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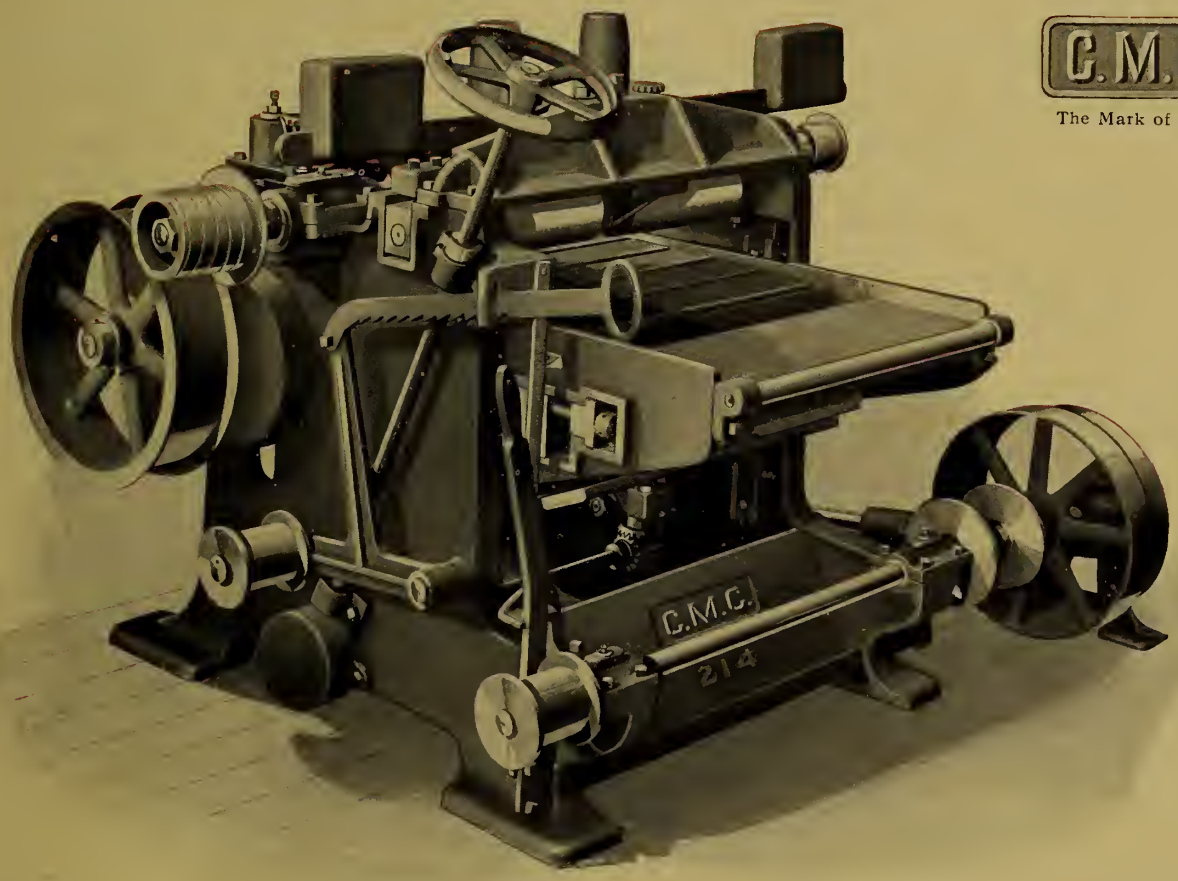
LIMITED
145-149 ADELAIDE STREET WEST
TORONTO
CANADA

Volume Twenty TORONTO, JANUARY, 1920 Number One

CANADIAN WOODWORKER and Furniture Manufacturer



C.M.C.
The Mark of Merit

OUR No. 214 ENDLESS BED SURFACER

is a strong feeding smooth cutting machine and has a place in every wood working establishment. It is unequalled in its class, and merits investigation

Size 24″ x 10″ & 26″ x 10″

CANADA MACHINERY CORPORATION, LIMITED, GALT, ONTARIO

Toronto Office and Warerooms, Brock Avenue Subway

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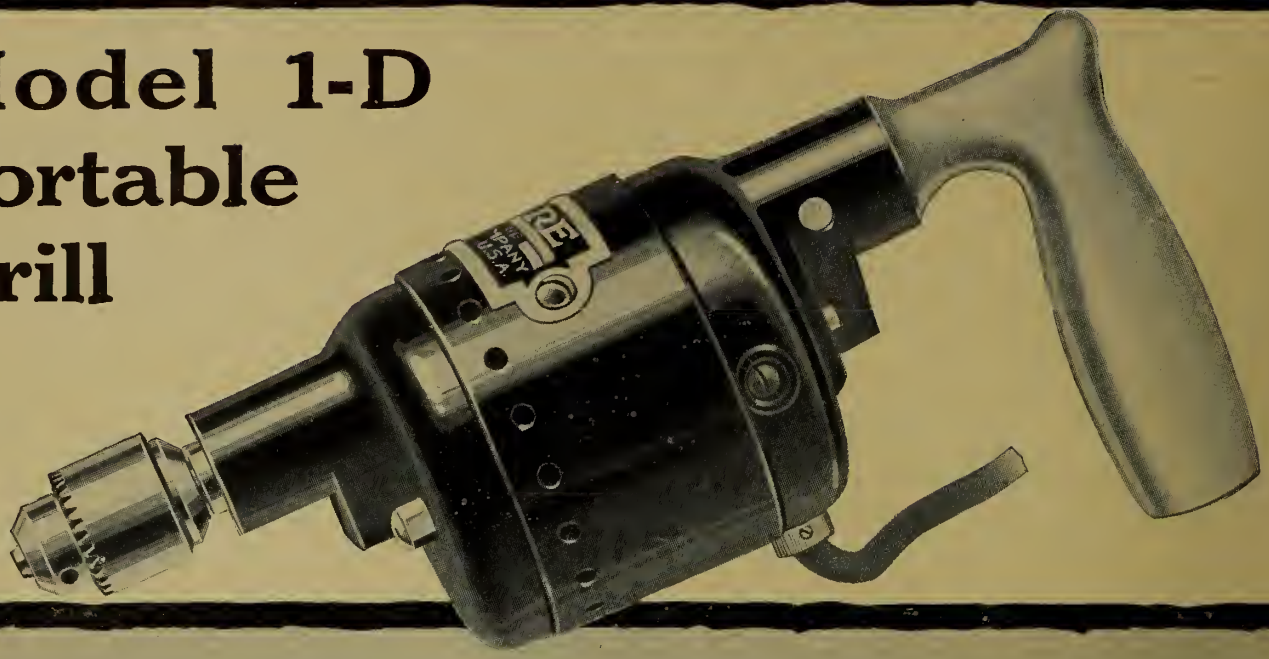
Model 1-D Portable Drill



HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—4¾ pounds.

Capacity—Steel, 0 to 3/16". Wood and alloys, 0 to 1/4".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3⅜ inches.

Spindle—Offset from center 3/32".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

Jacob's Chucks used as a regular equipment.

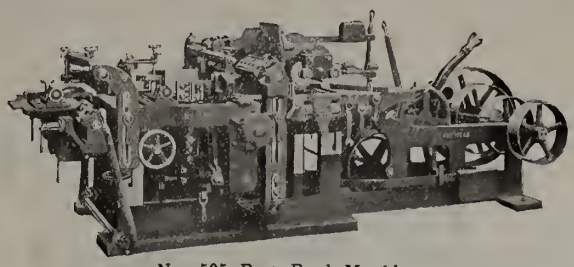
FOR speed in drilling and countersinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

Wisconsin Electric Company
7119 Sixteenth Street, Racine, Wisconsin, U. S. A.

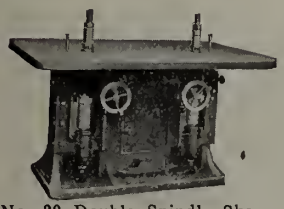
DUMORE GEARED ELECTRIC DRILLS

No. 25 Edging Saw

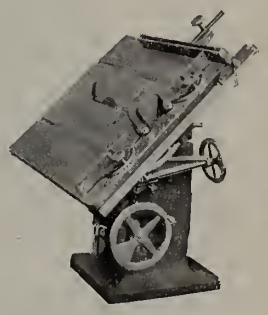


No. 505 Fast Feed Moulder

No. 20 Universal Saw

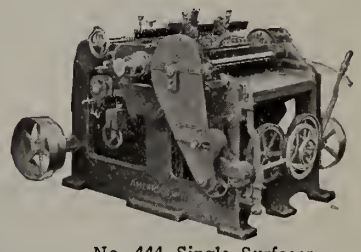


No. 30 Double Spindle Shaper



No. 1 Variety Saw

No. 2 Vertical Borer



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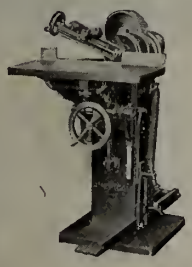
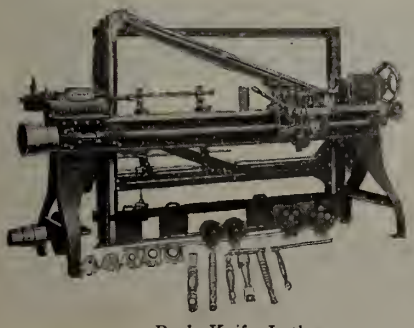


Radial Borer

Double Cut-off Saw



Back Knife Lathe

No. 109 Band Saw

No. 1 Jointer and Buzz Planer

American Wood Working Machines are sold by

Garlock-Walker Machinery Co.

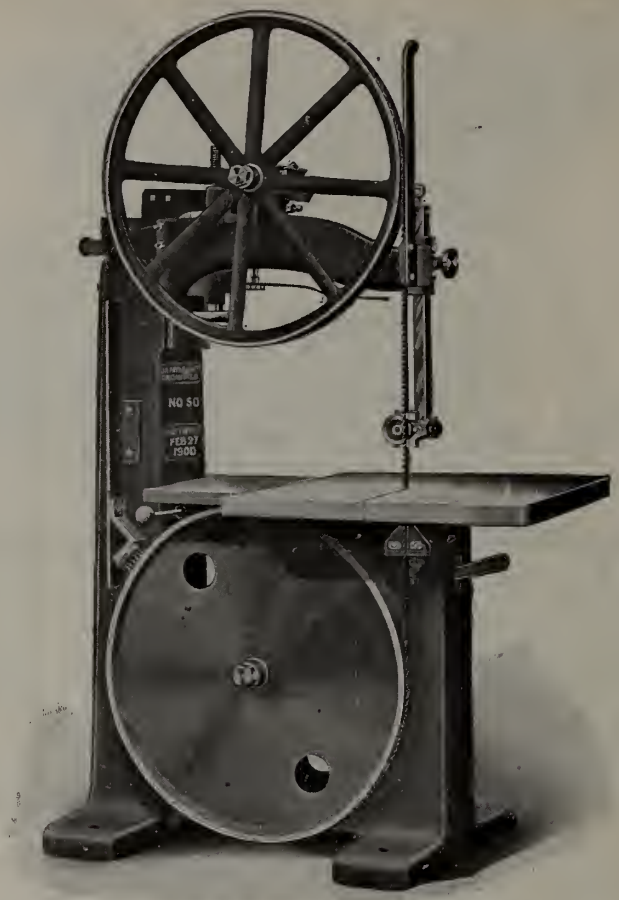
INC.

32 Front Street West
TORONTO, Canada

You can depend on Mr. Garlock for correct information concerning any of our machines. You can depend on him too for reliable advice concerning any of your woodworking problems. He is a practical man. He can save you money.

American Woodworking Machinery Co.

London Agents—
The Projectile Company.



Save 25% to 50% of Blade Upkeep and Power Cost

Get Two, Even Three Times As Much Work

It's not the blades that wear out that cost, it's those that break.

It's the broken blades that cut down productive time and cost to repair and to replace.

Blade breakage is reduced to a minimum on Fay-Egan No. 50—36″ **Square Column "Lightning Line" Band Scroll Saws.**

The Fay-Egan "Knife Edge" Blade Tension, made on the principle of a fine laboratory balance scale, is so sensitive that it compensates for changes in atmospheric conditions—yet, so flexible, you can pass a block between blade and wheel, while running, without breaking the blade. Folks tell us blade expense on "No. 50" averages 50 to 75 per cent. less than on the old timers.

The solid lower wheel acts like the fly wheel on your engine, its momentum carrying the load, so that the power consumption is reduced fully one-half, while at the same time it controls the light-spoked upper one, preventing over-running and choking down on a heavy cut.

The heavy square column eliminates vibration and permits the wheels to be revolved at 50 to 100 per cent higher speed, increasing the cutting capacity to double, and in some cases, triple that of the ordinary band saw.

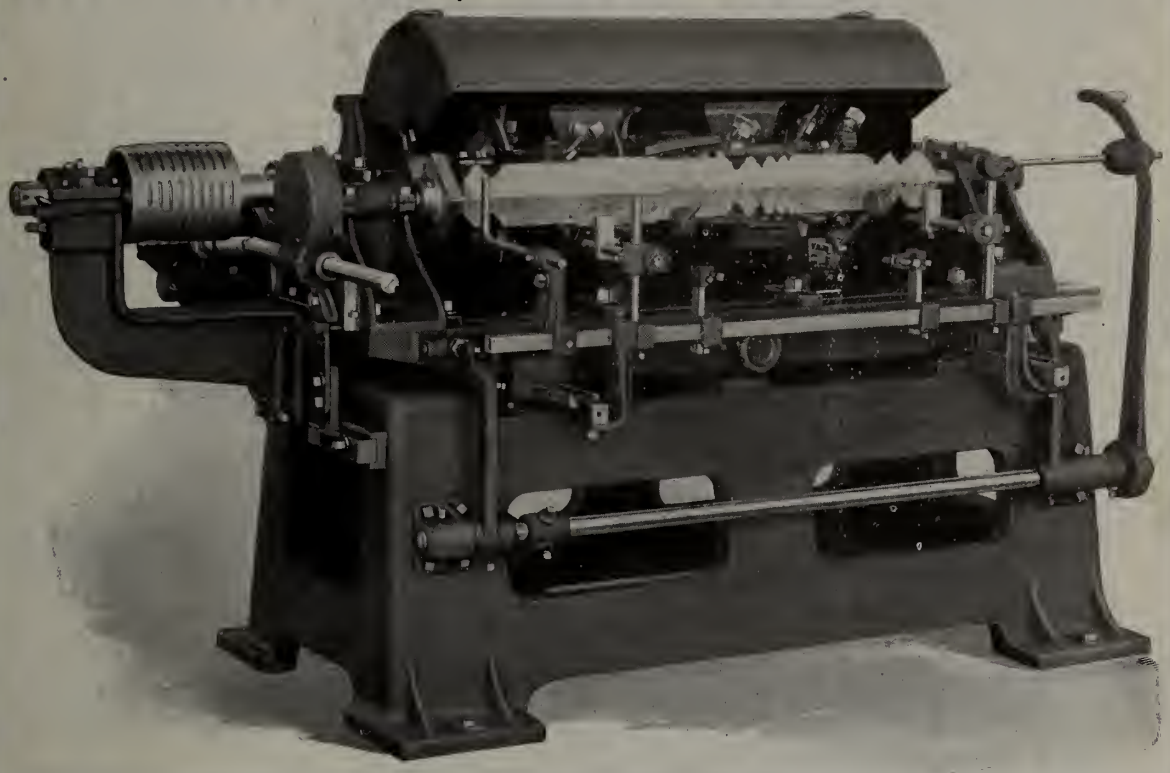
As a user of saws, you cannot afford to ignore what Fay-Egan Square Column Band Saws are doing for others and can do for you. An investigation does not obligate you.

Write for Bulletin M-4

J. A. FAY & EGAN CO.

153-163 W. Front St. CINCINNATI, O.

"Heads, You Win!"



"The Invariable Choice of the Man Who Knows."

The cutter heads on the Yates No. 70 Turning Machine are absolutely the best on the market. When used on a machine of the sturdiness and dependability of the No. 70 you are bound to win. To increase shop capacity and assure absolute accuracy you need the "70."

Let us tell you about it.
No obligation.
Write today

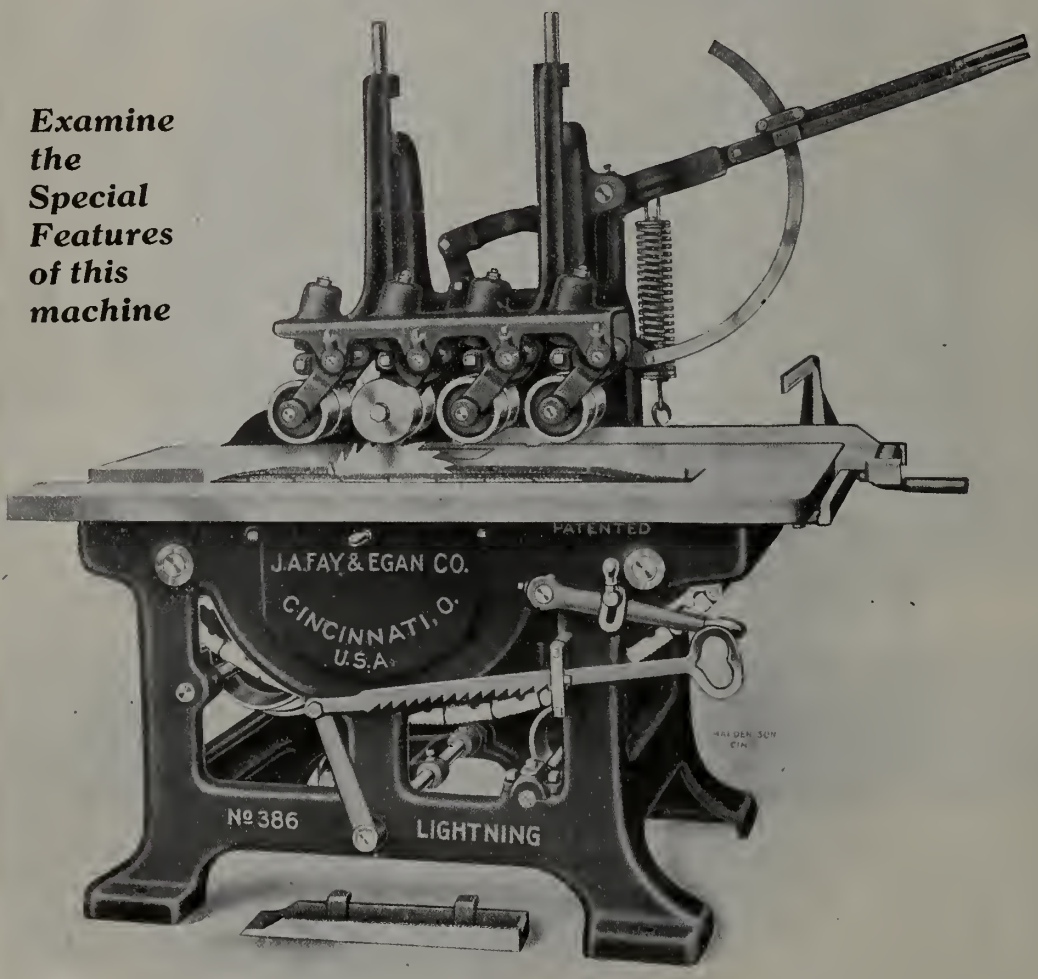
Yates

P. B. Yates Machine Company Ltd.
HAMILTON, ONT. CANADA
United States Plant, Beloit, Wisconsin

New Straight Edge Ripping and Jointing Machine

Makes perfect straight joint ready for glueing
Built in two sizes

Examine the Special Features of this machine



No. 386 Straight Edge Ripping and Jointing Machine

Prevents any twisting on either long or short stock.

Saw arbor easily accessible for oiling.

Double feed chain of flat milled links, each link removable and interchangeable.

Instantaneous adjustment of all rolls easily made and automatically locked at any point.

Spring counterbalance makes roll adjustment easy.

Saw blade easily accessible by removing plate.

Chain adjustable above table for rough, crooked, or finished stock.

Saves 33⅓ to 50 per cent. in Wages, 10 per cent. in lumber and also uses up your waste stock

NOTE—Saw cuts from below and all sawdust and slivers are drawn down and away from the saw and do not scatter over the work and get into the operator's eyes, ears, nose and mouth, as in the case where saw cuts from above.

Circulars fully describing this new machine will be gladly mailed to all interested parties

Jackson, Cochrane & Company

KITCHENER - CANADA

The "Shimer Limited" Expansion Head

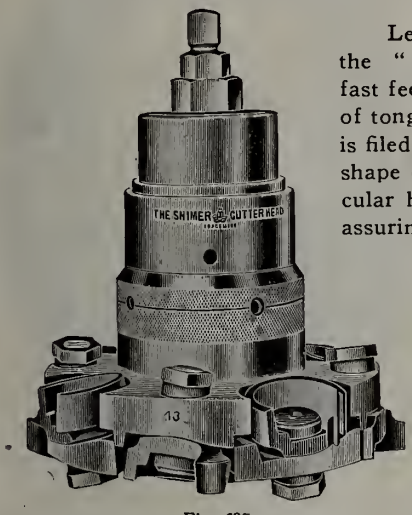


Fig. 627

Let us draw your attention to the advantages of using the "SHIMER CUTTER HEAD" for general Mill and fast feed Planer work. The Cutter is turned to cut the shape of tongue and groove desired, so that to sharpen the cutter it is filed or ground on its face, guaranteeing the user the same shape of cut during the life of the cutter. The bit being circular has from 3½ in. to 5 in. cutting length to the cutter, assuring long wearing life to the cutters.

Note that the cutter, being fastened to a concave seat on a compound angle, assures the user of the proper clearance of cutters, consequently they never burn.

These heads are fitted with or without the Self-Centering Sleeve, and made Expansion or Solid, to suit the customer's wishes.

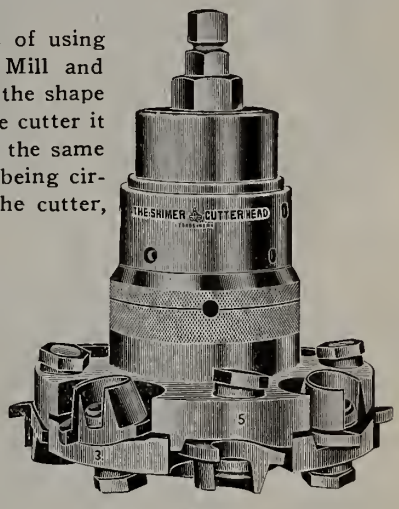


Fig. 268

Shimer Heads have been in use for sixty years, and their reliability and reputation have spoken for them in the past. Let us know your wants and we will guarantee their reliability at the present.

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

Successors to Samuel J. Shimer & Sons, Inc.

GALT, ONTARIO

BEAVER BEVEL WING GROOVERS

FOR CUTTING WITH OR ACROSS GRAIN

For general grooving on fine hardwood there is nothing equal to the bevel wing-type of groover saw illustrated above. It will cut equally smoothly either with or across grain and will not break out or tear. It can be used on shaper as well as on saw table.

Radcliff Saw Manufacturing Company, Limited

1550 Dundas Street West TORONTO, ONT.

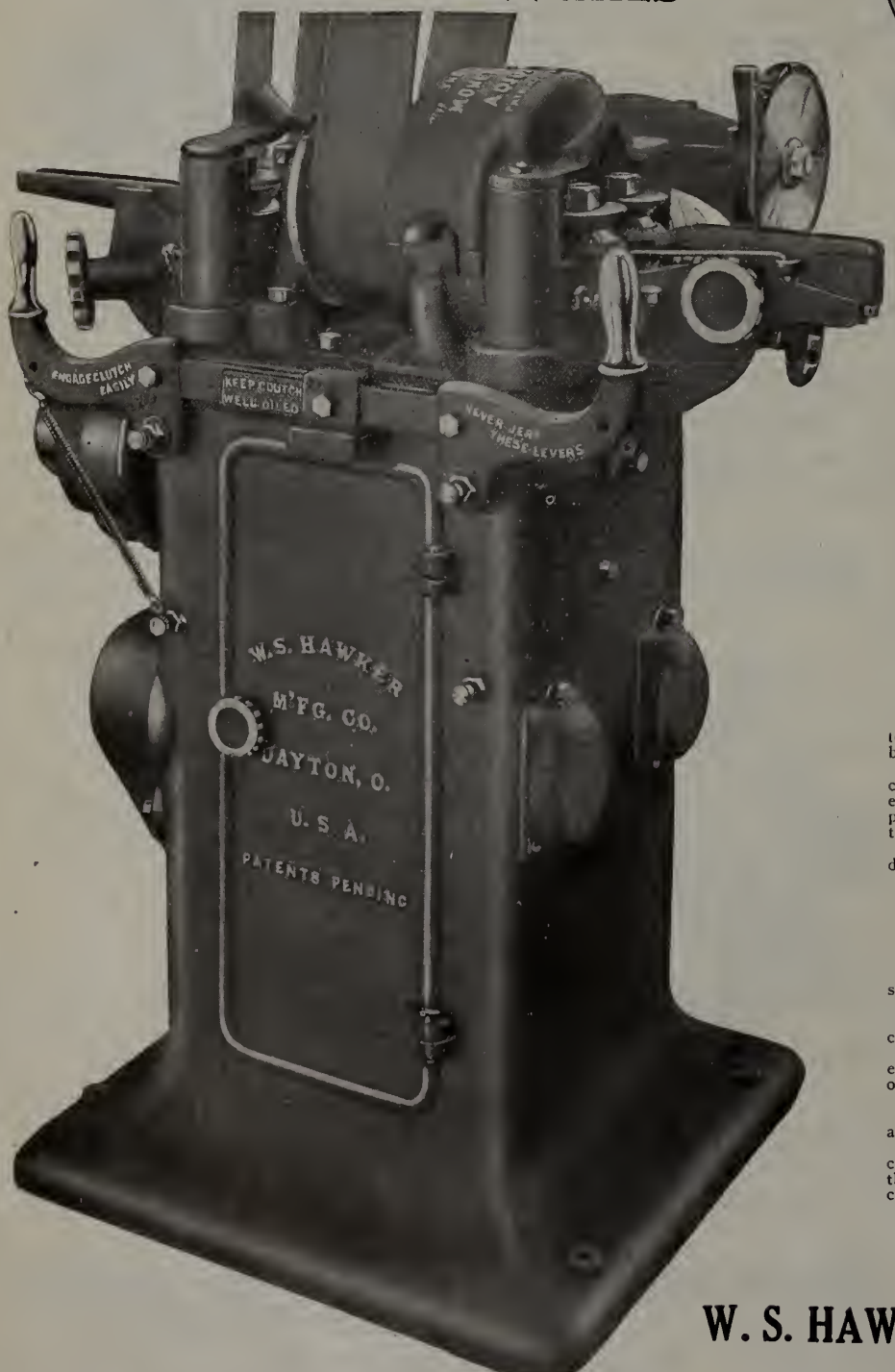
AGENTS FOR L. & I. J. WHITE CO., MACHINE KNIVES

UNIVERSAL ADJUSTABLE CUTTER HEAD Patented.
Infringements (maker or user) will be vigorously prosecuted.

Two Heads

that have put 100% more profit in the production of Dowel Stock.

FOR SHIP TREENAILS



W. S. HAWKER.

Inventor and Designer of the World's most efficient Tubular Turning Machinery

THE

Money Maker Adjustable Rod

and

Dowel Machine

The machine that is sent under a guarantee to show you a gain of from 100 to 400 per cent. before you buy it.

The improved dowel machine that 90 per cent. of the largest and oldest machinery builders and dealers now endorse and recommend in preference to the solid chuck machines they themselves previously built.

One cutter head turns from 1/4 in. to 2 in. diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

Works stock as short as five inches.

Rolls automatically centre variations in squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid chuck dowel machine.

We can save you from one dollar out of every two, to four out of every five, that the operation of solid chuck machines costs you.

Engagements for competitive test solicited.

Formal orders not solicited. All sales made after demonstration.

The only question is, are you willing to cut cost of your dowel turning to one-half or one-third of what it costs with any make of solid chuck machine?

Machine delivers the goods before you buy.

State conditions of stock closely.

Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY

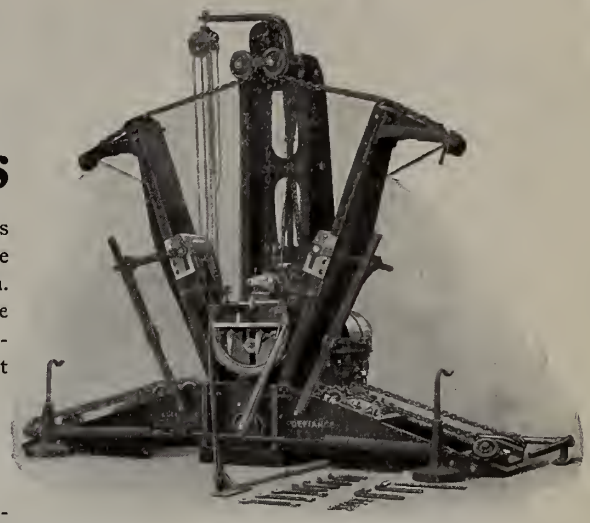
DAYTON, OHIO.

Why Struggle Along Continually With Obsolete Wood Bending Methods

when a little time spent investigating Defiance bending machines would lead to the salvage of your present material wastage—increase your present output, and reduce losses in breakage to a minimum. Defiance bending machinery is serving wood benders everywhere throughout the world. Its success, so pronounced and so long continued, proves Defiance methods of wood bending the most correct in use today.

DEFIANCE HIGH PRODUCTIVE WOOD BENDING MACHINERY

is built in various designs and sizes, and particularly adapted to bending rims for artillery wheels, automobile, auto-truck, wagon and carriage wheels, table rims, plow and truck handles, hames, bows for vehicle tops, and steering wheel rims. For the complete manufacture of the foregoing products many of the largest manufacturers all over the world are using Defiance equipment—all of which is a proven success and high productive machinery.



12″ Patent Rim, Felloe and Round Bending Machine

Illustrated and descriptive matter on your requirements in wood bending machinery will be mailed on request.

THE DEFIANCE MACHINE WORKS

New York City ***DEFIANCE, OHIO, U.S.A.*** *London, England*

You Have Heard About Them, but do You Know what They Will do for You?

Construction of Chapman Double Ball Bearing in B Housing

For power economy Chapman Double Ball Bearings have proven far superior to any other make. The perfect surface of these bearings is only obtainable by the use of the highest grade steel thoroughly tested and manufactured into Chapman Double Ball Bearings by the hands of skilled workmen. For years

Chapman Double Ball Bearings

have been saving power and money to manufacturers and plant owners who have installed them in place of the power wasting, inefficient line shafting. You, too, can stop this leak in your costs immediately by equipping your plant with Chapman Double Ball Bearing—the bearings of no regrets. May we send you further particulars?

The Chapman Double Ball Bearing Co. of Canada, Limited

Toronto **339-351 Sorauren Ave.** **Ontario**

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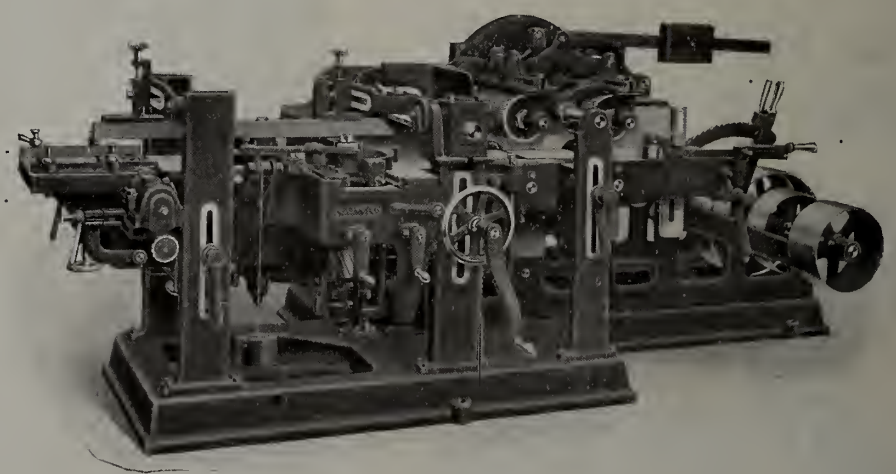
Moulder No. 289

10″ or 12″

Table lowers 8″

Full of Distinctive Features



Cowan Woodworking Machinery is dependable, efficient and creates a great saving in operating costs. We manufacture

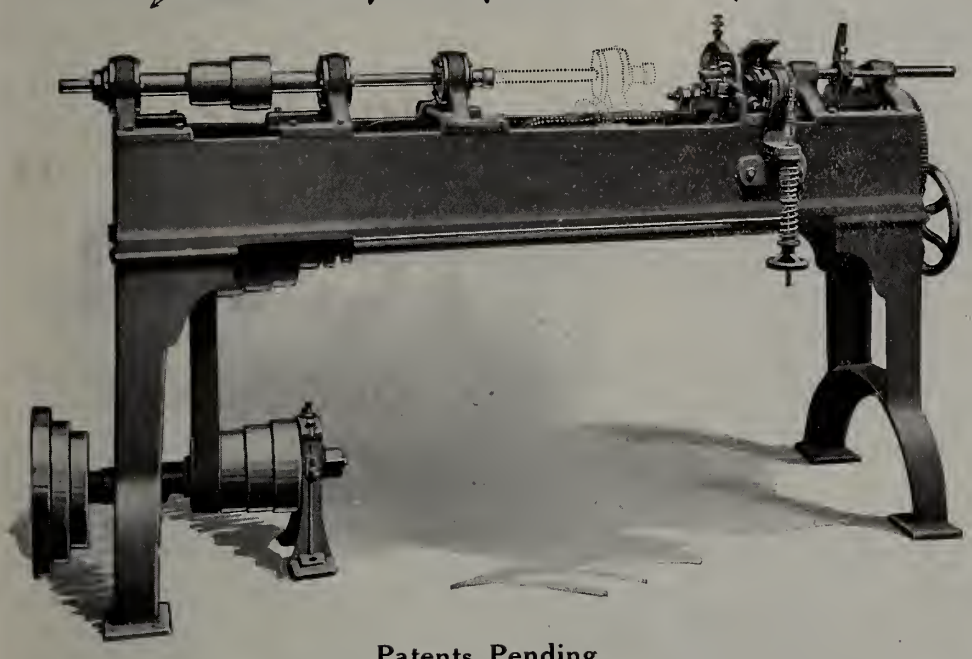
Planers	Mortisers	Band Saws	Sanders
Moulders	Borers	Scroll Saws	Grinders
Shapers	Lathes	Cross Cut Saws	Clamps
Tenoners	Resaws	Rip Saws	Veneer Presses

COWAN & CO. OF GALT LIMITED - Galt, Ontario

A Variety Turning Machine Such as You've Long Felt the Need of

What wouldn't you give for a variety turning machine in your plant—or several of them for that matter—so designed that all heating and mandrel troubles are eliminated; all friction on the wood, after it has been turned round with the roughing knife, done away with; in fact, all troubles overcome which retard operation? Such a machine is here—the new C. W. Smith.

S.K.F. Self Aligning Ball Bearings



Automatic Self-feeding Variety Turning Lathe

It is the result of many years' experience in the operation, development and manufacture of wood turning machines, and now constitutes a great forward step in this class of machinery.

The feeding device is so arranged that the feed can be changed by simply moving the belts from one cone to another, covering a range of 5 strokes to the minute, from 15 to 70.

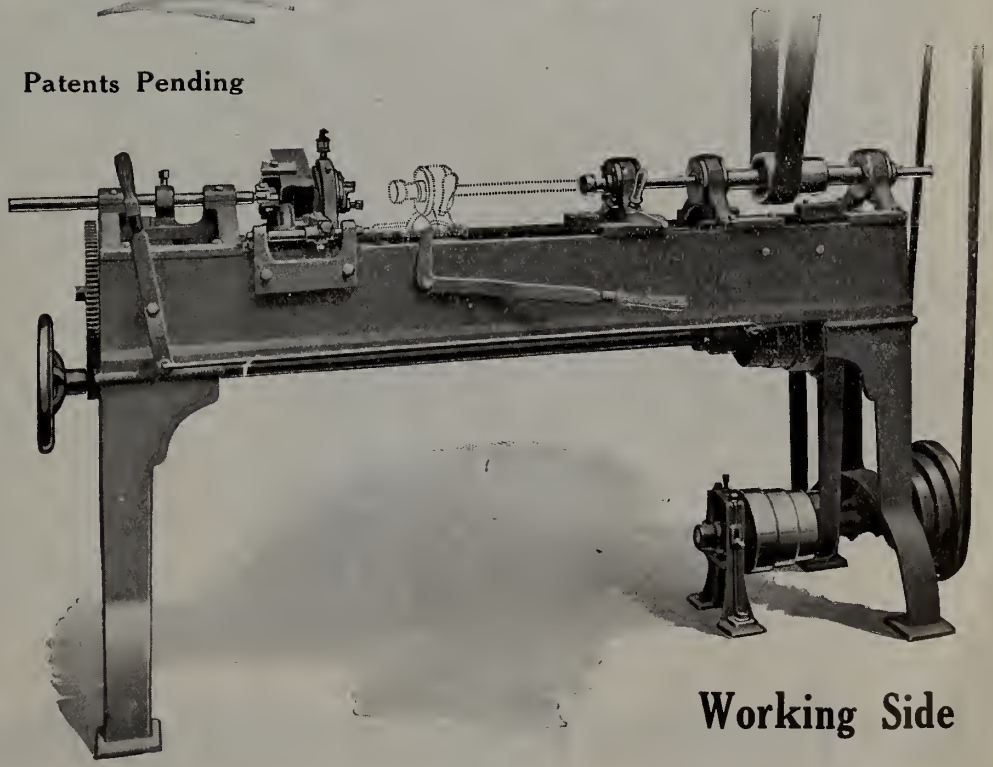
Patents Pending

The swinging cutterhead moves in all directions as well as a circular motion, thus enabling the operator to set knives where they cut the wood at all times.

Cutters are made up 7-in. long, without slots, and will turn ten times as many pieces as slotted cutters and do the work much better.

All kinds of plain and fancy work can be turned, from the smallest item up to 1¾-in. diameter and 7-in. long, in all kinds of wood.

Full details of this machine are given in pamphlet No. B-42, free on request.



Working Side

C. W. SMITH, M. E., 503 Grandville Ave., Grand Rapids, Michigan

"Treat Your Machine as a Living Friend"

The Features Worthy of Special Notice

— construction of the wheels
— size and style of bearings
— convenient adjustment
— universal alignment of wheels
— steadiness in running
— mimimum saw-breakage

No. 132 "Preston" 36″ Band Saw

An Aim Accomplished

In the design and throughout every stage of construction it has been our aim to make the No. 132 "Preston" 36″ Band Saw just a little better than it was necessary. This, of course, is a vital factor in the success the machine has proven to be when it was put in constant use.

We could, of course, have gone ahead with our designs and patterns and produced a machine of ordinary merit. But we realized that in this plan we would have in the end a product very similar to many other band saws that were already on the market. We realized that there was a large demand for a machine that would give better results all around and we set about to produce one. And, we believe, we have been successful; at least they have given such general satisfaction to those who have purchased them that the owners themselves tell us they are wonders. This is our aim accomplished.

Let us send you our bulletin which gives a complete detailed description of the machine, together with its many advantages.

The Preston Woodworking Machinery Co. Limited

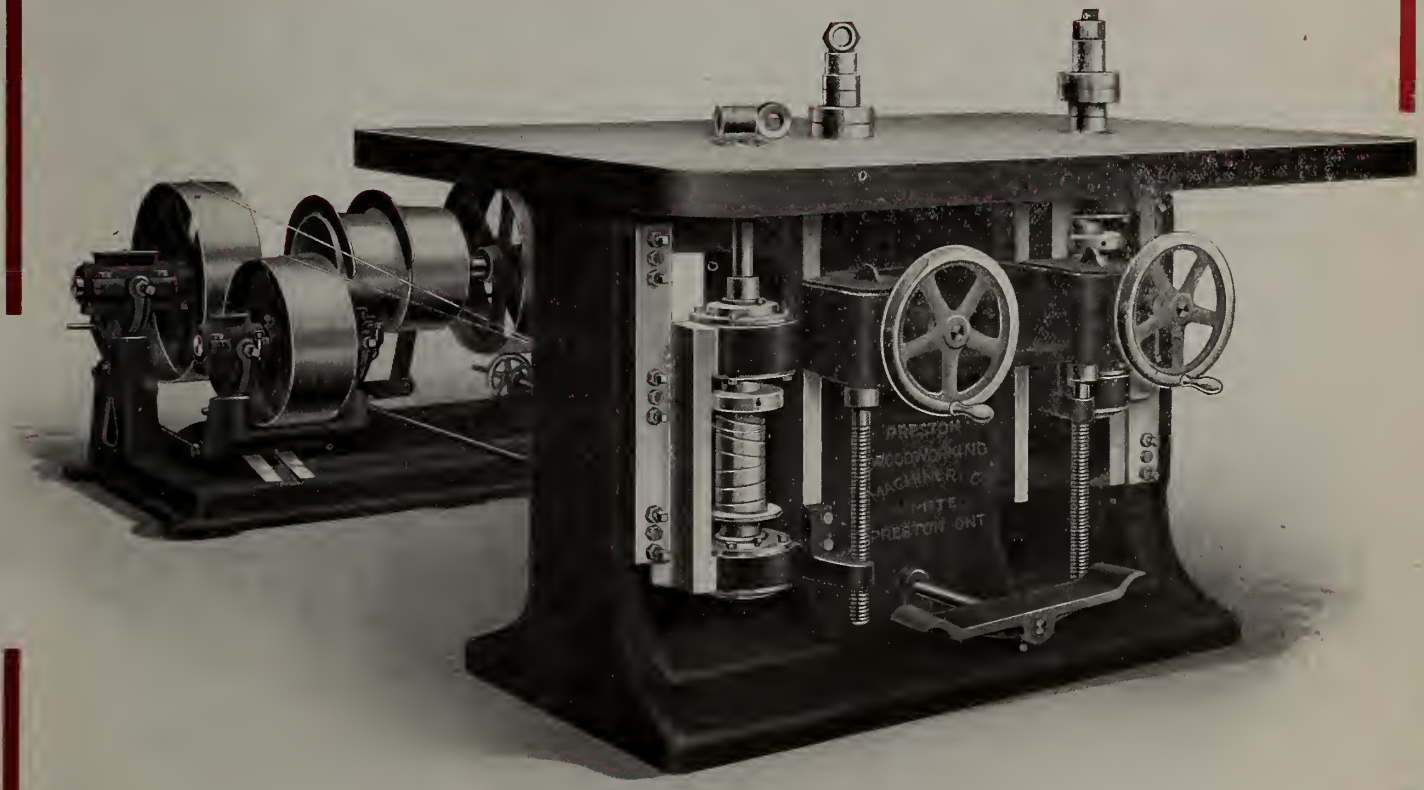
PRESTON, ONTARIO

You're Losing Money

every day you put off buying a

"PRESTON"

HIGH SPEED BALL BEARING SHAPER



WHY?

—because your operator can turn out more work in one day;
—because it will save you its entire cost in less than a year;
—because it takes less power to operate and will double your shaper production.

HERE ARE SOME OF ITS FEATURES:

SKF. Ball Bearings. *28" Spindle Centres*
Horse Power Required 3-HP. *Spindle Speed 7000 R.P.M.*
Weight 2750 lbs.

The Chevrolet Motor Co. are using 13 of these machines in their plant at Oshawa, Ont.

The Preston Woodworking Machinery Co.

PRESTON, ONTARIO Limited

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DRY AND PARTLY DRY STOCK

Ready for Shipment

GUM

13,000 ft. 1 x 13-17" Box Boards
71,135 " 6/4 1st and 2nds Plain Sap
71,126 " 6/4 No. 1 Com. and Sel. Sap
40,609 " 4/4 1st and 2nds Red
15,000 " 6/4 No. 2 Common Red
11,850 " 4/4 No. 1 Com. and Sel. Red
15,397 " 13" and up 1st and 2nds Sap
150,246 " 4/4 No. 1 Com. and Sel. Sap
50,125 " 6/4 No. 1 Com. and Sel. Red
91,246 " 4/4 No. 2 Common Sap
8,000 " 5/4 No. 2 Common Sap
99,080 " 6/4 No. 2 Common Sap
17,000 " 6/4 No. 3 Common Sap
12,860 " 4/4 1st and 2nds Sap
15,000 " 4/4 No. 3 Common Sap

LA. CYPRESS

40,725 " 4/4 Select
213,085 " 4/4 No. 1 Shop
108,000 " 4/4 No. 1 Common
18,205 " 4/4 No. 2 Common
9,000 " 4/4 No. 3 Common
5,000 " 6/4 Select
7,010 " 6/4 No. 1 Common
8,000 " 6/4 No. 2 Common
7,263 " 6/4 Peckie
7,590 " 8/4 1sts and 2nds
11,024 " 8/4 Select
7,106 " 8/4 Shop
11,220 " 8/4 No. 1 Common
11,150 " 8/4 No. 2 Common
2,250 " 8/4 Peckie
6,125 " 5/4 No. 2 Common
5,696 " 5/4 Peckie

HICKORY

Can cut 2 cars 8/4 10/4 Log Run

RED OAK

14,930 ft. 10/4 No. 1 Com. and Sel.
11,080 " 10/4 No. 2 Common
5,400 " 6/4 1sts and 2nds Plain
11,527 " 4/4 No. 1 Com. and Sel.
19,118 " 4/4 No. 1 Com. and Sel. Qtd. Red
9,186 " 4/4 No. 2 Com. and Btr. Qtd. W.
2,429 " 4/4 No. 2 Common Qtd. Red
13,425 " 3/4 No. 3 Common
15,000 " 4/4 No. 3 Common
15,000 " 4/4 Sound Wormy

LA. WHITE ASH

1,355 ft. 4/4 No. 1 Common
1,870 " 4/4 No. 2 Common
11,164 " 5/4 No. 2 Common
11,672 " 6/4 No. 1 Com. & Btr., 35% FAS
12,400 " 8/4 No. 2 Common
1,540 " 4/4 No. 3 Common
37,584 " 5/4 No. 3 Common

ELM

6,230 ft. 8/4 Log Run, Green
5,820 " 4/4 Log Run, Green
2,500 " 2½", 3" Log Run, Green
2 cars 10/4, 12/4 No. 2 Com. & Btr., Green
11,072 ft. 1" 6/4 No. 2, No. 3 Com. dry.

6/4 & 8/4 DOG BOARDS

31,000 ft. Cypress, mostly 6/4
14,142 " Cypress, mostly 10/4

PECAN

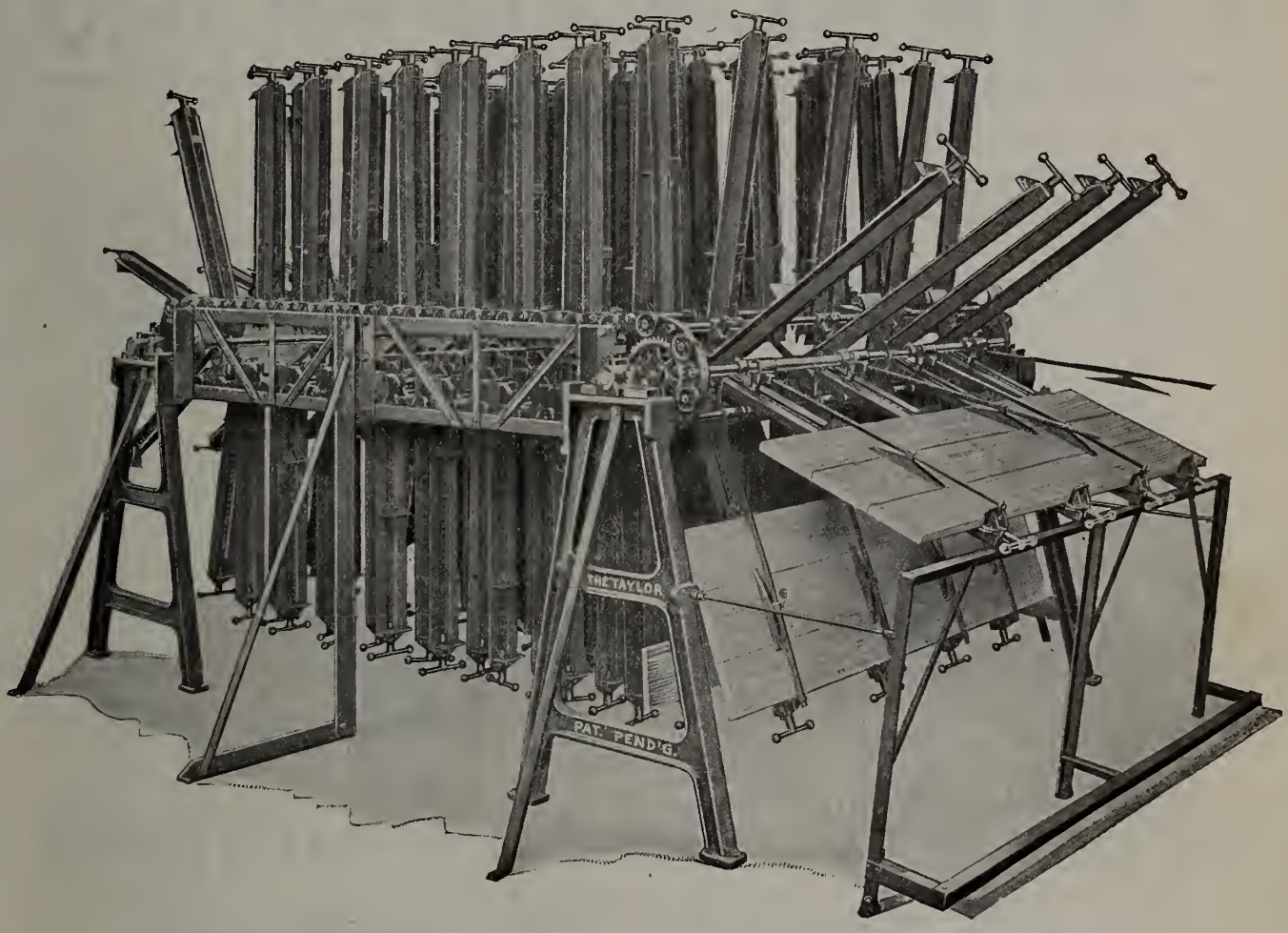
5,724 ft. 8/4 No. 3 Common

ABERDEEN LUMBER COMPANY

PITTSBURGH, PA.

CLAMP The Taylor CARRIER

REG. U.S. PAT. OFF. TRADE MARK



Forty section machine carrying 160 clamps, measuring 8 ft. 2½ in. between shaft centers.

The clamp is one of the most interesting features of the clamp carrier. A remarkable strain can be applied with greatest ease; the work it turns out—both thick and thin stock—is 100 per cent. perfect.

An Engineering concern recently wrote:

"I am recommending Taylor clamps to the Germain Mfg. Co. because I have proven the clamps more efficient through scientific time studies on both and all existing types of gluing-up machines and devices."

As a result of the above recommendations, The Germain Mfg. Co. referred to bought two Taylor carriers. They installed them, and tested them and have since purchased two more. We can tell you numerous instances where customers are using from two to nine Taylor carriers each as a result of similar experiences.

Let us prove the truth of these claims by showing you one of these carriers in operation, or you can try the clamps out on your own work. Ask for C. C. Folder and further information.

A. R. Williams Machinery Co., Toronto, Canada — Representatives

James L. Taylor Manufacturing Co.

POUGHKEEPSIE, N. Y.

Period Carvings

Have you a copy of our New Catalogue? If Not, Why Not?

Wood Fibre Ornamentation

WE SOLICIT YOUR INQUIRIES

J. WALTER & SONS

KITCHENER - ONT.

HARDWOODS!

May We Serve You During 1920?

We can supply hardwoods of every description that you may need during the coming year. Our large timber holdings enable us to meet your demand promptly and to your entire satisfaction.

Modern manufacture and quality woods are combined in our service to you. Write us regarding your requirements.

Memphis Bandmill Co.

Memphis, Tenn., U.S.A.

Boland Lumber Company

Murray Bldg., Grand Rapids, Mich.

Manufacturers Northern and Southern Hardwoods

Northern Woods:

Ash, Basswood, Beech,
Birch, Hard Maple,
Quartered Maple,
White Maple, Soft Maple,
Soft Elm, Rock Elm.

Southern Woods:

Cherry, Chestnut,
Cottonwood, Cypress, Gum,
Hickory, Magnolia,
Oak, Poplar, Sycamore,
Walnut, Willow.

Please send us your inquiries and it will be a pleasure to quote you and describe our stocks

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

WHITE ASH

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	10,000	1,800	25,000	85,000
1¼ in.	78,000	5,500	31,000	11,000
1½ in.	33,900	1,200	30,000	26,100
2 in.	100,300	500	119,000	50,000
2½ in.	6,500	....	2,000	3,500
3 in.	7,500	....	8,500	4,500
4 in.	6,500	....	300	500

BUTTERNUT

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	17,300	45,800	23,600
2 in.	8,400	17,000	10,000
2½ in.	3,000	3,000	....

CHERRY

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	135,000	5,000	205,200	74,500
1¼ in.	7,500	....	8,600	500
1½ in.	41,000	....	46,700	78,300
2 in.	8,100	....	23,200	31,900
2½ in.	4,500	....	2,100	1,200
3 in.	17,700	....	4,500	3,300
4 in.	9,900	....	2,200	1,600

CHESTNUT

	1 & 2	Clear Strips	No. 1 Com.	S.W.& No. 2 Com.
¾ in.	.....	....	6,500	.....
1 in.	79,900	1,500	53,300	180,500
1¼ in.	99,800	1,800	78,200	175,200
1½ in.	74,500	....	82,000	20,000
2 in.	46,200	....	73,300	107,200
2½ in.	4,000	....	1,150	.....
3 in.	2,800	....	1,300	.....
4 in.	1,500	....	300	.....

PLAIN RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
⅜ in.	30,200	....	.....	.....
¾ in.	101,000	....	44,400	29,200
⅝ in.	10,500	....	87,000	53,600
1 in.	243,200	....	36,000	73,400
1¼ in.	107,700	2,400	.....	13,200
1½ in.	117,900	4,300	15,200	35,000
2 in.	73,100	....	84,800	12,000
2½ in.	51,100	....	10,000	1,100
3 in.	28,800	....	12,500	3,000
3 in.	28,800	....	12,500	3,000
4 in.	16,600	....	7,900	....

PLAIN WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
⅜ in.	1,000	....	....	.....
½ in.	.....	....	....	.....
⅝ in.	25,150	....	2,000	16,900
¾ in.	53,900	....	115,000	28,000
1 in.	44,300	1,200	99,000	60,200
1¼ in.	73,300	....	3,000	8,000
1½ in.	41,600	....	25,000	12,000
2 in.	40,000	....	80,000	35,000
2½ in.	146,800	....	47,500	1,000
3 in.	75,800	....	51,800	7,400
3½ in.	5,500	....	3,000	1,500
4 in.	60,000	....	21,500	18,000

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	300	....	1,700	200
1 in.	20,200	2,300	....	....
1¼ in.	2,000	....	....	....
1½ in.	....	....	....	....
2 in.	1,000	....	7,400	....

QUARTERED WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
½ in.	5,500	....	.....	....
¾ in.	39,500	....	35,600	3,000
⅝ in.	.....	....	.....	.....
1 in.	32,400	7,000	16,400	17,000
1¼ in.	8,000	....	400	1,300
1½ in.	15,500	....	8,000	.....
2 in.	31,500	....	25,100	4,700
2½ in.	1,000	....	.....	.....

POPLAR

	18 in. & up	1 & 2	Box Boards 13 in. & up	Bright Saps
⅝ in.	8,800	20,600	.....	4,600
1 in.	1,200	45,000	10,600	24,200
1¼ in.	2,800	1,900	.....	5,000
1½ in.	4,300	2,300	.....	14,000
2 in.	....	16,600	.....	16,000
2½ in.	....	25,800	.....	28,000
3 in.	....	7,900	.....	38,600
4 in.	....	6,000	.....	6 ,300

Also Large Stock of BEECH, BIRCH and MAPLE

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

Band Mill and Yards, Memphis Plant.

STOCK LIST. This list supersedes all former issues. All stock listed is subject to prior sale. It will give us pleasure to quote you delivered prices on any stock listed. LET'S GO.

ASH

1,000 6/4 FAS
14,000 5/4 C. and B.
200 5 & 6" C. and B.
100,000 6/4 No. 1 Com.
20,000 4/4 No. 2 Com.
80,000 6/4 No. 2 Com.
25,000 6/4 No. 3 Com.
600 12/4 No. 3 Com.

COTTONWOOD

2,600 4/4 FAS 13-17"
7,000 4/4 FAS 9-12"
130,000 4/4 C. and B.
20,000 4/4 1, 2 & 3 Com.

CYPRESS

7,000 4/4 FAS
100,000 4/4 C. and B.
1,000 4/4 Select
14,000 6/4 Select
17,000 4/4 Shop
14,000 6/4 Shop
27,000 6/4 No. 1 Com.
5,000 4/4 Pecky
18,000 4 x 6" Pecky
600 6/4 No. 3 Com.

ELM

9,000 4/4 LR
5,000 6/4 LR
100,000 8/4 LR
24,000 10/4 LR
2,000 12/4 LR
6,000 8/4 No. 2 Com.
21,000 6/4 No. 2 & 3 Com.
26,000 8/4 No. 2 & 3 Com.
2,000 5/4 No. 3 Com.

QRT'D. RED GUM

6,000 4/4 FAS
600 5/4 FAS
2,000 6/4 FAS
5,000 4/4 C. and B.
80,000 8/4 C. and B.
30,000 4/4 No. 1 Com.
3,000 6/4 No. 1 Com.
30,000 8/4 No.1 Com.

MAPLE

15,000 4/4 Log Run
1,000 8/4 Log Run
30,000 10/4 Log Run

PLAIN RED GUM

30,000 4/4 FAS
6,000 5/4 FAS
1,000 6/4 FAS
30,000 6/4 No. 1 Com.
200,000 4/4 No. 2 Com.
2,000 6/4 No. 2 Com.
400 8/4 No. 2 Com.
6,000 6/4 No. 2 & 3 Com.
30,000 8/4 No. 2 & 3 Com.
1,000 4/4 No. 2 Com.

QRT'D RED GUM SAP NO DEF.

30,000 6/4 C. and B.
75,000 10/4 C. and B.
25,000 12/4 C. and B.
2,000 8/4 No. 2 Com.
2,000 12/4 No. 2 Com.
4,000 10/4 No. 3 Com.

PLAIN SAP GUM

48,000 4/4 wide box boards
100,000 4/4 C. and B.
25,000 5/4 No. 1 Com.
100,000 6/4 No. 1 Com.
300 8/4 No. 1 Com.
350,000 4/4 No. 2 Com.
95,000 5/4 No. 2 Com.
120,000 6/4 No. 2 Com.
2,000 8/4 No. 2 Com.
7,000 10/4 No. 2 Com.
5,000 4/4 No. 2 & 3
15,000 8/4 No. 2 & 3
60,000 4/4 No. 3 Com.
40,000 5/4 No. 3 Com.
5,000 6/4 No. 3 Com.
40,000 8/4 No. 3
90,000 12/4 No. 3

HACKBERRY

4,000 4/4 Log Run

TUPELO GUM

5,000 6/4 FAS
200,000 4/4 C. and B.
1,000 4/4 No. 2 Com.
1,000 4/4 No. 3 Com.

LOCUST

2,000 8/4 LR

QRT'D WHITE OAK

60,000 4/4 FAS
16,000 5/4 FAS
13,000 8/4 FAS
125,000 6/4 C. and B.
200,000 4/4 No. 1 Com.
90,000 5/4 No. 1 Com.
48,000 8/4 No. 1 Com.
6,000 4/4 No. 2 Com.
10,000 6/4 No. 2 Com.
3,000 8/4 No. 2 Com.
110,000 4/4 No. 2 and 3.
1,000 5/4 No. 3 Com.
4,000 6/4 No. 3 Com.

PLAIN WHITE OAK

7,000 4/4 FAS
2,000 8/4 FAS
2,000 3/4 C. and B.
28,000 5/4 C. and B.
3,000 10/4 C. and B.
200,000 4/4 No. 1 Com.
1,000 6/4 No. 1 Com.
4,000 8/4 No. 1 Com.
14,000 6/4 No. 2 and 3
1,000 8/4 No. 2 and 3.
6,000 4/4 No. 3 Com.
10,000 5/4 No. 3 Com.

QUARTERED RED OAK

900 6/4 FAS
175,000 4/4 C. and B.

PLAIN RED OAK

35,000 4/4 FAS
10,000 5/4 FAS
200,000 6/4 C. and B.
75,000 8/4 C. and B.
52,000 10/4 C. and B.
56,000 11/4 C. and B.
70,000 12/4 C. and B.
7,000 14/4 C. and B.
150,000 4/4 No. 1 Com.
100,000 5/4 No. 1 Com.
9,000 5/4 No. 2 Com.
100,000 4/4 No. 3 Com.
50,000 5/4 No. 3 Com.
20,000 6/4 No. 3 Com.
20,000 8/4 No. 3 Com.
20,000 3" bridge plank

SOUND WORMY OAK

100,000 6/4

"DIRECT FROM PRODUCER TO CONSUMER"

GAYOSO LUMBER COMPANY

MEMPHIS, TENNESSEE

Reese Sheriff Lumber Co.

WILLIAMSPORT, PENNSYLVANIA

Manufacturers of

Northern and Southern Hardwoods White Pine, Spruce and Hemlock

With special attention to **Oak, Chestnut, Poplar, Cherry, Walnut, Gum and Basswood.**

OUR MOTTO

REASONABLE PRICES—that you can afford to pay.
EFFICIENT SERVICE — that you have a right to expect.
FAIR TREATMENT — that you can depend on getting

We would appreciate an opportunity of furnishing a portion of your lumber requirements.

RED GUM

"AMERICA'S FINEST CABINET WOOD"

The really successful merchant, it matters not in what line, is he who takes the trouble to ascertain

WHAT THE PUBLIC WANTS

This is especially true in its application to the furniture manufacturer and his retailer. He *has to* study his public—or he soon will have no public.

That portion of his public which is influenced by the principles of good taste wants RED GUM furniture—Why? Because the color, grain and soft, velvety quality of this, the finest of America's cabinet woods, when handled by a master cabinet-maker, results in a thoroughly charming piece of furniture—the kind that people of nice discrimination like to have around—and want strongly enough to *ask for*. Then can YOU supply it?

Makers and dealers desiring to see samples of RED GUM, both rough and finished, are invited to correspond with us at once.

ADDRESS: RED GUM DIVISION

AMERICAN HARDWOOD MANUFACTURERS' ASSOCIATION

1314 Bank of Commerce Bldg., Memphis, Tennessee

I offer the following West Virginia stock for immediate shipment:

100,000 Ft. 4/4 Sound Wormy Chestnut.
100,000 " 5/4 " " "
75,000 " 6/4 " " "
70,000 " 8/4 " " "

No. 1 Common and Better Chestnut

100,000 Ft. 4/4
100,000 " 6/4
100,000 " 8/4 60% 14 and 16 feet long, 50 to 60% 10" and wider.
15,000 " 4/4 FAS Plain White Oak.
75,000 " 4/4 No. 1 Com. Pln. Wh. Oak.
100,000 " 6/4 No. 1 Com. Pln. Wh. Oak.

I have also a car of 4/4 No. 1 C & B Tennessee Red Cedar in transit.

I can make immediate shipment of Crating Lumber, Excelsior and Wood Wool.

Write, Wire or Phone for Prices.

PERCY E. HEENEY
202 Weber Chambers, KITCHENER, ONT.

Our Service Yard
is maintained for SERVICE

We have the lumber—but more than that we can get it to you **quickly.** Orders that come into this office are shot out of our Logansport (Indiana) Yard at top speed. This is merely one mark of the efficient service that is shown all our customers.

Nothing but the best quality stock ever leaves our Logansport Yard. The fact that we invite inspection there means that our customers **must be satisfied.**

	ASH	Ft.
1"	FAS, No. 1 & 2 Com.	56,720
1½"	FAS, No. 1 & 2 Com.	82,460
2"	FAS and No. 1 Com.	51,752
2½"	No. 2 Common	13,860
4"	FAS & No. 1 Com.	8,530
	PLAIN OAK	
1"	FAS and No. 1 Com.	13,716
1¼"	FAS and No. 1 Com.	4,200
2"	FAS and No. 1 Com.	112,710
2½"	FAS and No. 1 Com.	196,138
3"	FAS and No. 1 Com.	158,960
4"	FAS and No. 1 Com.	79,616
	POPLAR	
1"	FAS, No. 1 & 2 Com.	110,100
1¼"	FAS, No. 1 & 2 Com.	14,214
2"	FAS, No. 1 & 2 Com.	50,210
2½"	FAS, No. 1 & 2 Com.	9,000
3"	FAS, No. 1 & 2 Com.	12,340
4"	FAS, No. 1 & 2 Com.	11,190

	SOFT ELM	Ft.
1"	FAS, No. 1 & 2 Com.	12,775
1½"	FAS, No. 1 & 2 Com.	121,400
2"	FAS, No. 1 & 2 Com.	25,980
2½"	FAS, No. 1 & 2 Com.	120,400
3"	FAS, No. 1 & 2 Com.	135,600
	HICKORY	
1½"	FAS & No. 1 Com..	27,230
2"	FAS & No. 1 Com..	11,000
3"	FAS & No. 1 Com..	15,180
	SOFT MAPLE	
1"	FAS, No. 1 & 2 Com.	13,186
2"	FAS, No. 1 & 2 Com.	11,000
3"	FAS, No. 1 & 2 Com.	16,260
	HARD MAPLE	
2½"	FAS & No. 1 Com..	83,319
3"	FAS & No. 1 Com..	12,670

John I. Shafer Hardwood Co.
SOUTH BEND INDIANA

H. W. Darby Hardwood
Lumber Company

Manufacturers of

Hardwood Lumber
Red and Sap Gum a Specialty

Gum, Oak, Tupelo, Poplar
Ash, Elm, Cypress

Rooms 1531-33 Bank of Commerce & Trust Bldg
MEMPHIS, TENN.

Mills at:
Sidon, Miss Money, Miss.
Greenwood Miss.

HUNT, WASHINGTON & SMITH

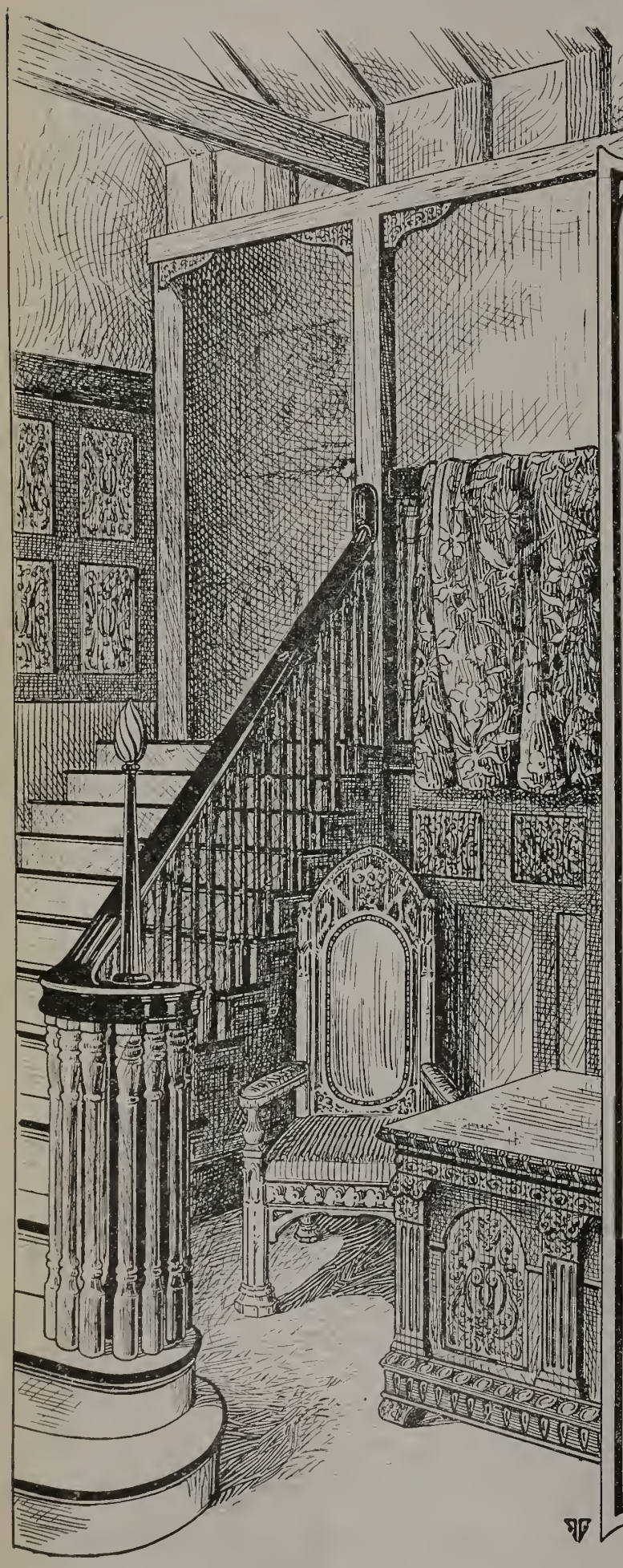
Nashville, Tennessee

Manufacturers of

Quartered and Plain White Oak

Poplar - Ash - Chestnut
Tennessee Red Cedar
Gum and Cypress

Canadian Representative
W. R. YOUMANS
Parkview Hotel Toronto, Ontario



IOWA WALNUT

The War Brought It Out

The absolute insistence of our Government upon American Black Walnut for gunstocks (and for aeroplane propellers to the limit of our capacity) developed the fact that the amount of American Walnut still available is more than ample for our domestic uses of several generations to come!

Its qualities are so incomparable among all hardwoods that it is no wonder that Walnut is classed as the supreme cabinet wood of the world. If you inspect the palaces and museums of Europe and America you will get quite an awakening—and you will then be glad that Walnut is still plentiful and that you can secure your supply—and at most reasonable prices.

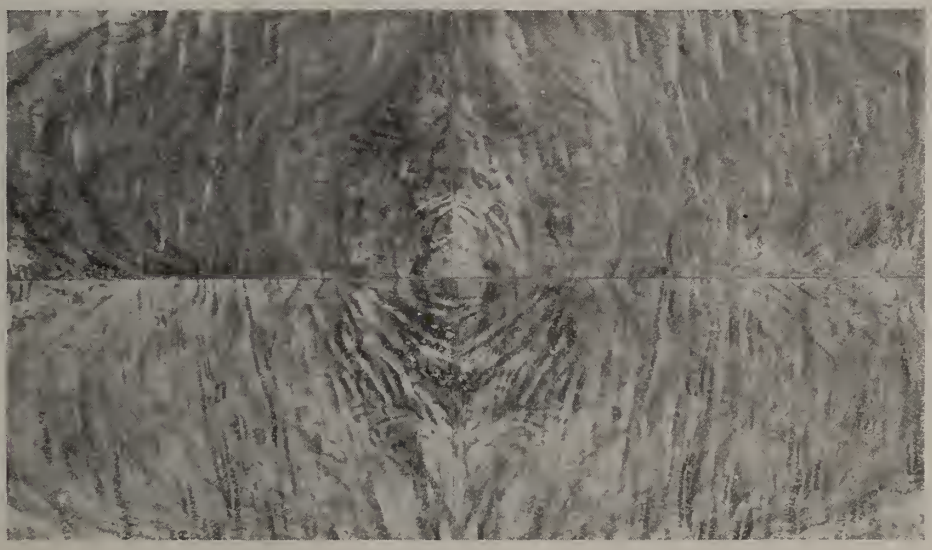
Send us a list of your needs.

Des Moines Sawmill Co.

DES MOINES, IOWA

"Hartzell" Lumber and Veneers "Hartzell"

American Walnut Exclusively



"Hartzell's Choice Walnut"

Furniture manufacturers will do well to note that we produce only American Walnut, and therefore can be classed as the logical source of supply in this wood, and our years of experience in handling American Walnut will prove valuable to you if you desire to take advantage of it.

By saying that our long experience will prove advantageous to you we mean that you should by all means take time to examine our line before purchasing, because the quality will be far superior to the average line and the price no greater.

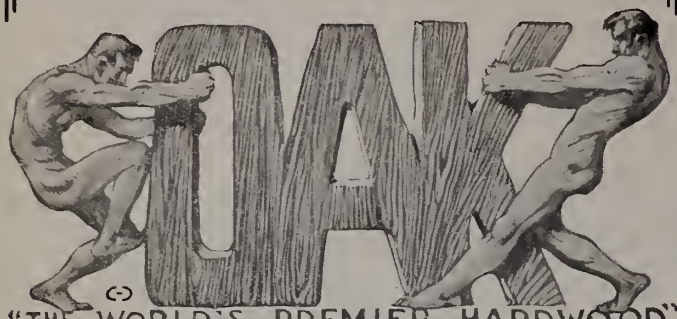
We study your particular interests and produce veneer of the kind and quality that is best adapted to your work, and whatever class of figure you are using we can give you a complete uniform line of just the wood you want for your selection, and it will not be necessary for you to handle a great lot of all sorts of samples and then find only a few stocks suitable for your needs.

When you purchase our line you can rest assured that you can duplicate your purchase just as near as it is possible to do so in Veneers, that is our part in serving you and we see to it that you are served right.

"SEND YOUR INQUIRIES FOR VENEERS TO US."

"Hartzell" Piqua, Ohio "Hartzell"

"YES!" IS THE WORD FOR AMERICAN **OAK** TODAY!



"THE WORLD'S PREMIER HARDWOOD"

to ***ALERT FURNITURE MAKERS: "A WHISPER IS ENOUGH"***

From FILING CABINETS and other Office Furniture to "the bones of great ships"—OAK is **OAK.** (Supreme.)

From ***DELICATELY CARVED FURNITURE*** for the ***DILETTANTE TASTE*** to the sills and ribs of great structures whose nobility is in their sheer strength (and to the historic beams of Westminster Abbey) OAK is **OAK.** (Supreme.) ***GOOD* OAK FURNITURE is "COMING *IN*."**

Without a rival, without an apology, without a substitute, OAK is indeed

"*The* WORLD'S PREMIER HARDWOOD"

(has been, is and ever shall be), AND EVERYBODY KNOWS IT.

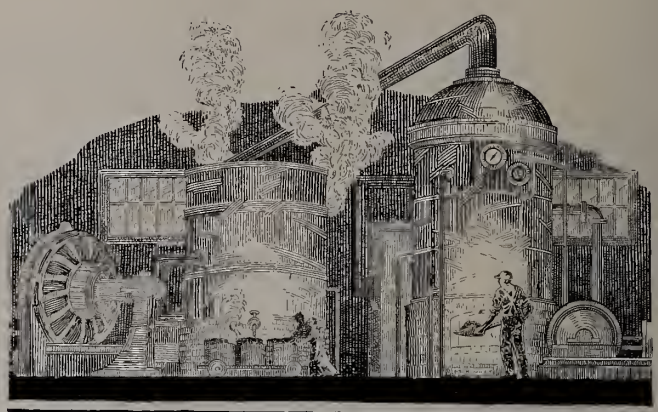
Nature will never grow another wood as good as OAK for the uses for which it is historically appropriate.

No need to mention Economy—*you know it.*

AMERICAN OAK is PLENTIFUL, ECONOMICAL, INDISPENSABLE.

ADMIRE IT. TRUST IT. INSIST ON IT. ***SPECIFY*** *IT. USE IT.* WRITE us. TELL us. ASK us. *We will give you a Straight Personal Letter in prompt reply—WITH ALL THE FACTS.*

Address: Oak Division,
AMERICAN HARDWOOD MFRS. ASSOCIATION
1408 BANK OF COMMERCE BLDG., MEMPHIS, TENNESSEE



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The picture shows surface of pond.

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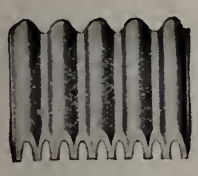
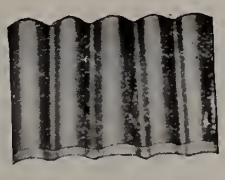


SAW EDGE



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A New Step in Technical Training

Practically all industries are at present confronted with a shortage of skilled help. This dearth of trained mechanics may be more marked in certain lines but cannot be said to be confined to any one trade or any one locality. It is a general condition that must be faced by all employers including those engaged in the woodworking industry.

It is not necessary to discuss the various causes to which this state of affairs may be attributed but one contributing factor is the fact that the younger boys are not entering the different plants and learning the trade from the ground up, as they were wont to do in former years. If the younger generation cannot be induced to thoroughly master a certain trade or calling it is hard to see where the mechanics of the next decade are coming from or what class of workmen will man our machines in years to come.

Many have hailed the technical school and the growing popularity of technical education as the signs which point to a solution of this problem. In the technical classes being held in various schools the boys are being grounded in mechanics and given a certain amount of practical training. This instruction not only educates the boy along practical lines but arouses in him a liking and inclination for things practical.

There are those who maintain that the manual training classes and other technical departments are not fulfilling their true mission. That instead of teaching the pupil to make boxes and other simple articles, they should work on commercial articles such as are being produced in our factories. Working thus the boy would become familiar with articles in common use and by conducting the classes along the lines followed in the factories he would gain an intimate insight into factory work and would naturally look for employment in a manufacturing plant when his course was finished.

The aims and limitations of modern technical training were clearly outlined in articles which appeared in the July and August issues of this journal. The object of these schools is not merely to turn out a certain number of skilled workmen but rather to turn out boys who, in addition to having received a grounding in mechanics, are able to take their place as citizens and hold their own in a competitive business world where a good education is necessary.

It has been suggested that the technical schools could better fulfill their purpose if the different manufacturers and other employers of skilled labor would co-operate with the authorities and work out a scheme whereby those who desired could spend part of their time in school and part working in the various plants and thus gain an insight into the methods and demands of our modern industrial life.

Beginning with the opening of the present term the industrial committee of the board of education of Chatham, Ontario, acting in conjunction with the chamber of commerce and the heads of several local factories, have adopted a scheme whereby the boys will study for one week in school and work the next in a factory, alternating from week to week during the term. It is hoped that in this way the boys will receive a thorough theoretical and practical training. This is a move that should be closely watched by all who are in the market for skilled labor. If the idea is a good one and it works out successfully, as it undoubtedly will, it could be applied to other schools.

This is not a new idea but one that has been in successful operation in a number of schools in the United States. An article describing the methods followed in one American school and the results achieved will be found elsewhere in this issue.

Lumber Situation Reviewed

As far as the lumber situation is concerned the year 1920 does not begin as auspiciously as did its predecessor. At the present writing lumber stocks are low and broken and prices on many items are slowly but steadily advancing. A combination of circumstances, beyond the control of the lumber manufacturers, tends for low production, so that it will probably be some time before there is any marked improvement in the hardwood lumber field.

Elsewhere in this issue will be found an article reviewing the trend of the lumber market for the past year and giving the stock on hand at the beginning of 1919 as compared with present holdings. The increase in prices which took place in the different woods and grades are included, together with the latest quotations from the Chicago lumber markets.

Saddle seat arm chair.

Demands of the British Market

An undoubted market exists for various forms of furniture and woodenware—Mr. Kaufman, who recently returned from England, outlines some of the requirements of this trade—Standardized lines in plain designs needed to successfully satisfy the British buyers.

By F. Kaufman.

Plain pad seat chair.

Readers of the "Canadian Woodworker" may be interested in my impressions of the British market, gained while on a trip to the "old country."

During my four months' visit in Great Britain I was astounded at the high prices and scarcity of furniture which I found to exist there. This condition is only natural when one considers that for almost four years the manufacture of this commodity was on the prohibited list. Since furniture manufacturing has been resumed it seems almost impossible to cope with the demand, and the people are paying fabulous prices to obtain their requirements. Taking all things into consideration it is my opinion that there are wonderful possibilities in Britain if any Canadian manufacturer cares to go after the export furniture trade. It may be said that our manufacturers in their usual efficient manner can do a tremendous business, but I suppose it takes them all their time to look after the Canadian trade. If there are any who contemulate trying to secure some of this business I would say "Now is the time," especially when one considers that the market is improving, both with regard to prices and shipments.

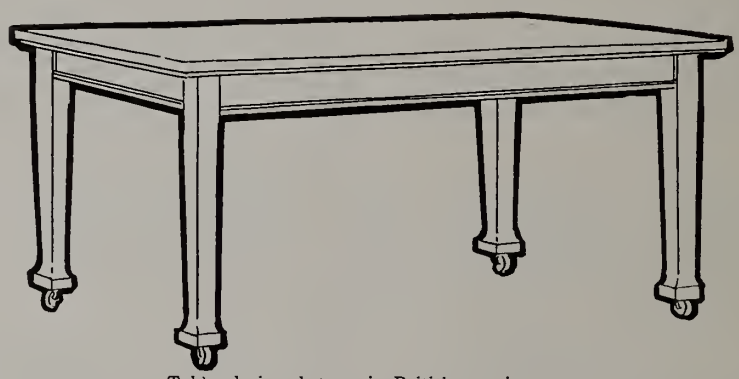


Table designed to suit British requirements.

At the present time the American furniture men are trying to obtain all the business they possibly can. In the office furniture field they have firmly established themselves in the English markets, but I cannot see any reason why our own manufacturers cannot do the same.

The articles of furniture and woodenware that are in demand are what may be termed necessities, not luxuries. What is required is strictly utility furniture. It is necessary to supply what the dealer wants and not what you would like to ship. All contracts must be fulfilled to the minutest detail. Although England is in need of these articles, the British market must not be considered a dumping ground for goods that will not sell.

In catering to an overseas trade in furniture it would be advisable to do business with one first-class wholesale importer or to open a permanent show room and warehouse, with a good selection of samples, under the management of a good, live agent. It is not advisable to depend upon selling from photos, for the people require to see the goods and to be sure of quick deliveries, which would follow if a stock were carried there.

The chief articles of furniture that should find a ready sale, and which could be manufactured economically and profitably are,—office furniture, such as desks, office tables, office chairs, office stools, filing cabinets, etc., and household furniture made in plain oak and finished in fumed, together with wood beds having iron side-rails, also dining-room chairs, dining tables, bedroom chairs, kitchen tables, dressers, chiffoniers, and kitchen chairs in hardwood.

To be suitable for importing the furniture would have to be simple in design and construction so that it could be made economically and in quantities. It is necessary that it be shipped knocked-down, so as to take up the least possible space when packed, and above all it should be standardized. As many pieces as possible, such as tops, frames, rails, gables, post-legs, glass-rails, etc., should be standardized, so that these pieces would be interchangeable as they appear in various articles.

Woodenware, such as chopping boards, rolling pins, clothes-racks, etc., mouldings of all descriptions, in fact practically any article that is useful and can be readily packed is bound to meet a ready sale. I believe that any manufacturer catering to the overseas market would find an almost unlimited demand for his wares. To my mind the possibilities latent in an export trade between Canada and Britain are greater than most people imagine. Is this immense trade going to go to the American manufacturers and others who are alive to its real value?

The accompanying illustrations, showing a dining table and suitable chairs, together with a few pieces of bedroom furniture, indicate a type of furniture that should take well on the British market. These pieces are simple in design and could be produced in quan-

tities at a price that should prove attractive. The lines are nearly all straight and time consuming scrolls and carvings are entirely eliminated. While there is a ready market for the better grades of furniture in the various period designs the greatest need is for plain furniture for the middle and working class homes. This is the grade that the Canadian producer is best equipped to supply and is the style that can be packed and shipped to best advantage, especially under present conditions.

Outlines British Piano Market

The American Consul in Liverpool recently investigated the market for pianos, and reports as follows:

There is a good market for pianos and player pianos in Liverpool, but American manufacturers would meet with keen competition and would doubtless find themselves to be laboring under a heavy handicap.

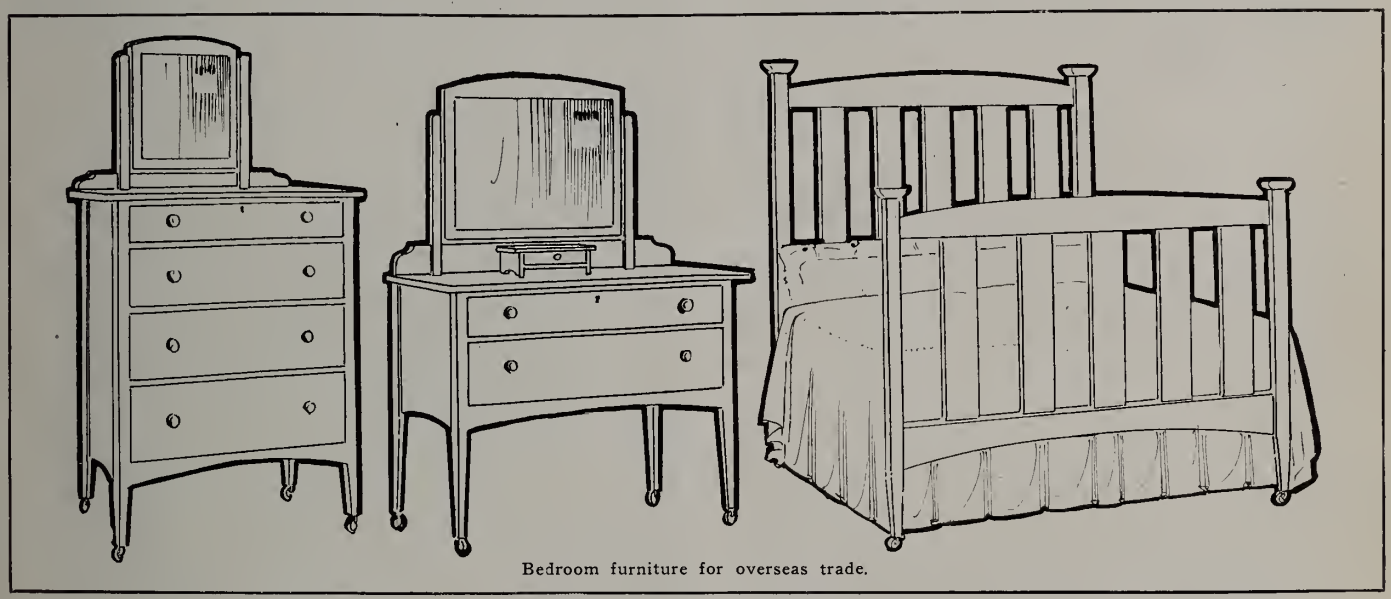
Prior to the war most of the pianos sold in this city were English, and nearly all the imported instruments were German. Manufacturers of the latter country sent over representatives, who studied the requirements of the English market and produced in accordance therewith a good piano, moderate in price, but not intended to last over twenty years. This type of German-made piano soon occupied first place in the local trade among the cheaper grades, English pianos somewhat higher in price being no better in tone and finish, and excelling in lasting qualities only.

During the war the market was entirely in the hands of British manufacturers, but now, with the lifting of trade restrictions, outside competition will again become severe. German manufacturers are taking active steps for the sale of their pianos here, and it is stated that already arrangements have been made for the shipment of 4,000 pianos form Germany to England.

The present range of retail prices for pianos is 150 to 450 dollars. Before the war a good German-made piano sold here for 125 to 150 dollars. Owing to the shortage of materials, particularly wood, together with the higher rate of wages being paid and shorter hours worked, the cost of production of British pianos is increasing heavily.

There is a duty of 33 1/3 per cent. on the c.i.f. value of pianos coming from foreign countries, and this, together with the present rate of exchange, would make it very difficult for American manufacturers to compete here. The duty is less of an obstacle to German makers who are selling in marks, from which a great advantage is secured by English buyers. Under the calonial preference scheme pianos from British colonies and Dominions would pay two-thirds the regular rate of duty, but imports from these are not yet a factor in the piano trade.

American-made pianos are so little known in Liverpool that it is difficult to determine just how they would be regarded. One primary consideration, however, is that American cases are, in many instances, too large and little suited to the average English house, the rooms of which are smaller than in American houses. The popular size for upright pianos in this country is from 4 ft. to 4 ft. 4 in. The cases most in demand are mahogany and rosewood, French finished, plain, or with very little decoration. By some dealers it is stated that tonal qualities of American pianos do not suit this market.



Bedroom furniture for overseas trade.

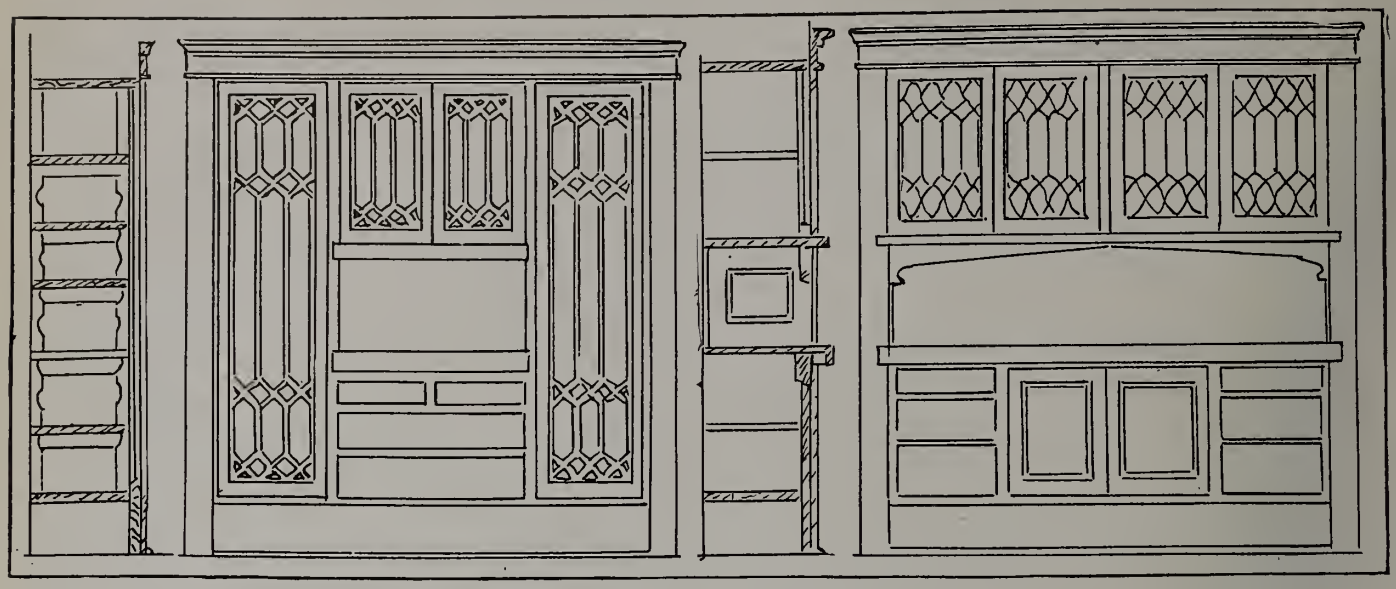
Woodstock—Brunswick Agreement

The agreement between the City of Woodstock, Ont., and the Brunswick Canadian Products Co., Limited, calls for the Brunswick Co. to erect a factory with a floor space of 125,000 feet and at a cost of not less than $200,000, including equipment. When the plant is complete the city agrees to donate the site, 10 acres, which cost $22,000, as a bonus, and, in addition, to advance the sum of $50,000 cash, as a loan, to be repaid either in money, with interest, or to be satisfied with the employment of not less than 200 employees for a period of ten years.

For each hour's employment given by the company to an employee in Woodstock, the Company shall have accounted for 1¼ cents on such loan, provided that if the amount so accounted for in any one year is less than $5,000, the difference, with interest, shall be made up in cash by the company. In other words, the employment of a certain number of hands for a ten-year period will completely satisfy the $50,000 loan.

In addition, a fixed assessment of $50,000 for ten years is provided for.

years is provided for. The by-law, to this effect, was carried by a good majority.



Saving Space in Constructing a Home

Built-in Buffets Increase Attractiveness of Room and Prove an Added Convenience—Old Doorway Converted into Useful Cabinet

By W. H. Shaw

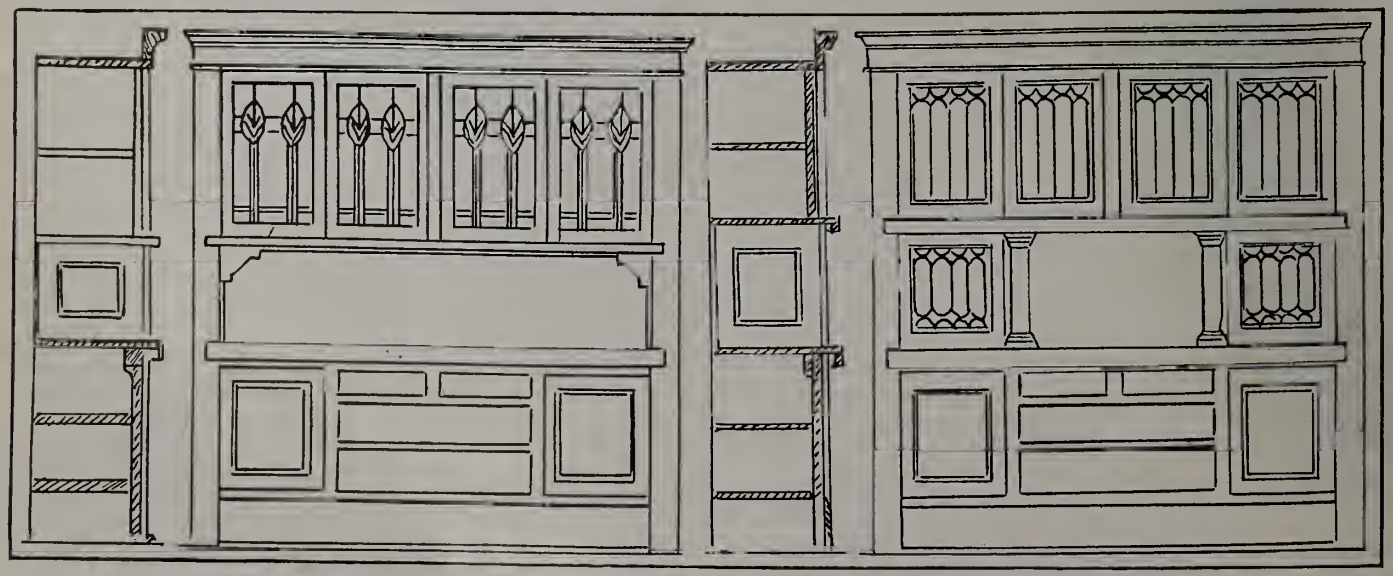
During the twenty four months preceeding the ending of the war, when individuals were practically prohibited from erecting new buildings, our Government, Munition Board, and large corporations doing war work carried on house building operations on a gigantic scale, many hundreds of houses having been built for the employees of shipbuilding and munition plants.

A study of these houses reveals many valuable lessons, the chief of which is found in the startling discovery that families may be perfectly comfortable and contented in houses of much smaller dimensions than was ever before thought possible. By this I do not mean the haphazard slicing off of room sizes, or storey height, or the omission of rooms, closets, or passage ways, where such compartments are necessary to the comfort of the occupants, but instead I refer to the intelligent reduction of sizes in all cases where such a saving is found possible, and the utilizing of all other known features of economic planning.

The small house, developed to meet war emergency needs, has became the new idea in home building. Its many adaptations in present building plans reflect the work of some of the best architects in the country, men who have given their experience to the designing and erecting of numerous low-cost houses.

The house with many built-in features usually makes especial provision for my lady's dishes, which will at the same time make an interesting display of the china, and give it special protection. Where ever it is practicle china cupboards or buffets are built into the wall. Such a cupboard will not gather dust, and is less in the way than one which projects into the room. At the same time, a sideboard which projects beyond the wall on the outside, unless it is given good insulation makes a cold wall.

In severe weather it is often found that a very considerable amount of cold is driven into the room from around a projecting sideboard bay. On further investigation it is often found that the speculative



Attractive designs for built-in buffets.

builder, since he did not expect to live in the house and it "would not show" when the house was completed, omitted plastering and all other insulation, setting the built-in buffet just as it came from the mill, against the unplastered outside wall of the house.

Of course, it is cold. The wind blows right through the brick or clapboard and sheeting into the drawers, and so on through into the room. When the house is building it is well to examine the construction before the buffet, cupboard and pantry fixtures are put into place.

The buffet if possible should never project into the room, nor outside the wall. A window seat on either side if possible fills the depth of the linen drawers, while as they are usually built the cupboard above is shallower. Dishes are apt to be broken if cupboards are built so deep that pieces must be lifted past those in front.

This is really a clever arrangement as the sideboard and seats do not diminish the service space of the room any more than the piece projecting into the room would do.

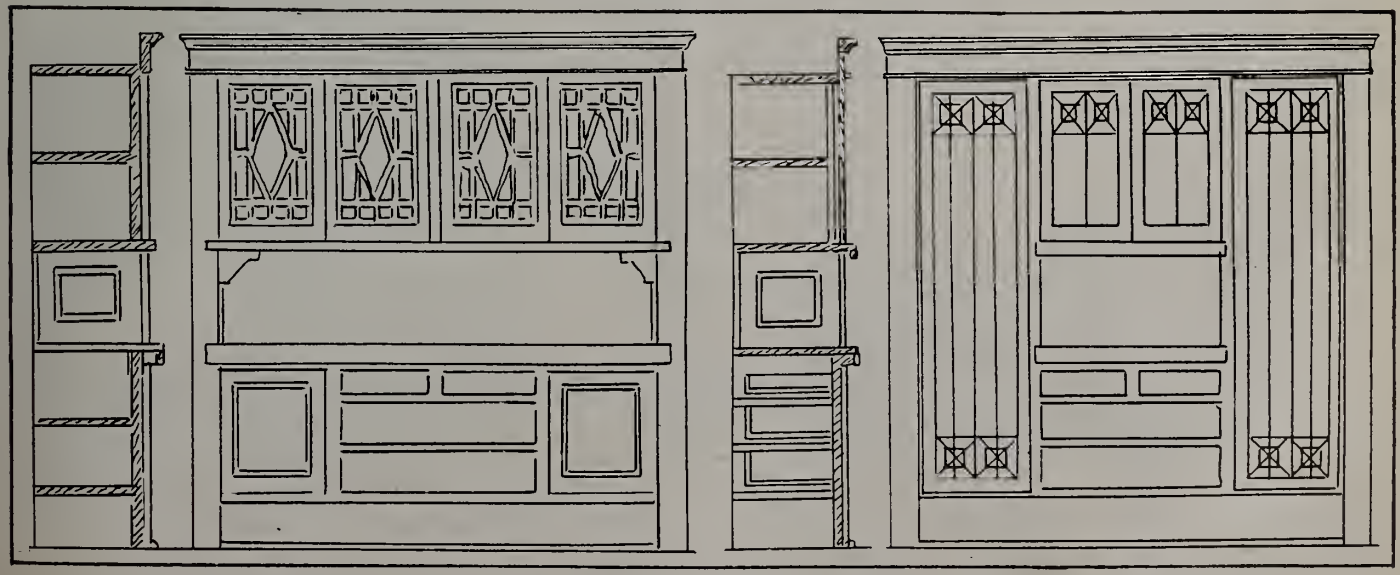
If the cupboards are not built-in there are often corners and small waste spaces where room may be found and a shallow cupboard constructed.

The depth of the cupboard is fixed by the largest size of plates which are to be put into them. Twelve inches is usually considered ample. Six inches more than the thickness of the wall, which is cut through, will in this way give room for a china cupboard or buffet.

Another suggestion is a cupboard built in an old door opening. The opening and trim remaining the same, just a little more than the width of the partition will give space for china. The drawers underneath should be deeper if they are to be really useful for table linen, as the housewife will tell you that the table cloths will look better if they do not show too many folds. Special table linen drawers are made long enough to take half or at least a quarter of the width of the widest cloth.

At least one drawer should be from thirty to forty inches to accomodate table linen.

These built-in buffets are made in an almost endless variety of styles and sizes. The wood should be the same as the trim of the dining room. The height should be the same as that of the doors and the frieze corresponds with the head casings of the doors and windows. The picture moulding of the room is carried entirely around and forms a crown moulding to the buffet as well as to the door and window head casings.



Alternate designs and sections of built-in buffets.

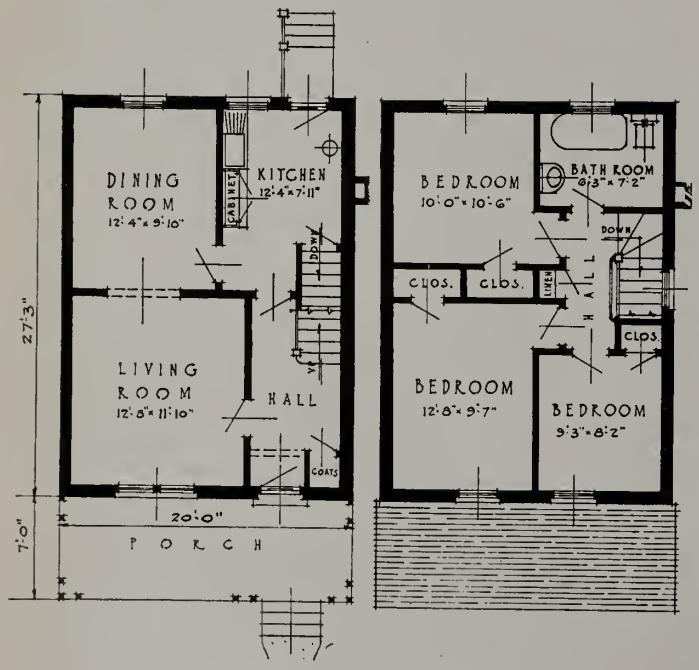
Style of house being erected by the Leaside Housing Commission.

Pointers in Home Building

Many Attractive Features in Designs of Houses Adopted by Leaside Housing Commission

The front elevation and floor plans which accompany this article are from designs by William Lyon Somerville and illustrate the type of home adopted by the Leaside Housing Commission for their building scheme.

The floor plans are worthy of close study as they



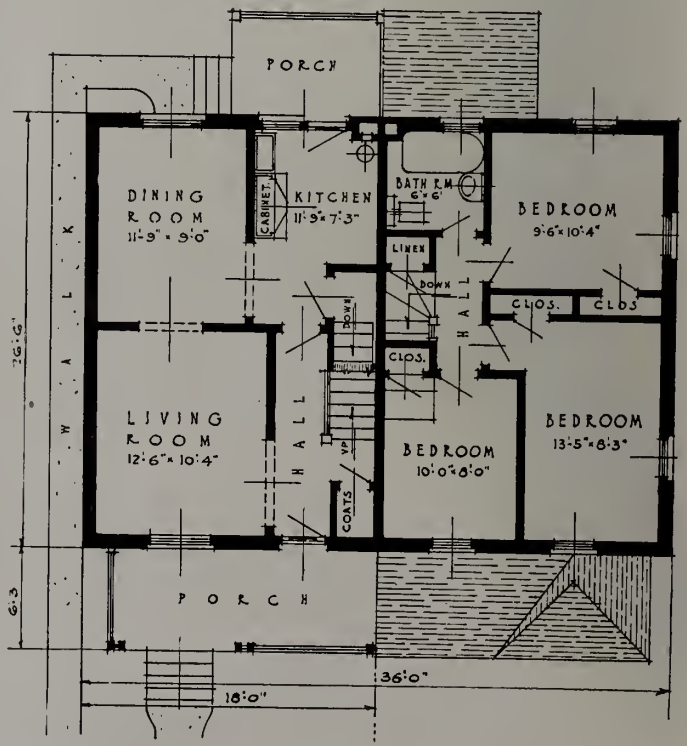
Floor plan of detached house.

embody the latest ideas in the design of homes for those of moderate means. Attention might be called to the total areas of bedroom space as compared to the total area of the first floor. This means that without sacrificing comfort or convenience all waste space has been eliminated and a maximum amount of room given over to sleeping quarters. As will be noticed, the upper hall is only large enough to give access to the different rooms and closets.

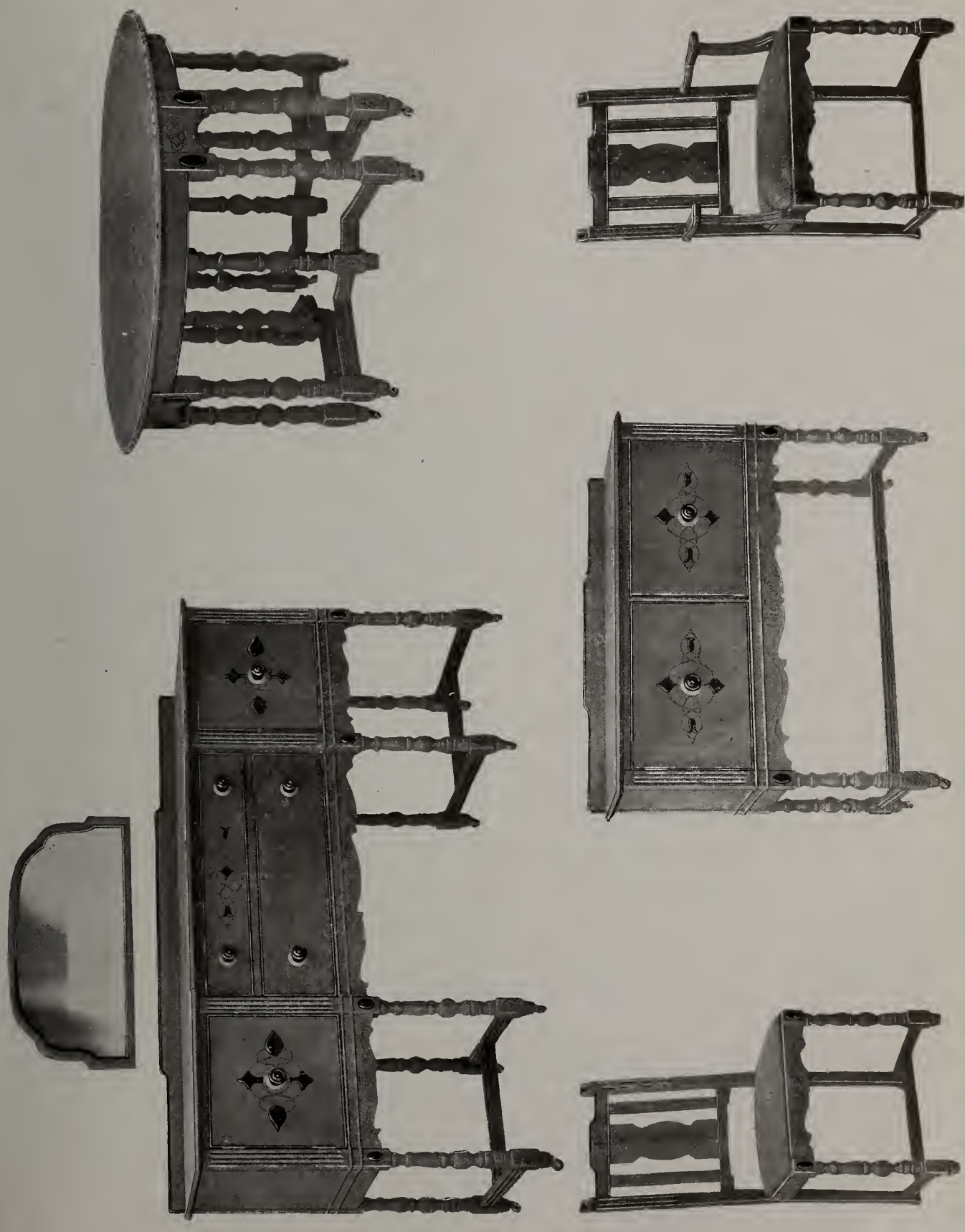
The ground floor is conveniently laid out. A direct passage gives access to the kitchen, from the front entrance, without having to pass through the living and dining rooms. This is not only convenient but gives the lady of the house a better chance to keep these rooms spick and span. The kitchen contains a built-in cabinet and the sink is placed close to a window, thus insuring a maximum light. The closet just inside the front entrance, will be found very convenient for coats, hats, rubbers, etc.

The houses are finished in stucco and attention might well be called to one important feature. Exposed woodwork that is painted is a continual bill of expense as to prolong the life of such work, and maintain the appearance of the house, frequent coats of paint are necesary. To eliminate this expense the amount of exposed woodwork has been reduced to a minimum. The overhang of the roof has been cut down and very little woodwork is shown around the window and door frames, a very narrow casing being used. Then it is the intention to stain all exposed wood. A good stain, properly applied, lasts for, approximately, twenty years.

Tenders were called on these plans last fall and the bids submitted varied from $2,500. to $2,755. for the semi-detached houses, and from $2,800. to $3,000. for the detached. As building costs have advanced since that date, it would cost considerably more to erect these homes to-day.



Plan of semi-detached showing alternative porch design.



Dining suite manufactured by the Strathroy Furniture Co., Limited, Strathroy, Ont.

Ford's System Applied to Furniture Making

Work Done in Units—Unit Constitutes Day's Work—Gives Maximum Turnover per Man—Output 150 Suites Daily

Henry Ford's scheme applied to furniture manufacturing—that, in a nutshell, is the Stout Furniture Company's solution of the production problem, says a writer in the Furniture Maufacturer and Advertiser.

In the first place, it must be borne in mind that the Stout line is not "cheap stuff." It is walnut and mahogany, with a good three coat varnish finish. It is not the highest quality line on the market—but a little better than the "medium grades." (Four pieces sell for a bit over $200, and we venture to say that with ordinary methods of production, the cost would be well over $320.)

The line is short—two suits only. Standard walnut and standard mahogany finishes are used exclusively, though an ivory line was recently produced. As it slowed down production three days, it has been discontinued. The most popular suit is the Queen Anne. The other is an attractive Louis XVI.

The basement of this model factory is used for storage; the first floor machine operations, assembling and staining; the second, finishing, and the third, packing. Then the goods are taken down to the shipping rooms, and it might be said in passing, that the elevator shafts and the stairways are on the outside of the building, thus giving unobstructed rectangles within the four walls.

Work Turned Out in Units

In order to understand the manufacturing operations, the "Stout Plan" must be thoroughly comprehended. In general terms, it is as follows: Two shifts of 75 operatives each, making a total producing force of 150 persons, turn out 75 crated pieces each shift, or a total of 150 pieces each day. It takes 12½ days for the lumber to pass from the kiln to the crate —from the raw material to the finished product. The work is done in units, that is, the cut-off sawyer, as a part of the first unit, has an empty space to start with. He cuts just enough stock for 75 pieces of goods, thus completing his allotment. This stock passes to another machine in the first unit, and when the work on the 75 pieces in that unit is finished, the operatives go home. All along the line ahead this process is repeated.

Each unit contains just enough machines and operatives to turn out of their particular unit just 75 pieces. At the end of the shift, this material is moved up into the next unit, thus crowding into the cars 75 finished cases, and leaving a clear space for the following cut-off sawyer. This does not mean that each machine is a unit, but that the work is grouped in units—there being three only in the machine room with its many operations, and 29 in the entire system. If a third shift is added—and the way has been paved for it by cutting the hours on a shift from nine, up to November 10, to seven and one half now—the time consumed on one batch, except for the varnish drying, will be lessened, and the production will increase from 150 pieces a day to 225.

Each Shift Completes Unit

As stated, when the operations in a unit have been finished, the workers go home, since a figure is set and no overproduction of pieces is desired. If the unit is not cleaned in seven and one-half hours, the next shift carries on the laggard work and cleans it up in addition to its own allotment, and, since practically all is piece work, this unfinished work is welcomed because of the additional pay it brings. But the division of labor has been so carefully worked out, that uncleaned units seldom exist when the whistle blows.

Work is started by the first shift at six a. m., and the second shift finishes at 10 p. m. If an operation has not been completed by the end of the first shift, the worker continues until the second shift man arrives to take the work up—no let-up on unfinished work is allowed. The first shift works until 2 p. m., with one-half hour for lunch, and the second starts at 2 p. m. and has one-half hour off in the evening.

System Works to Advantage

This is, in a general way, the "Stout Plan." It works with perfection in their plant. There is absolutely no "back-tracking"—the lumber goes from the kiln to the crate without retracing a single foot—and this is one secret of the success of the organization.

The plant is modern in every respect. When the visitor sees it he is at once impressed by its cleanliness and efficient lighting. Large windows on both sides give excellent light and clean whitewashed walls and ceilings add much to the cheerfulness of the plant. For the height of about six feet above the floor, all is painted a light green—even to the machinery. Down the centre of the machine room two white streaks, back of which trucks must be "parked," keep a wide trucking space always open.

Many manufacturers will wonder how they do it—make a clean profit and pay exceptionally high wages. They sure do it, and the answer is the old one of real efficiency and a disregard for old-fashioned orthodox procedure. Let us stop for a moment and consider a few figures. The company on its two manufacturing floors has 48,000 square feet of space, and at its present rate is turning out 45,000 pieces annually—almost one piece to a square foot of space. Not half bad! But this is the big item of interest—$2,600,000 worth of business in a year. With 180 names on the production pay roll, that averages $14,-444,44 turnover to the man! Seems to us that we once heard of a fellow who did $3,500 to a man, and he thought he was doing good!

Strict Attention to Finish

One word about the finish. This is the point where most persons—especially retailers—imagine the goods to be weak. We have seen the finish, and it's "up to snuff." Stain, filler, shellac, three coats of varnish—and efficiency. The secret—if there is one (and there isn't)—lies in the drying room. The stain, filler and shellac are handled in the orthodox way, and the varnish is sprayed on. Then the goods are placed in the hot drying room whose humidity is carefully controlled. In nine hours the trick is done and if they left the goods in for nine weeks, the results would not be any different. The finish is dry, and it is rubbed as all good stuff is rubbed. Rubbing machines are

used wherever possible and the last rubbing—oil and rotten stone—is done by hand.

One more bit of information which will interest the manufacturer is their sales policy. At the present date—like all the rest of the fraternity—they have orders on their books of five and six months' standing. They are filling these orders at prices quoted regardless of recent developments. When this business has been ceaned up, they will sell for 60 days, quote prices, promise deliveries at a certain date, and fill the orders within five days of the promise. When these goods have been disposed of, they will figure their allotment for the next sixty days, pro-rate it among their salesmen, and repeat the process.

Employers Co-operate with Technical School

The Boys, Who Work Under Signed Agreements, Spend Week in School and Week in Shop—Gratifying Results Achieved

By Jas. C. Clarke, in Manual Training Journal

It was my good fortune to plan and equip a practical shop for metal work at the Quincy School, Boston, where a special class of about thirty-five boys receive prevocational training, and a few were placed in shops, working in pairs on alternate weeks. It is a satisfaction that many of this class found their way into secondary schools and others became practical men at the trades. One of the latter is now making over thirty dollars a week.

When Hyde Park became a part of Boston, I was transferred to its high school to help in the development of the new co-operative industrial course.

In February, 1913, we visited local industries and placed twenty-two boys in eight different shops, for one afternoon a week, without pay. The experience these boys gained in drafting rooms. machine shops, sheet-metal departments, forge shops, foundries, and woodworking plants, gave them an insight into industrial life.

That fall (1913) the school program was so arranged for the industrial course that the school work came the first three days of the week, and real shopwork. with pay, the last three days. This arrangement was not entirely satisfactory either at school. because the boys came from different grades. or at the shops, which were short-handed the first three days. Too much cannot be said in appreciation of the public spirit shown by the superintendent of the American Tool and Machine Co., the general manager of the B. F. Sturtevant Co., the Becher Milling Machine Co. and others in tolerating these conditions and so freely opening their shops to the boys.

Increasing numbers in the fall of 1914 called for a week-at-school-and-a-week-in-shop program, with two alternating divisions taught by the same teachers. This was practically the same arrangement that prevailed at the Quincy School. One of the divisions was made up of third and fourth year pupils, and the other of second year boys. The course of study was prepared by George W. Earle, head master of the high school, in conference with the supervisory staff, and with an advisory committee of manufacturers and technical experts. Immediately after graduation from the high school work of this industrial course, the entire time of the student is given to completing the 7560 hours of shopwork which are required before the diploma can be received.

That the shop end of this work may run smoothly and not be crippled by the lapse of one of the pair of boys in any shop. we have prepared a one-year contract which must be signed by the applicant and his parent before any shop assignment can be made. This contract, while not legally binding, has kept most "on the job" for the school year.

This practical course is a boon to several groups of individuals: To parents of limited means who need the financial returns from the shopwork; to motor-minded boys who continue in school because of the relief shopwork gives on alternate weeks; also to boys who cannot afford a higher technical education, yet see a developing future through evening technical training after graduating from this co-operative industrial course. Several of our graduates are already in good jobs, and are carrying on advanced technical work. All of the class of 1916 have positions paying from $16 to $20 per week. Most of those who left school without graduating, are in the trades for which this course was fitting them.

Busy men have given freely of their time and experience to promoting the welfare of our prospective mechanics. Occasional lunches, prepared by the girls of the domestic science course, have brought the manufacturers and school superintendents closer together. Gatherings of fathers and foremen help to a better understanding. Parents and guardians have been conducted through the shops which were working evenings. That disappointment may not arise from any lack of knowledge of shop conditions, the head master calls the parents of the first year boys for a conference, and shop conditions are stated as plainly as possible, thus avoiding many lapses. At first several manufacturers were in doubt as to the practical value of our plan. Now, all our twelve shops heartily approve of this course, and are calling for more boys. Mr. Russell, of the Franklin Union, writes in regard to this high school course:

In conclusion, let it be understood that such a course, desirable as it may be, will not run itself. The nature of its work, with varying conditions, forbid a cut-and-dried program. It must be constantly changing, and unless there exists a hearty co-operation between the school men and shop manager, failure is sure to follow. The fact that these two distinct factors are working for the development of the boy makes the work of the co-ordinator most important. He must be a man used to both shop and school methods, able to plead the caues of our coming citizens in either plant, especially in the shops. Here they serve under different foremen and find varying scales of wages. It is to be expected that those in this course will not receive identical training in the trades. Piece work and modern productive methods limit a complete knowledge of the trades. but these shops also, can. and must be used by the coordinator, who finds value in these experiences if the jobs are changed with reasonable frequency. A few shops will take a boy to train him for a machine tender, claiming this to be a trade training. The cordinator must transfer worthy boys from such a plant and yet retain the good will of the management.

"Good Enough" Not Heard in This Plant

Modern Equipment and Methods Employed in Producing Pianos—Waste Material Utilized to Advantage—Spraying Machine and Humidity Controlled Kiln in Finishing Room

A stroll through the piano factory of Heintzman & Co., Limited, West Toronto, would lead one to believe that the motto of their whole organization is "Nothing is good enough. It must be perfect." Attention to detail, no matter how small, marks every operation in the production of their line of upright and grand pianos, and is possibly in no small degree responsible for the popularity of the Heintzman piano and the success achieved by "Ye Olde Firme."

American double cut-off in Heintzman plant.

This firm commenced the manufacture of pianos in 1851 and the first unit of the present plant was erected in 1889. Since then the business has grown and expanded until to-day it crowds to overflowing a large brick factory containing over 110,000 square feet of floor space. At the preesent time about 325 workmen are employed and the annual payroll is in the neighborhood of $350,000. Present production runs very close to 300 uprights and 15 grands per month.

Up-to-date Drying Methods Followed

The different kinds of lumber, such as chestnut, ash, spruce, whitewood, etc., are air-dried for from twelve to twenty-four months before being placed in the kiln. The kiln-drying is done in a four-compartment Grand Rapids kiln, and the most up-to-date procedure is followed. The stock is carefully tested before being placed in the kiln and the amount of steaming and the subsequent treatment is governed by the condition of the material as shown by this test. The lumber is dried to a moisture content of 4 per cent.

As a rule the lumber is allowed to cool and set before being removed from the kiln. When the weather is warm it may be moved before it cools thoroughly, but in any case it is run on a transfer car and placed in dry storage. From there it is taken to the machine department, as required. In the machine shop, after being cut to length, the lumber is ripped to the different widths required. This work is done on a Fay & Egan power feed band rip saw and an American endless bed straight edging and jointing saw. Both machines are giving entire satisfaction. The American straight edging and jointing saw is capable of extremely accurate work. Part of the material ripped is glued up direct from this machine without any further correction.

The stock for the cores, and any other material that requires gluing, is put through a Jackson-Cochrane glue jointer, which trues up the edge and from there is passes to the gluing department. After being glued up the pieces are allowed to stand for three weeks or longer before being machined and veneered. This gives the joint a chance to dry thoroughly before the stock is surfaced, and prevents the appearance of depressions so often found in veneered surfaces.

Glue Jointer Gives Good Service

Another interesting operation that is performed on the Jackson-Cochrane glue jointer is the trueing up of one edge of the back posts. This machine was not built for such heavy work but they have put a special head on and it handles the work nicely, turning out a straight, true job. The post material is about 3 x 4 and 4 ft. 6 in. long, and is dressed on two sides on the planer. Formerly one edge was squared up on the buzz but using the glue jointer for this operation as many pieces can be put through in one day as could be turned out in three or four days on the buzz.

The machine room is very completely equipped. Among the machines installed may be mentioned two Whitney planers with divided rolls, a Cowan chain mortiser, Preston two-spindle shaper, Fay & Egan band rip, American edging and joining saw, band saw, sticker, tennoner, three lathes, jig saw, Jackson-Cochrane glue jointer, swing cut-off, etc.

Preston veneer taping machine used in making pianos.

Utilizing Waste Material

One noticeable feature is the way the waste is worked up. In assembling the backs for the cases, a

lot of blocking is required for the top and bottom. This bocking goes between the posts and consists of pieces about 3½ in. thick x 6 in. to 8 in. wide, and 9 in. long. These pieces are all built up and the ends and edgings are worked into them. The width or thickness does not matter as every piece can be utilized provided it is sound. This is a good idea as it practically eliminates all waste.

When the core stock has equalized it is trued up, surfaced and run through a three-drum sander and is then taken to the veneer room. In addition the stock for the falls, trusses, arms, toeblocks, etc., has been machined and passed on for veneering. All veneer work is cross-banded with the exception of the falls, where instead of cross-banding a piece of cheese-cloth is placed between the face veneer and the core. With the exception of the large tops for the grand cases, the stock is cross-banded and the face veneers laid in one operation. In the case of the grand tops, the core is jointed up and allowed to equalize then dressed on a belt sander and the cross-banding laid. After the cross-banding has been glued on, the top stands for a month or more before the face veneers are applied.

Veneer Stock Properly Stored

The value of good veneers and cross-banding is appreciated and every precaution is taken to see that they are stored and handled in a proper manner. The veneer store-room is a large well-ventilated and adequately lighted basement. The veneers and cross-banding are kept in neat, orderly piles with lots of room around each pile. Every lot has a tag attached, giving the kind of stock, amount, name of manufacturer and date received. The basement is good and dry, with the result that the veneers are always in first-class shape.

As veneers are required, they are picked out, cut to size and re-dried. The face veneers are dried between hot cauls, while the cross-banding is stacked in racks and placed in a Greeffe dry-kiln. This is an automatically controlled heat and humidity kiln. A veneer jointer has been installed to take care of the jointing, and the taping is done on a Preston taping machine. The gluing equipment consists of a glue

DeVilbiss spraying machine on piano work.

spreader, glue mixer, hydraulic press and retaining clamps.

The veneered stock is left in the retaining clamps for twenty-four hours, then piled with sticks and placed in the Greeffe kiln. When the pieces are removed from the kiln, some are sized and the edges and ends veneered, while the remainder is trimmed up, but all veneer stock stands for at least thirty days before it is cleaned up and finished. This makes certain that the pieces are in perfect condition before being manufactured further. Each lot is numbered and

Heintzman Louis XV. Grand.

the date it was veneered is indicated on a ticket which follows the work through. Thus an accurate account is kept of the length of time the stock has been veneered.

Accurate Work in Cabinet Room

In the cabinet room where the various parts are sized and cleaned up, ready for assembling, the equipment consists of an American double cut-off saw with power adiustment, a Yates double spindle shaper, a Mattison hand-block belt sander, a Mattison oscillating belt sander, three other belt sanders, buzz planer, variety saw, and an American three-drum sander.

The work in this department is very particular, as the various parts are stained and varnished before the cases are assembled, so that the need of fitting must be entirely eliminated. Various forms of gauges and patterns are employed to secure this accuracy and the work tested from time to time to make sure that everything is going right. After going through this department, the gable ends are assembled and they with the other parts go to the finishing room for finishing.

Oak Fumed on Raw Wood

In the case of mahogany, the finish consists of one coat of light potash stain, a coat of shellac, then filler, stain and varnish. Five coats of varnish are applied, three with a DeVilbiss spraying machine and the two finishing coats flowed on by hand. The under-coats are dried in a Nichols automatic humidity-controlled drying-kiln, eight hours being all that is required. The final coat is allowed to stand for a month or more before being rubbed and polished.

The oak cases are fumed and waxed. The fuming is done on the raw wood, no wash or stain being employed. Naturally some stock takes better than other and the light pieces are given a coat of oil to darken

them. After fuming a coat of shellac is applied, then the light streaks and spots are touched up and another coat of shellac given before the wax is applied.

While the different parts of the case were being manufactured and finished, the backs were assembled in another department. The wrest-plank and pin-

A Heintzman upright in mahogany.

block were prepared and attached to the back, then the sounding-board was glued on. These boards are made of the very best grade of spruce and are crowned slightly so that they will retain their tension under strain. They are rigidly inspected and must be perfect to pass. The ribs and bridges are glued on before the sounding-board is attached to the back. The bridges, which are built up of selected maple, are glued in a special form and bored for the bridge pins before attached to the sounding-board.

The back is now ready for the iron frame. When this has been bolted on, the pin-holes are bored and the pins driven and the strings attached. It might be of interest to mention here that the strings are manufactured on the premises. After the strings are attached they are tensioned and chipped in or tuned.

The back is now ready for assembling and goes to the assembling room where the finished gable ends are glued on. The action is then installed and the instrument tuned. Then the key-board and keys are put in place and the "fly-finisher" attaches the top, doors, falls, etc., and then it is tuned a second time.

The next operation is regulating and adjusting the actions. After this is done a third tuning takes place. The piano now passes to the tone-regulating department where the tone is regulated and then goes to the polishing department for a final polishing and oiling. It is then given a final tuning and is ready for shipping.

Gluing up the Grand Rims

The making of the grand cases is a very interesting operation. The rims, which are built up on special forms, consist of an eight-ply core with face veneer on either side. The core stock consists of sawn, chestnut, ash, whitewood, etc., and must be in very long lenths, the larger grand cases requiring stock 22 ft. long. The whole rim is glued in one operation and after the work is once started, speed is the main requisite. The core is all glued and laid and then the face veneer put on and the whole rushed into the special form and pressure applied. When removed from the forms, the rims are allowed to stand for six months or more to thoroughly dry out and set. An inner rim, consisting of 13 plys, is glued up in the same manner.

The grand pianos are made in a separate department, most of the work being done by hand. The rims are cleaned up, scraped and sanded by hand and the inner rim attached. Then the key-board and braces are put in place. The mouldings and carvings are planted on and the bottom of the rim worked to the shape of the carvings attached. It is work calling for a high degree of skill on the part of the workmen.

The remaining operations are very similar to those followed in the making of the upright cases, and every precaution is taken to make sure that the grand is as perfect as it is possible to produce.

It will be noted in the foregoing brief description of the making of a Heintzman piano, that none of the operations are hurried. While the work goes through in a systematic manner, ample time is given for the glue moisture to dry out thoroughly after jointing and veneering. The same holds true in finishing. Each coat is given sufficient time to dry through and through before another one is applied.

This is only as it should be yet in many plants one often hears the expression "Oh that is good enough, let it go." "Good enough," dry enough," "Oh let it go" are not heard in the Heintzman plant. It is the strict attention to every last detail, coupled with skilled workmanship and the best materials that has placed the piano manufactured by this firm among the quality pianos produced in Canada.

A chiffonier from the Meaford line.

Not only your financial but your social habits as well have their influence on the willingness of your banker to extend accommodation when you want it.

Are You Keeping Detailed Costs?

By R. C. Little

International job recording clock

I happened to be looking at one of the I.B.M. clocks and, I thought of the likeness twixt the mechanism of the clock and the cost system of a plant, for a cost system is the special mechanism of the plant and like such must be thoughtfully planned, built well, if it is to be of service. It must be borne in mind that you can't buy a cost system, you must build your own. The fundamental principles in all systems are the same, labor, material, burden, and from this given the use of "up to the minute" labor, time and money saving devices, no great difficulty should appear in the way of building up a system for the plant.

The cost system should be installed slowly and with great care. By forcing the matter it will only lead to confusion and the so called system prove an expense. There is also a great danger of going to too much detail in commencing the system; it is better to have the details come along at a later date, otherwise one may smother the system with what may be called "red tape". The cost system must not only give the cost, but it must be used to reduce the cost. A chart may be drawn up showing the cost of the product month by month, from which the management can readily perceive the upward or downward trend of costs.

Outlining Cost Keeping System

Cost accounting is becoming more important each day and manufacturers are not viewing it as an expense but are looking on a good cost system as a good producer and a paying investment. Without touching the peculiar conditions which are found in each plant one may lay out a few ideas which may be helpful to the woodworker and furniture manufacturer. The plant will probably be divided into departments as follows: Dept. 1 Machine Dept. Dept. 2 Cabinet Shop. Dept. 3 Finishing Room.

A requisition is received at the Cost Department, for five hundred (500) cabinets. A production order is immediately made out with copies for every department the job will touch until it is completed. Dept. 1 commerce work on the job and every minute of time is charged on the time card to the number of the production order, no matter how many men work on the job all time must be charged to that number. Dept. 1 finish their work on it and the foreman sends in his copy of the production order to the cost department. This is costed and filed with the office copy and is held awaiting the return to the office of the other copies in the factory. The job going on to Dept. 2, here as in Dept. 1 all time on the job is charged to the production order covering the job. When the work is finished in this Department it goes on to Dept. 3 for varnishing etc. and when through here their copy is forwarded to the cost department.

An accurate and efficient method for keeping track of the time on different jobs or production orders in the different departments is to provide job recording clocks and have the workmen stamp the time started and time finished on suitable tickets. When this method is followed each machine is given a number and each individual operation, such as planing, ripping, shaping, etc., is known by number. The workmen mark the production order number, the machine and operation numbers and, if required, the catalogue number of the article, and stamp the ticket when starting that operation and again when they have finished. The accompanying cut shows a form of ticket used by many manufacturers. This is ruled so that the time for a number of jobs may be kept on one card. Another form favored by some manufacturers is provided with a space for the number of pieces finished by the workmen in the time stamped.

Advantages of This System

Keeping time in this way has many advantages over any other system. If an operation number is given to such forms of unproductive labor, as cleaning machines, repairing equipment, handling stock, sweeping floors, etc., not only can accurate account be kept of this labor but each department can be charged with its own unproductive labor. In addition it enables the management to analyze production

No. 32

Name F. H. Martin

Job No.	Clock Record			Elapsed Time	Rate	Cost
2681	1917 FEB 26	11 .5	STOP	2.5	60	1.50
	1917 FEB 26	9 .0	START			
2681	1917 FEB 26	9 .0	STOP	3.3	40	1.32
	1917 FEB 26	5 .7	START			
2371	1917 FEB 26	5 .7	STOP	3.1	40	1.24
	1917 FEB 26	2 .6	START			
3168	1917 FEB 26	2 .6	STOP	1.2	40	48
	1917 FEB 26	1 .4	START			
3351	1917 FEB 26	1 .4	STOP	1.4	40	56
	1917 FEB 26	0 .0	START			
	Totals			11½		5.10

Time ticket used in many factories

costs. It will be noted if any operation is costing more than it should. The output of many machines is known and if these are not worked to capacity, the cause should be investigated and remedied.

Where the workmen give the number of pieces finished, a check is kept on the individual. If any men are soldiering on the job, the time ticket will show it. Not only that, but it is only natural that some workmen are more expert on certain forms of work than others. When this fact is established, as

it will when this system is employed, the mechanics may be kept at the work they are best adapted for. Many other advantages will occur to the reader. Some of the firms who have installed or are installing this method of keeping time, are the Canada Furniture Manufacturers Ltd., Woodstock, Ont., the Knechtel Furniture Co., Limited, Hanover, Ont., The McLagan Furniture Co., Ltd., Stratford, Ont., and the Jacques Furniture Co., Ltd., Kitchener, Ont.

Material Used is Shown

The material used in each department is shown on the department order. The orders are now costed showing the material used, and brought forward on the office copy. Care must be exercised not to close the order before all the labor has been posted. The burden or overhead is figured on the time card at the same time the labor is figured and posted with the labor. Many plants use a flat rate of burden, this is satisfactory, the only danger being that in a smaller plant when this method is used, if the rate of overhead is not large enough it might make an embarrassing condition at the end of the year when adjustments had to be made. A better plan would be to base the rate on the previous months burden charges, so that you carry your entire burden as you go. The burden rate may be charged monthly, and adjustment made each month.

Large plants and plants of a moderate size will find the Hollerith sorter and tabulator a great time and labor saver, in connection with their pay roll and cost records. The dial card is sorted into man number for pay roll records and production order number for cost records, the cards are then put through the tabulator which shows the hours worked by each man, the amount of wages earned and the total hours and dollars of the pay roll, likewise the cards in production order are put through the tabulator and a statement made showing order number, amount of labor on the order, burden and respective details. Good accounting equipment is necessary and instead of being an expense is a great investment. Clocks and cards suitably placed in departments save hours of waste energy. They are the means of the manufacturer dealing honestly with his employees and himself.

A great deal depends upon the choice of the cost accountant, he must be a fighter from first to last, bent on getting results and one who will run his department as efficiently and economically as any other.

Year 1920 as Viewed by the Trade

Manufacturers See Indications of Strong Demand Continuing—Labor Situation Not Satisfactory—Manufacturing Costs to be Higher—Strengthen Present Position and Prepare for Eventualities

A number of representative manufacturers of general woodwork, boxes and furniture were asked by the "Canadian Woodworker" for their views of the prospects in their line for the year 1920. The period upon which we have just entered may contain many surprises that will upset present calculations but the letters published below reflect the general thought of those engaged in the woodworking industry.

The demand in 1920 will be still greater than it was during 1919, but we are afraid that the production will not meet the demand on account of the scarcity of material, specially mirrors. Manufacturers of mirrors, in Canada, before the war were buying their supply of glass from Belgium, but for the past few years they have been getting their material from the U. S., where it has become scarce. If the Canadian glass manufacturers do not find any way of securing glass from some source other than the U. S., there will be certainly a great scarcity of mirrors and the furniture manufacturing will be handicapped.

Prices of mirrors have gone up lately and as a consequence prices of furniture have also advanced, and we anticipate that the present prices will not last long as mirrors will certainly go up again in the near future. Wages are also advancing on account of the high cost of living. The rate of exchange has a lot to do with the raise in prices, as the Canadian manufacturers have to get a good deal of their supplies from the States, it raises the cost of manufacturing.

The St. Lawrence Furniture Co.,
Riviere Du Loup, P. Q.

* * *

The outlook for 1920 for the Box and Lumber business, as we view it, is that the demand in both lines will be brisk —greater even than 1919.

The writer has just returned from Boston and New York where he went carefully over the situation as a whole and asked many opinions of those posted in the trade and it seemed to be generally conceded that building on a large scale for 1920 had simply become imperative and that people would be compelled to build irrespective of the cost of lumber. Manufacturing costs for the coming year will depend more or less on how the cost of living barometer moves, but we are inclined to think that it will on the whole cost more to manufacture during 1920 than it did in 1919, consequently the prices of lumber will continue in the upper register—indeed the cost of logging for the present winter is much higher than the cost for the preceding season.

Labor we think is likely to remain more stationary than it has for the past two or three years but the tendency will be higher and not lower until such time as production reaches a point somewhat commensurate with the world demand for the necessaries of life. There seems to be a feeling among the better class of labor that they are tired and sick of strikes and that they would now like to settle down to a permanent settled condition and a hope that gradually the cost of living will begin to sag, although apparently no one expects to see prices go back to anything like pre-war figures.

Wilson Box Company Limited,
St. John, N. B.

* * *

On account of continued low production, owing to strikes, which existed in 1919, and the great difficulties of getting materials, we figure that with a continued heavy demand, which should exist for furniture during 1920, the furniture manufacturers shall have more business on their books than what they will be able to deliver. One main reason is the housing schemes which will build in Canada during 1920, probably 5,000 to 6,000 houses. If only $1,000 were allowed to furnish each house, one can imagine the

tremendous amount of furniture this will represent to our Canadian Furniture industry. However, with all these nice prospects, the furniture industry of this country is in a very trying situation and never before has the furniture industry faced such a situation as exists in lumber and mirrors. Factories are exhausting their stocks of lumber which are difficult, if not impossible, to replace while the cost of labor is constantly increasing. We understand that the output of the United States chair manufacturers is now about 25 per cent. below normal, whereas the volume of orders on hand is about 300 per cent. greater than normal. Practically the same applies to Canadian furniture manufacturers. Under such circumstances, manufacturers should be very careful not to book orders too far ahead, nor to accept a greater volume of business than they can turn out within the specified time; also they should watch their costs and take into consideration what it is going to cost them to replace the materials they are not using up.

Victoriaville Furniture Company Limited,
Victoriaville, P. Q.

* * *

Owing to the present uncertainty in the lumber market, it is indeed a problem to try and anticipate the demand for sash and doors for 1920.

If lumber prices remain firm, there should be a big demand for our line of goods, and the business of 1920 should exceed the business of 1919 considerably. However, should lumber prices continue to soar, it may put a check on building operations. In so far as we can judge, there is, apparently, but a limited quantity of well-seasoned lumber on the market at present.

At the present time labor is restless and in all probability wages will be somewhat higher. In our opinion, labor will remain an uncertain quantity until such time as the question of "high cost of living" has been solved.

The only action the manufacturers can take to help better conditions would be to secure the co-operation of the builders with a view of standardizing both sash and doors as far as possible, and thereby reducing the cost of production.

R. Truax & Son,
Walkerton, Ont.

* * *

As far as we can judge at the present time there is going to be a very active demand for at least the first six months of this year, and providing labor does not give too much trouble the furniture industry of Canada should enjoy a good season's business.

What the last six months of the year will bring forth we are unable to estimate at the present.

The McLagan Furniture Company Limited,
Stratford, Ont.

* * *

We do not look for business outside of the Island of Cape Breton but do receive some orders from other parts of N. S. and also from Newfoundland, so our ideas of business for this year will be based on conditions in Cape Breton generally.

We anticipate good business, there appears to be much business ahead of us and as there is not a vacant house or room in the city, many houses must be built to accommodate the additional employees that must be secured to start and operate the new ship plate mills that are now nearing completion. Large works projected here are the building of Ocean Terminals and an $800,000 hotel, both of which are now assured.

The farmers have had a good year and the fishermen, who bring much wealth from the seas every season, have had a successful year, not only in the quantity of the catch but the prices have been good, and as our trade extends all over the Island and all ports are reached by Sydney owned and operated steamers we have every reason to expect a good business from the country and seaports all over the Island.

There are big developments ahead of us in coal mining. The Dominion Coal Co., who are good customers of ours and who are constantly trusting more of their ever increasing business to us, will open new mines and all indications are that this business will be good and reasonably steady for years to come. We expect a greater demand than in 1919.

We do not anticipate any reduction in manufacturing costs and slight increases will likely follow. Local lumber which is not of a high grade will likely be lower because of the fact that many new concerns are going to operate in a very small way and will produce an inferior grade both in quality and manufacture. Our opinion is that N. S. and N. B. lumber generally will be higher and that pine will take a big advance. Labor will remain much the same as at present with some special advances to good men.

The manufacturers of lumber can better their conditions by realizing the value of every piece of lumber and caring for it as they do for the dollar in their pocket, stick it properly from the saw, roof all piles, season it properly and have it in proper shipping condition as soon as possible after it is cut. Proper care for lumber from the saw will enable the consumer to use grades lower than would have to be used if proper care was not taken and a little extra costs in piling and properly caring for will be profitable, not only to the manufacturer but to the dealer and consumer as well.

Chappell Bros. & Co., Limited,
Sydney, N. S.

* * *

We think that the demand for furniture during 1920 will be equally as great if not greater than during the year 1919. Manufacturing costs will be higher, owing to higher wages being paid; raw material is on the upward trend, lumber is very scarce and going higher all the time. There appears to be plenty of poor labor, but skilled mechanics are very hard to get.

Beach Furniture, Ltd.,
Cornwall, Ont.

* * *

Under present manufacturing conditions, it is extremely difficult if not impossible, to tell how business will be in Canada in a few months' time, but we are under the impression that there will be an active market for all lines of furniture for some time to come. There is no question but that it would be a good policy to extend the Export trade, but unless a concern has a large plant, it is practically impossible to get after this business under present conditions. If it could be done, no doubt a good business could be worked up which would assist greatly when the quiet times come in our home market. The larger manufacturers may be able to do something, but we are of the opinion that the smaller concerns will not be able to take advantage of this opportunity.

Windsor Furniture Co., Limited,
Windsor, N. S.

* * *

So far as our particular business is concerned the prospects for 1920 appear to be exceptionally bright. In view of existing market conditions our opinion is that manufacturing costs must undoubtedly increase. Lumber and labor which represent the heaviest items in the cost of production in our business are gradually going higher. We do not expect the price of lumber will drop for possibly a year at the earliest and if the building boom continues as at present

there is every reason to believe that lumber prices will go very considerably higher.

It is quite evident that if the eight-hour day is inaugurated as seems to be apparent at this time, manufacturing costs must necessarily show a very considerable increase. To offset this, to a certain extent, it is possible to install labor saving machines which will increase production. The principle of the eight-hour day is very nice indeed but in a country the size of Canada that has such glorious chances to expand and whose territory is not crowded with a dense population it seems to us that it is a rather fatal step to take. In Great Britain for instance, particularly in England where the population is dense, in order to keep everybody employed we can readily see how the eight-hour doy would perhaps be an advantage, but we cannot help but recognize the fact that the cost of production must necessarily increase and our frank opinion is that the only way in which we can overtake the high cost of living is to take off our coats and roll up our sleeves and really get to work. The four years of war through which the world has passed has upset the equilibrium of every nation and as intimated before we think the quickest way to forget their troubles is to get busy and work and then one will see the cost of living come down and not before.

Houvd & Company Limited,
London, Ont.

* * *

At the present time we are shipping to New York and Mexico. Previously we could not quote against the American mills but prices are so high in the states that we are able to secure business in their field. Rather than enlarge our plant (perhaps it would be wise to do so) we intend to operate two shifts to cope with the present abnormal demand.

We will take export business this year in preference to domestic. That will help our own country and what helps Canada benefits us.

It is difficult to see how labor can be any cheaper for wages cannot go down and prices up. Prices, everywhere, are too high. There must be a break as present rates bear too heavily. I do not, however, look for any decline this year.

Our aim will be to extend production to the limit with present equipment and endeavor to strengthen our financial position so as to be prepared for all eventualities.

Pacific Box Co., Limited,
Vancouver, B. C.

* * *

We will try to outline things as we see them for 1920. We believe there will be a good demand for all wood products in the building line. When we say this, it may not be true generally, but it will be true for Kitchener and the surrounding district. We feel that costs will be considerably higher, labor as well as raw material. There seems to be a scarcity all over North America of lumber for house building purposes, and the cut to be taken out this coming winter will no doubt be used up as fast as the logs are made into lumber. We cannot see that the manufacturers can do anything to reduce the costs of lumber, as labor is steadily climbing, and by increasing the cut to create a surplus we feel will not help matters any since there appears to be a good export trade in lumber at the present time.

Jacob Kaufman Limited,
Kitchener, Ont.

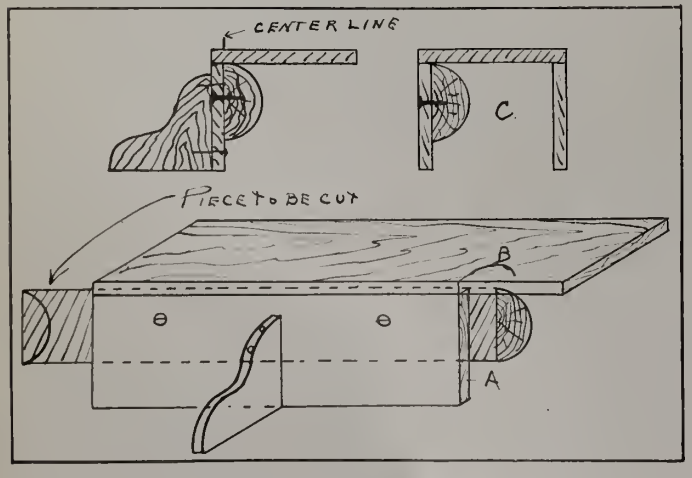
An Idea for Pattern Makers

H. S. Longworth

If two men each have a dollar and exchange them neither one is any better off but if two men have an idea and exchange each man has two. Ideas can be exchanged and retained at the same time.

The accompanying illustration shows a jig or form that we find very useful. It is for cutting branches for pipe or other patterns on the band saw. If the cut is made carefully the branch can be attached as it comes from the saw thus avoiding the time-consuming cutting and fitting necessary when the work is done by hand.

In making the form the end A should be trued up on the sand wheel. The branch, which is made in halves marked off on the joint and screwed into position with the line on the trued edge A. The radius of the body of the pattern, when the branch fits, is marked on the top of the form, the centre of the compass being in line with the joint of the piece to be cut. After the branch is attached cut along this line, B, with the band saw far enough to have cut the branch then back the saw out and leave the top piece intact. It can then be used as a guide for similar cuts.



Form for cutting branches.

Branches may be cut at any angle by simply screwing the piece in the required position. Mark the angle off on the form and screw the piece in place and proceed as before.

The sketch C shows another adaptation of the same idea. It is merely an inverted mitre box. If this form is used the bracket is not required.

Any number of pieces may be cut on the one jig. When once used this idea will be found very handy taking as it does half the work and worry out of any job where it can be applied.

(We would appreciate some practical idea that you employ. Send one in.—The Editor.)

New National Hardwood Inspectors

Arthur G. Bowler has been appointed Deputy National Inspector, and placed in charge of the Montreal district. His present address is 179 Drummond St., Montreal, Que. John E. Banks has been appointed Deputy National Inspector to assist H. L. Hebard in charge of the Toronto district. Applications for inspection work in the Toronto district should be addressed as heretofore to H. L. Hebard, 383 Carlaw Ave., Toronto, Ont.

Strengthening Boxes with Metal Straps

Most Efficient Method of Increasing Strength—Various Forms of Material Employed—Location of Band Important—Stock Must be Dry

There is no other means which will strengthen a box so greatly as reinforcing it with steel strapping. Tests show that it is possible to increase the strength of a box 100 per cent. or even more by the proper application of steel strapping. Also thinner lumber can be used and the cost of the box reduced and in addition strapping is of great assistance in preventing pilfering of boxes.

It is good export practice to strap all boxes for overseas shipment no matter what their size, weight

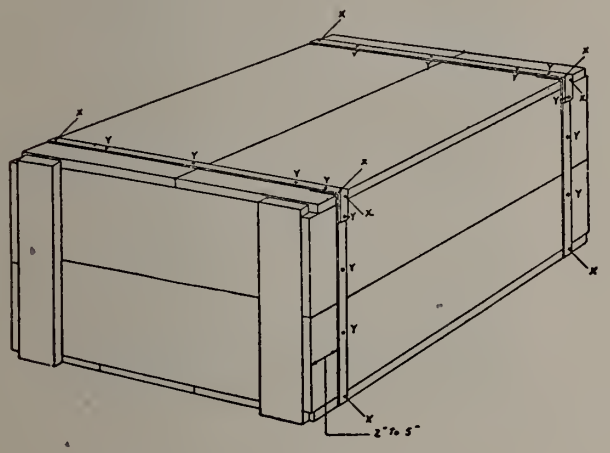


Fig. 1—Placing strapping in from end.

or destination. If strapping were also used to a much greater extent on domestic shipments it would go a long way toward reducing the damage claims paid by the carriers for broken and pilfered boxes. Also the required strength of a container can be secured much cheaper by the proper use of steel strapping than by lumber of excessive thickness.

Various Types of Strapping

The most common types of strapping are flat steel band strapping and single or twisted wire strapping. There are also efficient special patented types of nailless strap and wire. For all-round use, however, there is no better strap than the flat band, cold rolled, unannealed steel strap, coated to prevent rust, if it is properly stretched, properly located on the box and properly nailed.

Unanealed flat band strapping makes a stronger binding than annealed, for the unanealed strap possesses by actual test over 30 per cent. more tensile strength than the annealed. Also it usually does not cost any more. The tensile strength of a strap is its most important quality, as most strap fails by a direct tensile strain or by a tear. When a box dries out it shrinks and the strap loosens between nails, causing it to bulge away from the box. Then, when the box is handled in freight cars, on docks, in the hold of a ship or in the warehouse the strap often catches on nails or other projections and tears or breaks.

Annealed strap because of its low tensile strength is consequently much more liable to tear or break than unannealed strap. Also the annealed strap possesses considerable ability to stretch which is another undesirable quality. The annealed strap nails somewhat easier than the unannealed but in the gauges used for ordinary boxes there is no difficulty in nailing the unannealed strap.

Width and Thickness Employed

The width and thickness of strapping which should be used depends upon the size and gross weight of the box. On boxes up to 100 lbs. gross weight, where the size is not excessive, strapping ½ in. wide by .018 in. thickness should be entirely satisfactory.

On boxes over 100 lbs. gross weight, or on boxes of large size, a stronger strap should be used, ⅝ in. by .020 in. or ¾ in. by .015 in., having a tensile strength of around 1200 lbs. The larger, heavier cases require a stronger strap as the heavier weight of the contents is more liable to spring the side, top and bottom of the boards and cause the nails in the end of the box to start.

Boxes are strapped in two different ways: with the strap directly over the ends of the box and with the strap a slight distance in from the ends as shown in Diagram 1.

The location of the strap slightly in from the ends of the box gives a tighter binding, especially on boxes which are long, than strap applied directly over the ends, because, in this position it better prevents the bulging of the side, top and bottom boards which causes the nails in the ends to start. However, on boxes whose sides, top and bottom are less than ⅝ in. in thickness, it is somewhat difficult to nail the strap, when applied in from the ends, because of the thinness of the boards. The distance which the strap should be in from the ends will vary with the size of the box and the weight of the contents, but will generally be somewhere between 2 in. and 5 in.

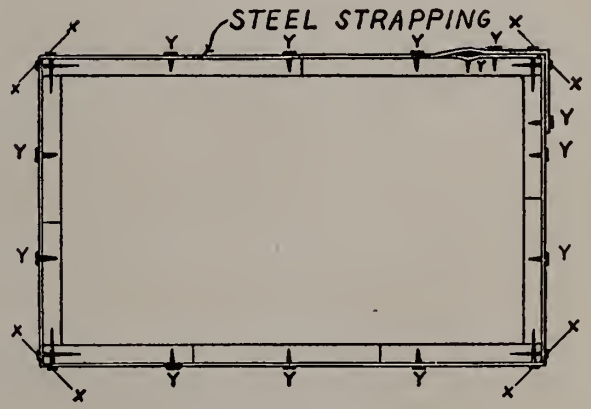


Fig. 2—How nails are spaced when strap is in from end.

Nailless strap and wire are always applied in from the ends of the box, being drawn tight by a stretching tool and the ends either sealed with a seal for flat band strap, or twisted if wire strap is used.

Strap applied directly over the ends of the box is generally easier to apply than strap applied in from the ends, because the ends of the box afford a firmer nailing surface and not so much care has to be exercised in nailing. Strap located on the end of the box not only assists in binding the sides, top and

bottom boards to the end, but also serves to prevent the nails in the side, top and bottom boards from working out.

Stretching and Nailing Bands

The stretching of the strap is of the utmost importance, for a loose strap loses most of its efficiency as a binding, and the tighter the strap, the less it will bulge when the box shrinks. There are a number of tools on the market which stretch the strap well and are simple to use.

Diagrams 1 and 2 show the correct way to nail strapping when located in from the ends of the box with double corner nails "x" and small flathead nails "y" holding the strap to the side, top and bottom of the box, spaced about 6 in. apart. With ½ in. strap it would probably be difficult to place two nails at the corners as shown at "x" in which case one nail should be used driven through the strap and through the top or bottom board into the side board. The lap of the strap should be at the corner as shown, a nail being driven close to the end of the strap so as to hold the end down firmly.

The double corner nails "x" hold the strap securely against a pull in either direction and the intermediate nails "y" keep the strap snug against the box and prevent it from bulging. Fourpenny cement coated nails are generally large enough for the corner nails "x" and the intermediate nails "y" should be short. flatheaded nails of length slightly less than the thickness of the sides, top and bottom. All nails should be cement coated.

Strapping located directly over the ends is nailed with double corner nails "x". The intermediate nails "y", however, are the same size and length as the nails "x" and are generally spaced about 3 or 4 inches apart.—"How to Build a Box."

Australia Objects to Wormy Boxes

A recent consular report from Melbourne, Australia, has the following, which is of interest to box manufacturers:

"The Federal Director of Quarantine at Melbourne has brought to the attention the fact that officers dealing with food substances and general cargo imported into Australia find that the packing cases are not infrequently constructed of wood that shows the borings and workings of insect timber borers. In order that destructive boring insects should not in this manner be introduced into Australia, the Federal Director of Quarantine has requested that the matter be brought to the attention of the government and the shippers. It is important that some action should be taken to prevent the packing and shipping of goods intended for Australia in wooden cases presenting evidence that woodboring insects are or have been present."

Comments by Bureau of Entomology

The foregoing item having been called to the attention of A. D. Hopkins, of the Bureau of Entomology, Washington, D.C., he commented as follows: "It would be an unheard of thing for insects that cause holes in pine and other soft woods remaining in the wood long enough to reach Australia; in fact, no insects are at all likely to remain alive in the lumber after it is seasoned or made into boxes. The sapwood of seasoned hardwood lumber, if infested with powder post (Lyctus) beetles, could be carried into any country, but packing boxes are rarely made from hardwood on account of the heavy weight as compared with soft woods. It would, in my opinion, be an injustice to shippers to require boxes free from worm holes. It would add greatly to the cost of the boxes and little or nothing would be gained as a prevention of the introduction of harmful insects."

When Your Saw Teeth Crumble

Once in a while a saw filer will be confronted by crumbling saw teeth. Seemingly, in spite of all that he can do he will find, when the blade is removed from the machine, that the points of a considerable number of teeth have crumbled and broken off.

An old saw filer, when asked how he treated teeth that showed a tendnecy to crumble, replied:

"Whenever I found the saw teeth crumbled when I swaged them, I took an 8-inch file and side-filed them to the gauge that my shaper shaped them to; in this manner the steel of the saw tooth was worked one way and a few repetitions of this method prevented any further crumbling and a smooth cut was assured.

"In going into further details as to why I did this I will give my version of the crumbling. When the teeth are swaged, the crumbling seems to radiate from the root of the swage. Now, when you work it through the shaper the steel is worked back to place. This continual spreading and compressing destroys the cohesive quality of the steel. When applying the above method, I have found that the first time this crumbling disappears and the teeth hold their cutting edge. Always, upon taking the saw off, I note the condition of the teeth that were crumbled and if necessary apply the above method when I have to swage. If the crumbling appears again, I repeat the process.

"In addition, I might add that it is sometimes necessary to face the teeth up with a file as the grinder sometimes fails to face them up well. In my years of experience the above method has proved itself and the teeth have held up."

Maple Flooring Required in Britain

A report recently received from London, Eng., states that the general outlook for maple flooring at the present time is excellent, as there is a good demand, and with the large amount of building in prospect, this should steadily increase, as industrial conditions become more settled. The sizes most in demand are 1-inch and 1½-inch by 4-inch. Wholesale prices at various dates during the past few years have been as follows:—

December 31, 1915,	£22	to	£27		per standard.
December 31, 1916,	27	to	32		"
December 31, 1917,	30	to	40		"
June 1, 1918,	35	to	45		"
December 31, 1918,	35	to	45		"
February 1, 1919,	30	to	37	10s.	"
May 1, 1919,	25	to	35,		"
September 1, 1919,	55	to	65		"
August 1, 1919,	55	to	65		"

"I am not much of a mathematician," said carelessness, "but I can add to your troubles, I can subtract from your earnings, I can multiply your aches and pains, I can divide your attention, I can take interest from your work and can discount your chances of safety.

New B.C. Lumber Commissioner

Wm. Robertson, of Victoria, who recently succeeded Major James Breckin, as British Columbia Lumber Commissioner in the East, with headquarters at Toronto, has been successful in securing bigger and more convenient quarters. Starting next month, the offices and display rooms of the B. C. Lumber

Wm. Robertson, Victoria, B.C.

Commissioner will be on the ground floor at 1 Adelaide St. East, where larger space and show-window facilities are available. Mr. Robertson has several other plans in view of an educational and propaganda character, so far as making more widely known the merit, worth and adaptability of B. C. forest products are concerned.

The new Commissioner followed the lumber business for a great many years, spending part of this time in B. C. In 1914 he enlisted and was sent overseas. During service in France he was injured and ultimately received his discharge. He returned to Victoria, B.C., and entered the service of the Forests Branch of the Department of Lands. On the resignation of Major Breckin as B. C. Lumber Commissioner for the East, Mr. Robertson was given the appointment and has taken up his new work with enthusiasm.

Furniture Exhibitions in Various Centres

The annual furniture exhibitions are being held from Jan. 12 to 24 at the different furniture centres. The usual exhibits are being made at Kitchener and Stratford. The F. E. Coombes Furniture Co., Limited, and the Andrew Malcolm Furniture Co., Limited, are exhibiting in their show rooms at Kincardine, instead of in Toronto, as on former occasions.

The Toronto exhibitions include the Owen Sound firms, the C. F. M. line. The Ideal Bedding Co., the Gendron Mfg. Co., the Canadian Meseneau Co., and the Gold Medal Furniture Co. are all showing at their Toronto plants.

Priestman Plan of Fixing Wages

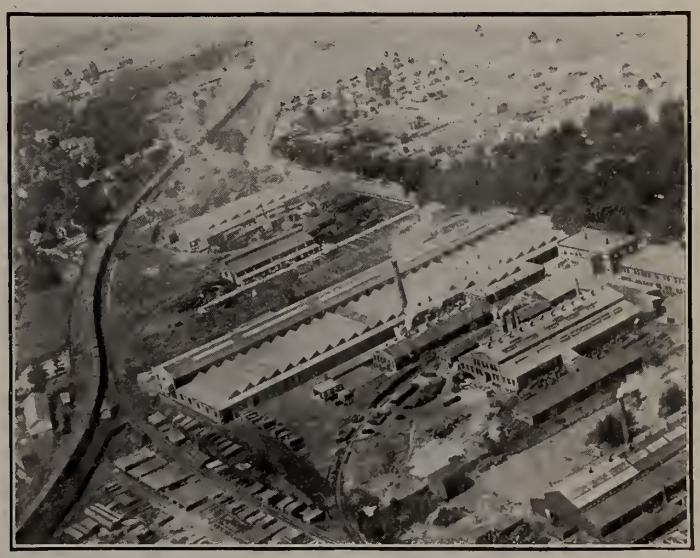
Details of a scheme adopted by a firm of machinery manufacturers which has increased its average output by 50 per cent. was recently made public. The Priestman scheme, as it is called, is based on the principle that a number of men can produce by ordinary effort a certain amount, known as the "standard," but by increased individual effort this can be exceeded. Every employee receives a percentage on his wages for all output in excess of the "standard." Thus, if the outpput is increased by 50 per cent. a workman earning $20.00 a week would receive $30.00. The friction often caused by piecework is thus avoided, and a maimum output is advantageous to all concerned. It is claimed by the council that the scheme is the "solvent of many, if not all, of the difficulties now facing industry."

Hibner Interests Disposed of

A new firm, known as Malcolm & Hill, Limited, has purchased the Kitchener and Listowel plants of D. Hibner Furniture Co., Limited. It is the intention of the new company to turn out a highly specialized line of bedroom furniture. Those behind the deal are James Malcolm, of the Andrew Malcolm Furniture Co., Limited, Kincardine, and E. A. Hill and S. J. Rutherford of the Toronto Plate Glass Co., and B. B. Hunter, an insurance broker of Toronto. Possession is expected about March 1.

Unique View of Rochester Plant

The interesting illustration accompanying this item shows a bird's-eye view of the main plant of the American Woodworking Machinery Co., Rochester, N.Y. This is where the well-known line of "American" woodworking machines are manufactured. The picture gives a good idea of the size of the plant and shows the adequate trackage facilities enjoyed by this



Aerial view of American Woodworking Machinery Company's plant.

company. The saw-tooth roof construction, noted on several buildings, is the most modern idea in factory construction, giving a maximum of light and ventilation. As far as is known this is one of the first U. S. industrial plants to be photographed from the air. The Garlock-Walker Machinery Co., Limited, Toronto, handle the "American" line of woodworking machines in Canada.

Machinery & Equipment

New Hoop Forming Machine

At present practically all flat hoops made in Canada are made from elm, it being one of the few woods for coiling that can be successfully handled. This has to be steamed and when coopers use the hoop they frequently have to soak them so they can handle them without breaking. With the new Richardson hoop forming machine hoops can be made from any wood and coiled without the use of either steam or water. Simply cut the stock to size, paint, lap and run through the machine. Will bend 12 in. and larger.

The hoop is formed by being carried on a travelling steel band around a power-driven corrugated bending wheel. The hoop enters the corrugations by means of an adjustable pressure roller in addition to the steel band. This corrugated wheel leaves indentations on the inner side of the hoop as it is bent, making the hoops very pliable. The teeth of the bending or corrugated wheel are nicely rounded so as not to cut the stock. The required pressure for proper depth of indentations for circle desired can be easily regulated by screw for adjusting the pressure roll.

The steel band is 1½ in. wide to fit exactly between the flanges on the corrugated bending wheel. There is a guide to guide the stock while entering and a deflecto rset so as to protect the operator and to turn the hoop out after passing around the bending wheel.

The bending wheel is regularly 12 in. diameter, 1½ in. face, bevelled 3/16 in. Other sizes and different bevel can be supplied to order. It has heavy deep flanges to guide the stock and hold it in place when being formed.

The tension pulley at opposite end from bending wheel is provided with screw and hand wheel for take up to suit length of band and has a veavy coil steel spring to tension.

Bending wheel will do fine work running 20 to 25 r.p.m. which will give an output of from 6,000 to 7,000 hoops per nine hour day. With good materiai, the speed may be increased to bend from 10,000 to 12,000 per day and can be fed by one man.

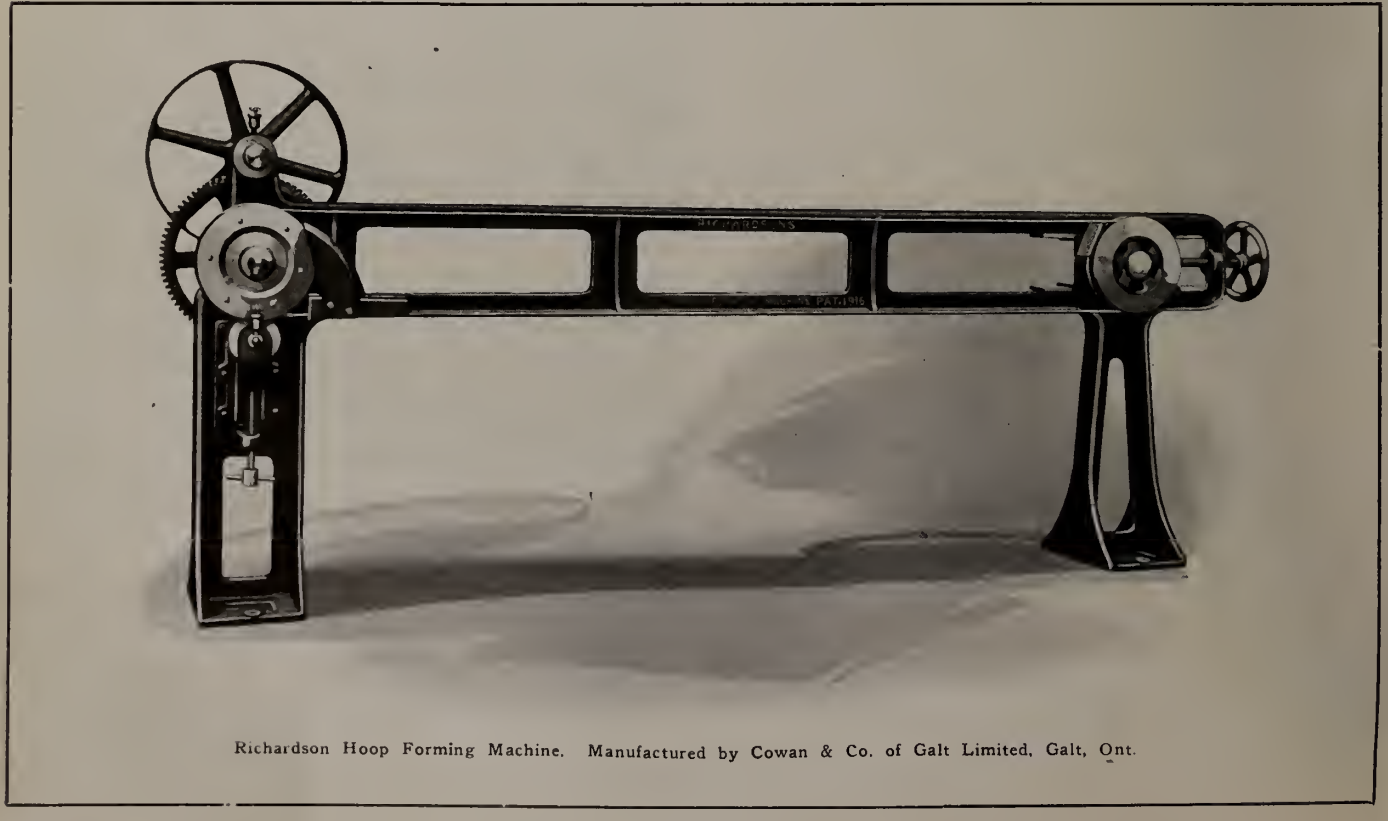
Steel band 23 ft. 6 in. by 1½ in. Drive pulley 24 in. by 6 in. should make 86 r.p.m. to give bending wheel 20 r.p.m. Floor space 14 ft. x 2 ft.

Full particulars may be secured from Cowan & Co., of Galt, Limited, Galt, Ont.

Root Multiple Spindle Boring Machine

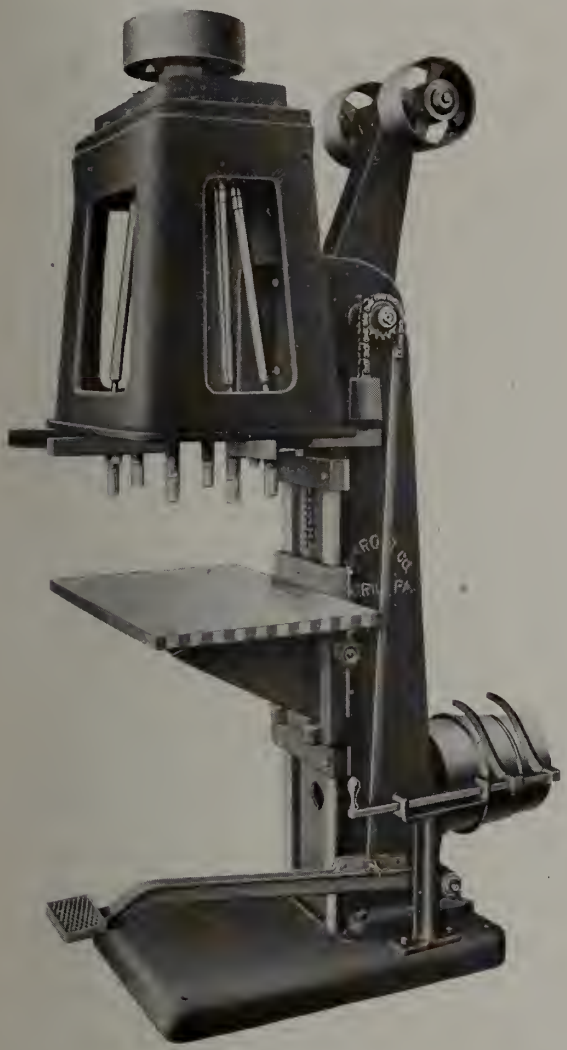
Multiple boring is a matter of growing importance to woodworkers generally. Manufacturers of talking machine cabinets, auto bodies, agricultural implements, and other articles find multiple boring a necessity in order to produce at low cost and to increase production.

The accompanying illustration shows a multiple spindle boring machine manufactured by the B. M. Root Co., York, Pa. The boring area is 14 in. x 25 and the six spindles collectively bore all over this area. Each spindle can be set to work at any point



Richardson Hoop Forming Machine. Manufactured by Cowan & Co. of Galt Limited, Galt, Ont.

within its range of action, which is about 6 in. from its straight position. The table which is 12 in. x 32 in. is adjustable for long or short bits for thin or deep work. It is raised by treadle giving easy boring strokes. Special boring rails and boring heads for staggered or straight rows of holes or for groups of



Root Multiple Spindle Borer.

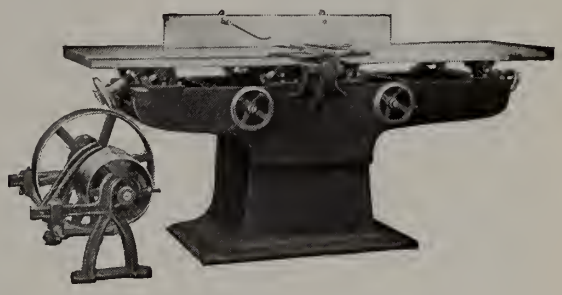
holes close together may be secured. May be had with either countershaft or motor drive.

With this machine the laying out of holes is eliminated and a number of holes are bored at one operation. It is well adapted for boring motor boards for phonographs, box parts, furniture parts, etc. Full particulars may be secured from the makers.

Jointer Embodying New Features

Some new features are embodied in the No. 800 jointer manufactured by the Silver Manufacturing Co., Salem, Ohio. This machine, which is made in four sizes, 8 in., 12 in., 16 in. and 20 in., is fitted with an efficient safety guard. The usual slide or groove is replaced with hardened steel pins, on which the tables are mounted. Split bearings are employed and all play may thus be taken up, keeping the tables firm and rigid at all times. The tables can be moved back and forth by means of hand wheel provided on working side of machine. This gives ready access to the head for sharpening knives or fitting special cutters. The vertical movement of tables is also controlled by handwheels and an auxiliary wheel lock the tables firmly in position.

A square slotted head is provided, but a round head may be had if desired. The square head is milled for the attachment of special cutters.



A Silver Jointer, table mounted on steel pins.

Full particulars may be secured from the manufacturers.

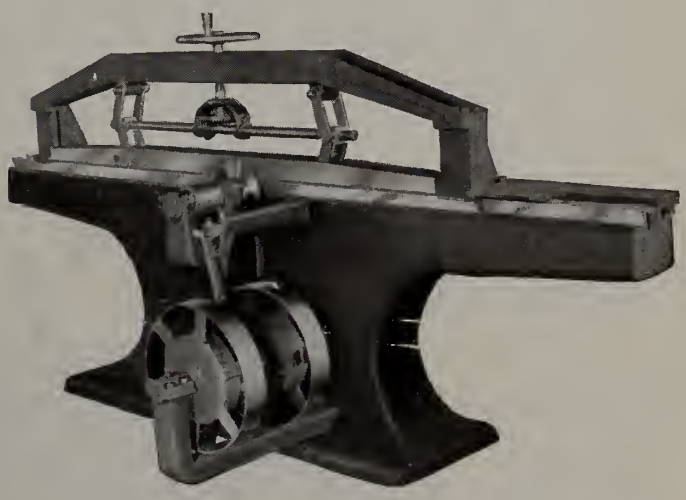
The Jenkins-Falls Veneer Jointer

The Jenkins-Falls No. 23 Veneer Jointer is manufactured by the Jenkins Machine Co. of Sheboygan, Wis., and sold in Canada by the Garlock-Walker Machinery Co. Limited, 32 Front Street West, Toronto.

It has been enjoying considerable popularity in Canada during the last few months. Some recent purchasers are:

Geo. McLagan Furniture Co. Ltd., Stratford.
Knechtel Furniture Co. Ltd., Hanover.
Canada Furniture Mfrs. Ltd., Woodstock.
Anthes Furniture Co. Ltd., Kitchener.
Preston Furniture Co., Preston.
Panels Limited, Southampton.
St. Thomas Cabinets Ltd., St. Thomas.
Williams Piano Co., Ltd., Oshawa.

In addition, the Office Specialty Mfg. Co. of Newmarket, and the North American Furniture Co. of



The Jenkins-Falls Veneer Jointing Machine.

Owen Sound, have been using these machines with success for years.

One feature of the machine that makes it so popular is that the veneer is clamped in place by a special clamping device, and is held flat while the travelling carriage carries the veneer past the cutter. Thus, buckled and crooked veneer can be jointed perfectly straight. The machine will joint either with the grain of the wood or across the grain for butt joints.

Upholstering and Trimming

A Plea for Better Upholstering

By W. L. D.

Upholstered furniture is a line that is purchased largely on faith. When a person buys a buffet or table they are in a position to form a fair idea of the worth of the article and to judge the soundness of the wood and the strength of construction. In upholstered goods this opportunity is, to a certain extent, denied them, which is especially true of stuff over pieces.

The manufacturers of upholstered lines, some at least, might well take a greater pride in their output and insist that none but the best grade of material be employed. Let them turn out a product that is worthy of their name and put their name on it and let the name sell the line. The phrase "good enough, let it go," should not be heard in any factory, and especially not in an upholstering shop.

Room for Improvement

That there is room for an improvement in many upholstered lines will readily be admitted by any observant person. How often has one gone into a room and sat in a covered chair only to feel that they were going through to the floor. This occurs on some expensive pieces as well as on the cheaper grades. Then look at the appearance of some pieces that have been in use for a few months or a year. Note the flat, beaten-down appearance of the seat and arms, see the loose wrinkles in the covering, due to the sagging of the filling and foundation. Should these symptoms appear in good upholstered furniture, where a fair grade of material was used and all the work conscientiously done? The writer thinks not.

Strength of Frame Important

There are those who think that because the frame of a stuff-over piece is covered and hidden from view that any kind of material can be put into it. Lumber that cannot be used up in any other way is utilized in making frames for the upholstered line. This is a fatal error. While the appearance of the wood is non-essential, it should be as strong as that entering into any other pieces of furniture. The frame is the foundation of the whole piece and unless well constructed of good sound wood the life of the piece is shortened. It matters little the quality of the material used in covering, if the frame is weak the finished product will be unsatisfactory.

The same applies to the webbing employed. The strength of the web is an important item. Compare the webbing used in England with that used in Canada. Is it any wonder that the furniture upholstered in England holds up and is handed down from one generation to another. It is a matter of pride with Old Country upholsterers to turn out an article that will give lasting satisfaction and comfort.

No Details Should be Overlooked

While the frame and webbing are very important items, as they are the very foundations of the work, the balance of the construction should not be overlooked. The cotton and canvas used should be strong and capable of standing up under severe service. The springs should be long and yielding and a sufficient number should be put in to ensure a lasting job.

Price Not All Important Factor

Many will say that if the best material were employed and every attention given to details that they would have to increase present prices. Admit that that would be necessary. Price is not as big an item to-day as it was a few years ago. Isn't it better to make a good article at a fair price than turn out a poor product at any price. The lasting satisfaction derived from a high-grade piece of upholstered furniture remains long after the price itself is forgotten.

The trend of furniture production seems to point toward quality as the goal. Let all upholsterers keep abreast of the times and turn out none but quality furniture. It may be a bread-and-butter line that is being produced, but good materials and good workmanship can be used and the price fixed accordingly. Let the furniture be built up to a standard, not down to a price.

Chesterfield couch manufactured by the De Luxe Upholstering Co., Kitchener, Ont.

Chesterfield chair and rocker from the De Luxe line.

The De Luxe Upholstered Line

The accompanying illustrations show three pieces from the line of the De Luxe Upholstering Co., Kitchener, Ont. This firm produces a quality line. Every attention is paid to all details of construction. The filling is composed of hair and moss, and every part is double stuffed. Spring construction is used throughout, and the cushions are of Marshall guaranteed construction. These pieces are produced in a well-appointed upholstering shop. and the workmen employed are experts in their line. Prompt deliveries are the order of the day.

Origin of Popular Textiles

Although clothing made of wool from the alpaca of South America—a grotesque-looking animal of the camel tribe, deer size—was worn in that country from remote antiqnity, not until the first half of the nineteenth century was alpaca wool brought to the knowledge of spinners in England. Titus Salt was the father of the English industry—and this by mere lucky chance or what the Americans would call Yankee shrewdness had Salt been born on their side of the little pond. For the gentleman had a mania for auctions, and at one in Liverpool stumbled upon an old consignment of the alpaca variety dumped upon the wharves months before. Considered virtually worthless, he bought it at a bargain and started in experimenting. So successful was the manufacturer in the results obtained that in 1854 he opened an alpaca factory, which in its top-notch days gave employment to as many as 4000 workers.

Later he made mohair plush on an extensive sale.

Serge has been used in Europe since the twelfth century.

Mohair, the fine silken hair of the Angora goat, was brought to London by the Turkey Company in the sixteenth century.

Calico was introduced into England from Calicut, India, by the East India Company, 1631. A picturesque story lies hidden in the commonplace of its name. For Calicut is a corruption of Calicoda, a Hindoo word meaning the "cock crowing," the town so called because the first monarch of Malabou ,India, as a reward to a war chief for distinguished service rendered in battle presented him with "all the land within the limit of which a cock crowing at a certain temple could be heard."

Chintz (Hindustanee chhint, now so used in decorations, meaning spotted) was originally the name under which all printed cotton cloth was exported from India.

While the fabric first came from India, the name gingham originated in the fact that its early European manufacture was at Guingamp, France—the forebears of the present day aristocratic ginghams, with their fine, beautiful texture, their artistic, complicated plaid designs, being very plain plebeian weaves with two or more colors in small checkered patterns.

The word dimity tells its own story when its name is parted in the middle, di and mitos the Greek for two threaded.

Some assert that the word lawn is derived from Laon, France, but a much prettier explanation for that dainty fabric is that the name was given because the delicate material was always spread out to bleach on smooth lawns, instead of upon coarse, ordinary grass.

Mohair plush took its rise in this country 1883 to 1910, New England leading in the race, Philadelphia leading in silk plush.

A Dependable Furniture Covering

A material that is rapidly coming to the front for use in covering furniture and similar lines is Fibro-hyd, an artificial leather, the product of the Fibro Manufacturing Co., Philadelphia, Pa.

Fibro-hyd is the result of many years of expert research. The first essential in the manufacture of artificial leather is anchorage—or adhesion of the coating to the fabric, second, the ability to produce a coating of maximum strength and resistance to wear. The most severe test for artificial leather is to use it on automobiles, where it is subject to extremely high temperature during the summer, and very low temperature in the winter. Under summer conditions, artificial leather must be made so that it will not spew, that is, the oil in its composition ooze out on the surface, or in winter that it will not crack and harden. Fibro-hyd is guaranteed absolutely not to spew. In the Spanish finish, this material is used very extensively for upholstering purposes in all its branches, and is said to be as satisfactory in every respect as grain leather. It is being sold extensively throughout the States, and very considerably in foreign countries, a very large shipment of which was recently sent to one of the Scandinavian countries, who report as follows:

"Fibro-hyd is considered by experts the best im-

That smile! H. R. H. the Prince of Wales during presentation of "Bywater" upholstered chair at the Canadian National Exhibition.

itation leather made to-day, and, therefore, should have a great sale."

Other lines manufactured by this company include Fibro-kane open webbing, Fibro-kane closed webbing, for suitcases and car seats, Fibro Flats for the manufacture of baby carriages, bassinettes, wicker baskets, etc., round reeds, for the same purpose, and paper twine in all sizes.

Value of Magnetic Hammer Criticized

Waterloo, Jan. 3, 1920

Editor, "Canadian Woodworker:"

In an article entitled "Is Specializing the Solution" which appeared in the Upholstering department of the November issue reference was made to the use of magnetic hammers to obtain speed and increase production. We have one man who uses a magnetic hammer but I do not think much of it.

For rough work they may be satisfactory if the boys are accustomed to use them, but I am inclined to think that it would take some time to become accustomed to their use.

On fine work there is a rabbet line which requires straight tacking. It is harder to drive tacks in a straight line with a magnetic hammer than when the ordinary kind is employed. On rough work the tacks are not usually straight, which matters little as the fringe is wide enough to hide all tacks that are out of line.

Yours truly,

E. Ruppel.

Kincardine, Dec. 27, 1919.

Editor, "Canadian Woodworker:"

An article in the Upholstering section of the November Canadian Woodworker referred to the use of the magnetic hammer as an aid to increased production. We have some men in our department who have used these hammers and to use their own term they "would not have the darn thing." They might be useful in places where it is hard to place a tack with the fingers, such as in small fancy pieces of upholstering, but for ordinary work they are likely to be more of a hindrance than a help.

I think where you would gain in one place through their use, you would lose in another, though a saving in time could probably be effected when working in corners.

Yours truly

J. C. N. Wellwood.

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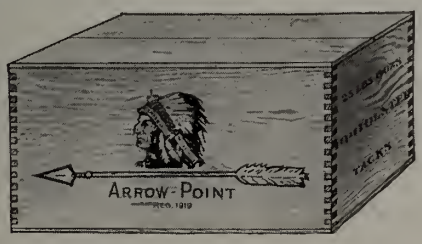
Upholsterers' Tacks require especial care in regard to point and head.

The points will stick readily and not break off, and the heads are reinforced in such a way that they will not fly off.



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AD-EL-ITE Shellac will not turn white with moisture. It is an improvement, not a substitute on Shellac.

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In our Stains you will find the highest possible color values—they are positive—they are permanent. Manufactured in quantities from the best quality raw materials.

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WRITE FOR PRICES

The Edward J. Shannon Company
CINCINNATI, OHIO

Securing Results with Enamel

Qualities of Flat Enamel—Every Coat Must be Carefully Applied—Condition of Stock Important

By Dixy Wells

In a recent article we gave the principal properties, contributing to success, that should be found in a first-class enamel—covering lustre, flowing properties, beauty of color, capacity, ease of application and drying ability.

To proceed further with the discussion of this subject, the flamboyant enamels were not particularly treated as they have only the properties of drying, lustre and flowing in common with the others. They are usually employed on tin, glass and other bright metals and are transparent, but very rich in color, producing satisfactory imitations of stained glass, lacquer, tinware, and are used on small metal furniture pieces, etc. They dry well in about eight hours, and may be baked if desired.

Should Have Uniform Lustre

Flat enamels are those which dry with a flat, egg shell finish, and are commonly used on furniture in place of flat paint, as they, as a rule, are able to withstand much more wear and tear. A good, flat enamel should possess these features—uniform appearance, ease of application, and should flow readily.

Having gone through a proper manufacturing process and been applied properly, a flat enamel should dry out with the surface quite devoid of gloss and with a uniform, eggshell lustre. If the enamel flashes after quick application it is generally defective. The ideal, flat enamel should look cool. By that we mean that it should not begin to set before sufficient time has elapsed to work it out properly. When applied to a panel, for instance, it should not begin to set for at least ten minutes, unless the temperature in the room is unusually high.

A good flat enamel should require little softening off, as it should of itself flow out well, evenly, smoothly, and set without showing brush marks, streaks, or any imperfections. Another essential property is opacity, and in cheap work its presence or absence may make all the difference between a good or a poor job, just as with gloss enamels this material is often used as an undercoater as it gives uniformity of color, and is expected to have as much body as ordinary flat paint. The above points may be tested, as outlined in our previous article covering gloss enamels.

Aside from the important qualities numerated above certain flat enamels must be able to withstand heat through the baking process, and tests along this line may be accomplished by enamelling small pieces of iron with the different goods to be used, and baking them at a similar temperature for a similar length of time, and noting carefully whether they lose their flat appearance and become darker in color. If they do they are defective for the purpose intended.

In applying ordinary cabinet enamels on furniture, first see that the surface to be finished is perfectly dry, sanded and free from grease, dirt and all imperfections. Practically all standard primers or undercoaters coming ready for use should be stirred thoroughly, and an even free coat given the surface, being careful to brush out the material thoroughly. Allow to stand for about twelve hours to become dry all through. Should there be any imperfections in the wood they should then be evened up with a plastic surfacer or filler.

After this, sand lightly with fine sandpaper, dust thoroughly, and apply the second coat of primer, following the system as given above. Should it be necessary, thin to the proper working consistency with turpentine. This second coat should be allowed to dry about twelve hours, and after this apply evenly and freely your first coat of enamel which should have been previously thoroughly stirred. Allow the enamel to dry about twelve hours if kiln dried, and about twenty-four hours if air dried, sand lightly, dust thoroughly, and give the second coat of enamel, if desired, following systems as above.

While these are ample directions in a simple way, they, of course, can be gone into in a much more thorough manner. To proceed, while the ground work for an enamel is usually a flat paint or a specially prepared undercoater, it, nevertheless, varies a great deal according to the class of work in hand.

Ground Work Claims Attention

Between the grounds of the poorest work and those of the best there is a great difference regarding the number of coats to be given and the kind of material used. The cheapest bringing up of the ground work is acomplished usually by the cheapest enamels, but quite apart from the quality of enamel employed, all enamelled work may be classed as good, bad or indifferent, according to the preparatory work and grounding it has received.

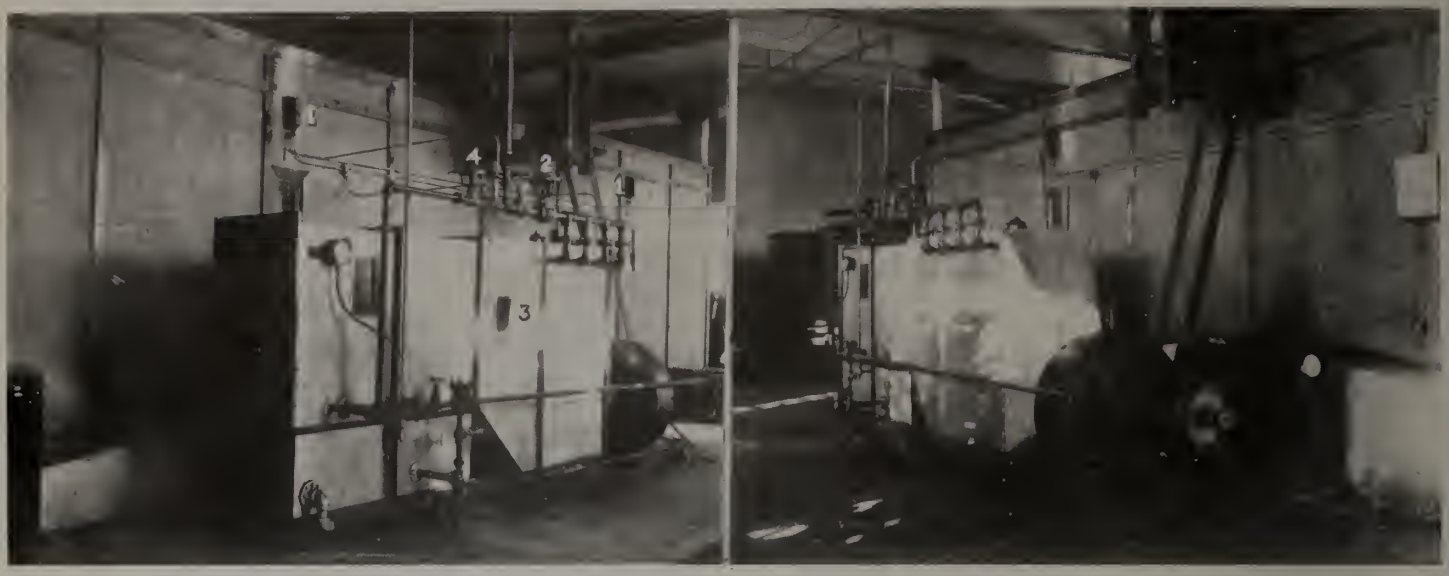
A cheap enamel on high-class ground work may not make the best job, but in many cases, gives superior results compared with the high-priced enamel on poor ground work, thus, there are grounds to suit various clases of work—low class, medium and high class. We will cover here only the latter, as quality is coming to be a paramount feature in the preparation of all painted or enamelled furniture.

The preparation and ground for this is very important. The surface should be thoroughly clean and sandpapered, and should, if possible, be done a day previous to the application of the first coat. It is advisable to consider grounding for high-class enamelling, the same as the ground work for high-class varnishes, for although the opacity of an enamel might render the identical number of coats unnecessary it can by no means make the ground smooth..

Work Should be Smooth

This is quite an important matter, for even though the ground may be brought to a uniform color, several

(Continued on page 64)



Two views of Nichols varnish drying equipment as installed in the plant of Heintzman & Company, Limited, Toronto.

Drying Varnish in Eight Hours

Automatic Humidity Controlled Kiln Solves Varnish Drying Problems—Clean, Warm, Moist Air Used to Increase Production of Finishing Department—Giving Satisfaction in Up-to-date Plant

In the drying of lumber of various kinds it has been found that to secure satisfactory results a certain amount of moisture must be admitted or retained in the kiln and the same has been found to hold true in a varnish drying kiln.

Experiments have clearly demonstrated that when a varnished surface is exposed to a dry, warm current of air, the outside of the varnish will dry before the body of the coat, with the result that while the varnish may appear hard to the touch, yet underneath it is still soft. The admittance of a certain amount of moisture with the warm air retards the rate of drying of the surface and ensures that the varnish is dried from the bottom out and a perfect drying job is the result.

Modern Kiln Described

The writer recently inspected a modern drying kiln which the Heintzman Piano Co. installed some time ago. This kiln which is in the centre of their varnishing room and is a two compartment kiln 40 ft. by 60 ft., each being 20 ft. wide. It is of frame construction and sheathed in with Beaver-board. Three wide sliding doors are provided on each side and in the dividing partition. It is so arranged that the heat can be turned on and off each compartment at will. The reason for two compartments is so that one section can be drying while the other section is being filled with newly varnished material. The first three coats of varnish are applied by a DeVilbiss spraying machine, and as each piece is sprayed, it is placed on a suitable rack mounted on wheels. When these are filled they are run into the kiln. Each compartment holds a day's work so that one is drying while the other is being filled.

The accompanying illustration shows two views of the equipment which automatically contracts the temperature and humidity of this kiln. This equipment was manufactured and supplied by the A. S. Nichols Co., New York, whose advertisement appears in this issue.

Details of The Equipment

The two thermostats, one in each compartment, indicated by the figures 1 on the cut, project into each kiln and control the automatic heat regulating valve 2, which, in turn, controls the temperature of the heating coils through which the air is drawn. The figure 3 is the humidity control and acts on the steam valve 4. If the moisture contents of the air drops below the required percentage, the the steam valve at 4 opens and permits the steam to enter a coil which is placed in an open tank of water, over which the air is drawn. The admission of steam to this coil heats the water and causes an increased amount of vapor to be thrown off into the air as it is drawn past. As soon as the air reaches the required percentage of humidity, the steam valve automatically closes.

The air intake is at the left hand end of the equipment, shown dark in the cut. This end is covered by a wire screen, inside of which is a water screen. As the air passes through the water screen, all dust and other impurities are washed out. This is a very important feature as none but thoroughly clean air, air free from dust, should be fed into a kiln of this kind.

Air Thoroughly Washed

After going through the water screen, the air passes over the tank of warm water, absorbing the required amount of humidity, and then on in through the heating coils to the kiln. A fan, driven by a small motor, draws the air in and sends it into the kiln, giving a very positive circulation. When one stands in the compartment that is operating, a strong current of warm air is felt. The air enters at the bottom at one end and proceeds the full length of the

The above photograph shows the Nichols Equipment installed in the works of the Votey Organ Company, Garwood, N.J. These dryers may be used to turn out furniture, pianos, talking machines, etc., in as many days as it formerly took weeks, and the finish is better, for it is dried scientifically, from the inside out.

If not already Nichols equipped, you owe it to yourself at least to investigate, because:—

1—It will easily triple the output of your finishing rooms.

2—It will decrease congestion in your factory.

3—It will decrease the investment in goods necessarily in process.

4—It will enable you to make more prompt deliveries.

We will analyze your particular conditions and then make you a proposition on an equipment that we know, from our extended experience, will save you time and money, as well as improve your product.

We guarantee fully the efficiency of the equipment as well as its mechanical construction. Every installation has been successful. There are hundreds of concerns to whom we can refer you.

A. S. NICHOLS COMPANY, 33 W. 42nd St. NEW YORK CITY

Manufacturers of Dryers for Lumber, Veneers, Glued Stock, Varnish, Paint and Enamels, for both high and low temperature work. Also sole agents for "Zenitherm" insulating material for the making of rooms for both high and low temperature drying.

kiln being exhausted through suitable ventilators situated at the bottom of the far end of the kiln.

A wet and dry bulb thermometer is conveniently placed in each compartment, one will be noted under thermostat in the nearer kiln. A temperature of 110 deg. is carried on the dry bulb and the wet bulb is held at 100 deg. The equipment is capable of very fine regulation, and when once set, carries on day in and day out with a minimum of attention.

As an aid to production and reduced manufacturing costs, the value of a drying system of this kind need not be dwelt on.

Securing Results with Enamels

(Continued from page 61)

coats may still be required, combined with thorough rubbing down to bring it to the desired smoothness. Six thin, hard-drying coats may be brought to a perfection of surface unattainable by the giving of three thick ones, and when the surface, color and smoothness are good to begin with, fewer coats will be sufficient, but, generally speaking, the lowest number suitable for the highest class of work is five, that is, three of the undercoating and two of the enamel.

On a good, properly prepared surface the first coat, then one of filling, a second coat, then another of filling, and followed by the final coat of enamel make very good work. Where more coats of filling are required or the old surface is to be quite changed in color a great many coats of paint or undercoats are sometimes necessary.

In all events, whether few or many coats are given, you must never forget that skillful application and sound preparatory work are great factors in the pursuit of success.

Southern Furniture Men Meet

The annual meeting of the Southern Furniture Manufacturers' Association was recently held at Asheville, N.C. A number of interesting addresses were delivered.

A. E. Tate of High Point, N.C., who recently returned from Europe, said that at present, due to industrial unrest in all European countries, caused by the war, and due to the high rate of exchange against these countries, they are only buying absolute necessities abroad. The rate of exchange against them is so great that they cannot buy from America without financial assistance. The matter of giving money aid to these countries is now being studied by our large financial interests, and some solution may be worked out. Mr. Tate is of the opinion that later on there will be an opportunity for the sale of American-made furniture in Europe, but believes that it is useless for us to attempt export unless we prepare for it by forming an export organization to study the question and assign a definite per cent. of our output for this purpose."

Another speaker pointed out the importance of keeping customers informed as to the market value of furniture by frequently issuing new price lists, although no goods may be sold on the new lists. They would enable the retailers to get the full market value for their goods. Dealers must get replacement value or they will eventually go under.

They don't ask any more, "Can he paddle his own canoe?" but "Can he afford a Ford?"

Comparative Material Prices 1916-1919

In a folder issued recently by the National Association of Chair Manufacturers the following outline of the material market was given. It shows how prices have advanced to present high levels. While the comparative figures given apply to the American markets they can be applied proportionately to conditions in Canada.

Through the latter half of 1918 the conservation program resulted in most chair factories reducing their stocks of lumber and other materials to less than the normal supply. Hence, there were no abnormal stocks inventoried last December. As the demand for chairs began to increase this year, the factories were compelled to enter the material markets and have found there a situation of increasing costs—notably in lumber. The last 60 days the advances in lumber have been terrific. Not only are the prices paid for lumber to-day exceptionally high, but the grades of lumber are of such inferior quality that the chair factory cuts more lumber to secure a given number of parts suitable for chairs than was the case two years ago. It should be borne in mind that, all four surfaces of every chair part are exposed in the assembled chair, and therefore have to be free from defects, and at present cost of lumber, this point should be fully appreciated.

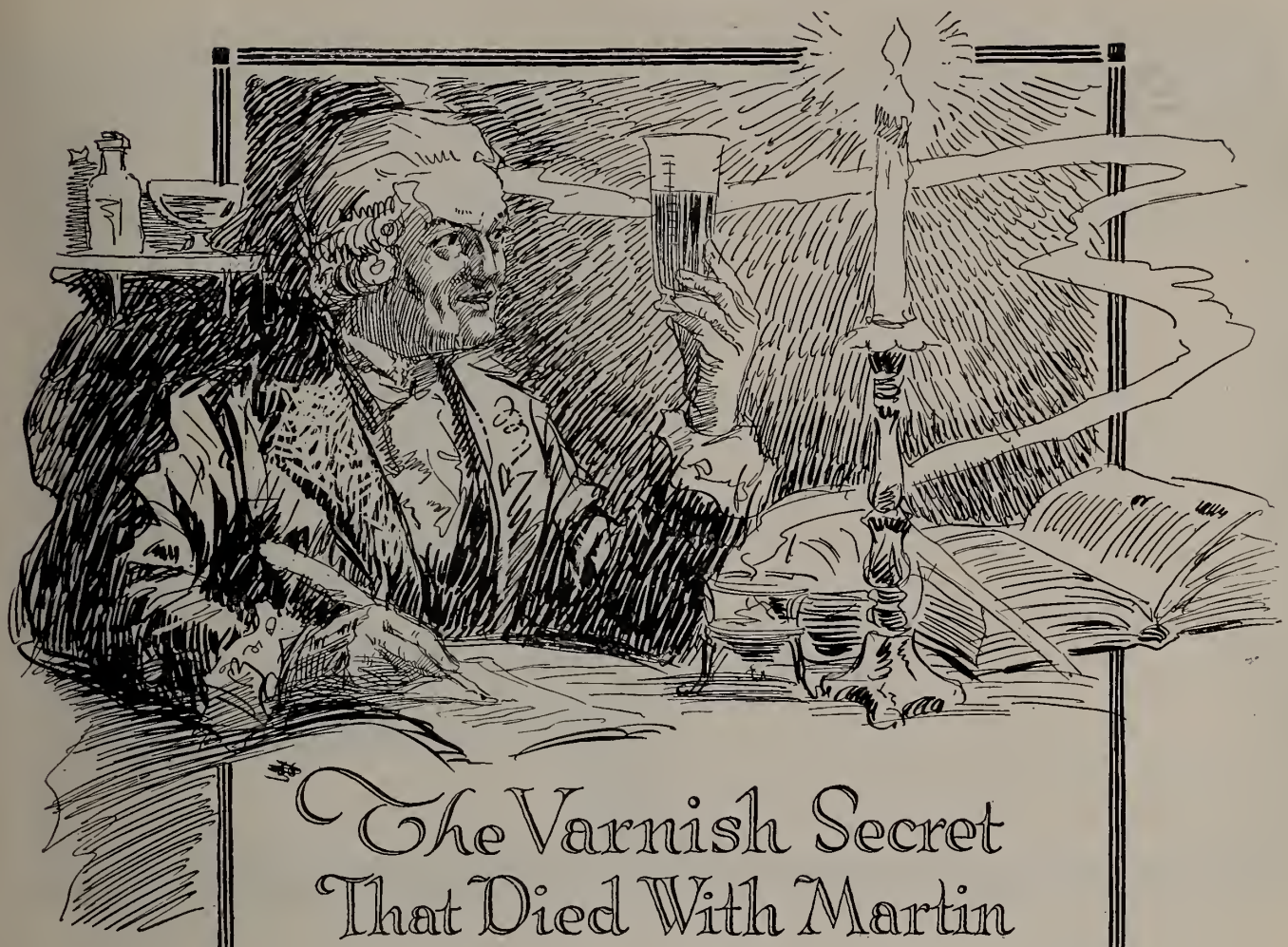
The following table will convey some idea of prices being paid by chair manufacturers, and which in turn must be reflected in the price asked for the chairs when shipped.

Lumber, per M. Ft.	1916	1919	Increase Per ct.
Plain Oak:			
1sts and 2nds	$55	$130	136
No. 1 Common	33	90	173
Quartered White Oak:			
1sts and 2nds	75	250	233
No. 1 Common	45	135	200
Red Gum:			
1sts and 2nds	33	110	233
No. 1 Common	20	78	290
Crating	11	33	200
Above prices based on Cincinnati gateway.			
Linseed Oil, per gallon	$ .50	$ 2.45	390
Shellac per gallon	1.05	5.00	376
Cotton, per pound	0.02½	.12½	400
Tow, per pound	.00¾	.03½	376
Tapestry, per yard	1.75	4.50	157
Leather, per foot	.13	.48	269
Jute, per pound	.08½	.28½	235
Glue, per pound	.15	.44	193
Spring, per 100 pounds	2.75	9.00	227
Excelsior Pads	4.50	12.25	172

Catalogue of Finishing Materials

The Jamestown Wood Finishing Co., Jamestown, N. Y., have issued a new, nicely illustrated catalog covering their complete line of finishing material and finishing room supplies. Among the items described are analine oil stains, analine water stains, mahogany acid stain, fumed oak stain, powder stains, fillers, reducers, finishing wax, varnishes, first coaters, enamels, axlac, undercoaters, bronzing liquid, furniture polish, white paint and other lines. Copies may be had on request to the above mentioned firm.

The usefulness of your trade paper does not end with your reading it through. It should be passed on to the rest of the force and they should be urged to read it.



The Varnish Secret That Died With Martin

It was a rare formula that this 18th Century Wizard of wood finishers used to produce his masterpieces. But even with it, weeks of tiresome labor and months of curing were needed to bring out the full, deep lustre of the wood.
Martin never told his secret—it died with him.
Today there are few, if any, secrets of wood finishing. To secure the deep toned finishes that are so essential to your product you have but to turn to

MARIETTA
SPARTAN ART WOOD
STAINS

These stains are made by practical wood finishers—men as famed in their skill of today as Martin was in his.
Especially for finishing furniture and for piano and cabinet work of every kind Marietta Stains are pre-eminent. They meet the modern demand for speed, volume and speed in finishing. They are always practical, yet do not sacrifice that prime essential—beauty.
Our water and oil stains are compounded from the strongest dyes obtainable.
We invite you freely to consult our laboratories and service department.

The Marietta Paint & Color Co.
MARIETTA, Ohio, U.S.A.
Southern Factory, High Point, N.C.

MARIETTA WOOD FINISH SPECIALISTS

Spartan Art Wall Finish gives an exquisite flat finish that is washable.

Increasing speed and reducing costs while making certain highest quality work, in your finishing room with

Aeron Finishing System
Surpasses Brushing

Spray-finishing Equipment

Whether you manufacture phonograph cabinets or chairs, metal filing cabinets or brass beds; whether you varnish, enamel or lacquer those products, 1 Aeron operator will do at least 4 or 5 times as much work as a brush finisher in the same time.

On every class and grade of work the sprayed-coating will be uniform and free from brush marks, runs, fatty edges and like faults.

Aeron System exhausting equipment will insure a clean, healthful place in which to work; and reduce any fire hazard.

The outfit will be on the job every day, and cost very little to operate and keep up.

These average savings and advantages possible in your finishing room, are taken from the years of economical, and successful operation of the Aeron System in thousands of wood and metal-working plants of every kind.

Let us mail you further particulars that meet your individual requirements—

The DeVilbiss Mfg. Co.
1318 Dorr St. Toledo, Ohio, U.S.A.

Manufacturers also of
Aeron System Portable Painting Equipment
for spray-painting factory interiors and exteriors at a big saving in time and labor.

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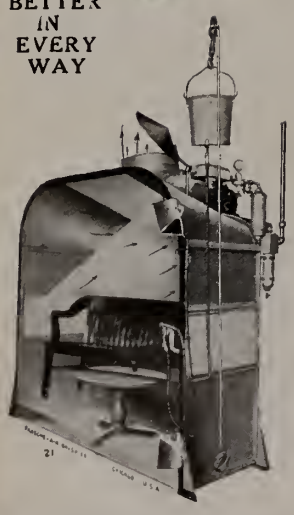
BETTER IN EVERY WAY



Most efficient and economical air finishing system known. One of our many popular (completely equipped) air finishing outfits as used by furniture plants everywhere. Made in various sizes to meet all needs. Applies liquid materials—all kinds

PAASCHE
SUPERIOR AIR FINISHING EQUIPMENTS

MEAN

Better Finishes
Quicker Work
Lower Cost

Saves 50% to 300%
depending on the nature of your product or the finishing materials used.

THE PAASCHE WAY
The most efficient and economical.

Let us tell you how to turn 4 to 6 days work INTO ONE.

Used in Hundreds of Plants operated on Strictly Efficiency Basis. You cannot afford to do without them.

Intelligent service rendered with each installation.

Most efficient rubbing machine in operation. Turns hard work into play. Perfect balance eliminates vibration—unparalleled in the performance of its work. Operated by compressed air. Does more and better work. Guaranteed. WRITE US TO-DAY FOR FULL INFORMATION.

Paasche Air Brush Co.

Washington Boulevard
and Willard Court
CHICAGO

Veneers and Panels

The Manufacture of Plywood

By S W Allen* and T R Truax †

The details of gluing, pressing, and drying plywood are not standardized, but these notes on manufacture are based upon observations of factory practice and upon extensive experiments at the Forest Products Laboratory.

The core or crossbands of the panels are coated with glue on a glue spreader consisting of two rollers, the lower one revolving in a bath of glue and the upper one sometimes being coated from another bath of glue retained between the upper roller and a trough with its lower edge almost touching the surface of the roller. The thickness of the glue layer is regulated either by scrapers or by the pressure of the rolls.

Panels Placed in Press Quickly

The panels are built up and placed in the press as soon as possible. Usually, with casein glues, the panels are grouped three to five in a set with caul boards placed between sets and at the top and bottom of the entire lot before pressure is applied. The panels are usually left under pressure for from 8 to 10 hours and are then taken to the drying room. Shorter pressure periods may be used when necessary.

One very successful factory using a casein glue has adopted the following standard practice, which is somewhat typical:

With 3-ply panels of 1/16-inch veneer, cauls are placed every five panels; with plywood of 1/12-inch veneer and three or more plies, cauls are placed every four panels. About five of these sets, or 20 to 25 panels, are pressed at one time. The time consumed between the gluing of the first panel and the application of pressure is 15 minutes. The panels are permitted to remain in the press for about 18 to 24 hours, but, if the plant is rushed and all presses are full, a press in which the panels have been pressed for at least 6 hours is opened and a new stack placed on top. (Retaining clamps could well be used instead).

With glues such as those of the blood-albumin type, demanding the use of a hot press, the glue is applied as in the case of cold glue and the panels placed one or two at a time in the hot press. Pressure up to 200 pounds per square inch at a temperature not to exceed 220°F. is applied. The panels are kept in the press for 2 to 5 minutes, depending upon the thickness of the plies and the panels and the type of caul that is used.

Calculation of Pressure in Hydraulic Press

For plywood manufacture determination of the correct amount of pressure to use is important. Results of experiments at the Forest Products Laboratory indicate that an excess or a lack of pressure tends to produce a weakened glue joint. Its determination on a hydraulic press equipped with a pressure gauge is simply a matter of calculation. With any hydraulic press, the amount of pressure secured per square inch of panel depends upon three factors: the area of the panel, the area of the piston or ram of the press, and the pressure gauge reading. The area of the piston in square inches multiplied by the pressure-gauge reading in pounds is approximately equal to the total pressure exerted by the plates. The total pressure exerted divided by the area of the panel in square inches gives the pressure secured on the panel in pounds per square inch.

The pressure-gauge reading must, therefore, vary with the size of the panels if the same amount of pressure per square inch is to be secured. For example, if the same gauge pressure is applied on panels 10 inches by 36 inches as on others 36 inches by 40 inches, the pressure will be approximately four times as great per square inch in the first case as in the second.

From the considerations mentioned above the following formulas for the calculation of pressures are derived:

$$P = \frac{P^1 \times A^1}{A} \quad 1 \qquad (1)$$

or

$$P^1 = \frac{P \times A}{A^1} \quad 1 \qquad (2)$$

Where P = gauge pressure in pounds per square inch
P^1 = pressure on panels in pounds per square inch
A = area of piston or ram in square inches
A^1 = area of panel in square inches.

To illustrate the use of the formulas let the following case be assumed: On a hydraulic press with a 10 inch piston, what pressure-gauge reading is ne-

*Industrial Examiner in Forest Products, Forest Products Laboratory, Madison, Wis.
†Wood Technologist, Forest Products Laboratory, Madison, Wis.

[1]To determine accurately the exact pressure secured, the weight of the platen to which the pressure is applied must be taken into consideration. For practical purposes, however, it may be omitted from the calculation, as inaccuracies in the gauge reading may account for much larger errors. When the weight of the platen is included the formulas become:

$$P = \frac{P^1 \times A^1}{A} \text{ plus or minus } \frac{W}{A} \qquad (3)$$

or

$$P^1 = \frac{P \times A}{A^1} \text{ minus or plus } \frac{W}{A^1} \qquad (4)$$

Where W = weight of the lower platen plus weight of panels or upper platen alone, as the case may be. The sign of the last member of equation (3) is plus when the pressure is applied by the lower platen and minus when applied by the upper. In equation (4) the reverse is true

cessary to secure 75 pounds per square inch on panels 24 inches by 48 inches? Use formula (1).

$$P = \frac{P^1 \times A^1}{A}$$

Here P = gauge reading required.
P^1 = 75 pounds per square inch
A^1 = 24 inches by 48 inches, or 1,152 square inches (area of panel).
A = 3.1416 × 5^2 or 78.54 square inches – the area of the piston[2].

Then $P = \frac{75 \times 1{,}152}{78.54}$ or 1,100 pounds per square inch, the required gauge reading.

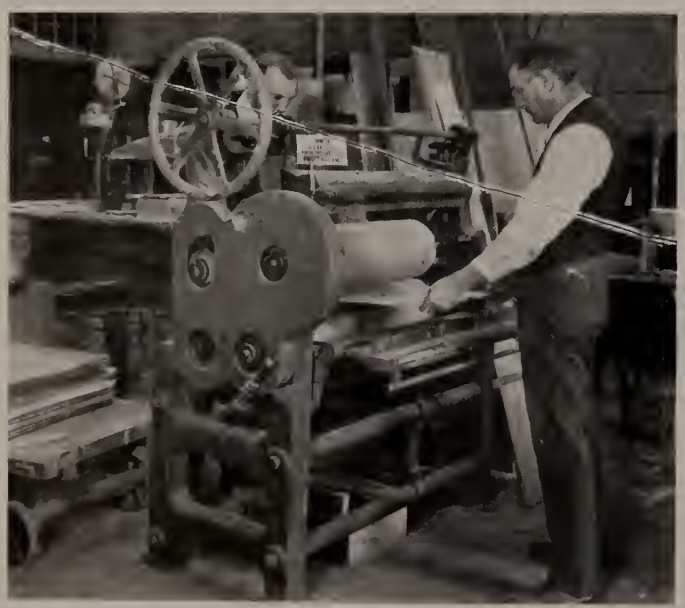
Suppose the operator of the press should use the same gauge reading of 1,100 pounds per square inch in pressing panels 8 inches by 36 inches, what would be the pressure on the panels in pounds per square inch? Here use formula (2)

$$P^1 = \frac{P \times A}{A^1}$$

Here P^1 = pressure actually secured on panel in pounds per square inch.
P = 1,100 pounds per square inch
A = 78.54 square inches
A^1 = 8 inches × 36 inches or 288 square inches

Then $P^1 = \frac{1{,}100 \times 78.54}{288}$, or 300 pounds per square inch, which is four times that used on the larger panels.

The necessity for calculating the required gauge reading for each size panel is thus obvious. A table, showing gauge readings to be used for all sizes of panels manufactured and for the different pressures used, may be computed and placed near the press



Glue spreader in operation.

where the operator can see at a glance the amount of gauge pressure required for every run of panels.

Reducing Moisture Content of Panels

Panels glued with wet glues take up a good deal of moisture and after coming from the press are placed in a kiln for final drying. One of the most successful manufacturers of panels dries them as follows: After leaving the presses, the panels are placed in a drying room having a temperature of about 90°F., and a humidity of from 40 to 45 per cent., with very little air circulation. The panels remain in this room for 3 or 4 days, depending upon their thickness. This firm has had little trouble with warping ,and its panels are exceptionally pliable.

Three-ply panels glued at low moisture content can be dried satisfactorily without particular care to regulate conditions. On the other hand, if the moisture content of the panel directly after pressing is up to 20 per cent. or higher, as a result of the state of the veneer and the type of glue used, conditions in

Type of hand press used in some plants.

the drying room or kiln should be carefully regulated to prevent checking. This means the maintenance of a low temperature and a high humidity. Panels dried to an abnormally low moisture content are, of course, likely to warp.

Method of Gluing Thin Veneer

Gluing thin veneer into a very thin panel of plywood has always been an extremely difficult matter for the manufacturer. The principal cause of trouble has been the excessive swelling of the thin plies due to the absorption of water from the wet glue, which causes overlaps and a considerable amount of wrinkling. A second source of trouble is in the handling of the very thin material when it has been coated with a wet glue, since it is very fragile and easily ruined when handled wet. These two troubles have made the manufacture of extremely thin plywood a very expensive process.

Since the aircraft work has become so intensive, an interest in this very thin plywood has sprung up. To help reduce the cost of such plywood and make more rapid production possible, work was undertaken at the Forest Products Laboratory to overcome the difficulties mentioned. A process was evolved which consists of making a sheet of glue by coating a tissue paper with blood-albumin glue, allowing it to dry and using the coated paper as the glue layer for plywood. The process of making the panel then consists in merely laying up alternately as many sheets of thin veneer and sheets of this glue tissue as may be required to build up the panel desired. These sheets are then pressed in a hot press. The result is a thin panel in which the moisture content has not been changed more than 1 or 2 per cent. This simple method eliminates the troubles resulting from the use of a wet glue, such as overlaps, open joints, and warping and twisting, and also makes the handling of the thin material an easy matter.

[2]The area of a circle is equal to 3.1416 times the square of the radius.

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

THE OHIO VENEER COMPANY

Importers and Manufacturers

Foreign and Domestic Veneers and Hardwood Lumber

We always carry a large and assorted stock of Mahogany, Circassian Walnut, Sawed and Sliced Quartered Oak.

Send us your enquiries and orders. We guarantee good service.

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Located close to the source of supply down in New Orleans, we have an up-to-date, well-equipped mill, exclusively employed in cutting into Lumber and Veneers the fine Mahogany logs our ships bring in direct from the tropics.

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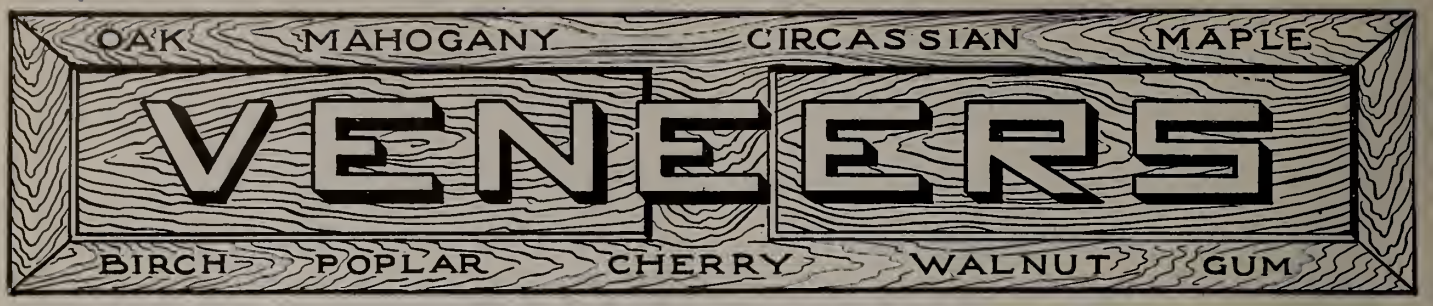
Sawed and Sliced

1635 West Michigan Street - - INDIANAPOLIS, INDIANA



Wood - Mosaic Co.
NEW ALBANY, - - IND.

WALNUT
Lumber ⌁ Dimensions ⌁ Veneers

If you are in the market for anything in Walnut, let us figure with you. We have cut three million feet of Walnut in the last year, and have a good stock of all thicknesses dry. We can also furnish Walnut dimension—**Walnut Veneers.** We have a large stock of veneers, plain, stripe figured and stump wood.

Wood-Mosaic Co., Inc.
NEW ALBANY, - - IND.

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MAHOGANY
Lumber
Plain and Fancy
VENEERS

Mahogany, Walnut
Birch, Ash, Poplar
Rotary, Sliced or Sawed in all Thicknesses

Built up Stock in
Birch and Maple

Send for Samples

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140 Chatham Street, Montreal

QUALITY *SERVICE*

PICKREL VENEER COMPANY, Inc.

MANUFACTURERS OF

American Walnut
Exclusively

Woodruff and River *New Albany, Ind.*

CONTINUOUS SERVICE FOR TWO GENERATIONS

One of our principal competitors recently paid us the compliment of the voluntary statement that our position in the hardwood and veneer trade was the result of never varying from the traditions on which our organization was founded.

Northern Grown Oak

Fifty-two years of making and finishing the right kind of product has resulted in service of that character becoming not only a trade asset and the basis of a National reputation, but a veritable business habit. Our endeavor has for so long been to never deviate from the standards of 100 per cent. excellence as laid down by those who founded this business, that it is practically a matter of impossibility for us to vary the quality of our goods without a complete reorganization over to a high-speed, quantity basis.

American Beauty Walnut

It is recognized by the discriminating trade that our service incorporates not only goods of the highest possible excellence, but thorough understanding of the customer's requirements in order that his share of our always choice selection of goods may be precisely what he prefers.

Our knowledge of customers' needs and our ability to exactly meet those needs, recommend our service to you as a careful and experienced buyer.

HOFFMAN BROS. COMPANY

FORT WAYNE INDIANA

Reg.U.S. HB Pat.Off.

Est. 1862
Inc. 1904

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

Looking Ahead to 1920 Needs

Your need for veneers for the coming year is sure to be large. We can meet your every requirement for Sawed and Rotary Veneers, Poplar Crossbanding and Sheet Stock, Walnut Butts and Longwood, Quartered Oak, etc. Let us give you the service you require.

Write for prices, etc.

W. T. THOMPSON VENEER COMPANY

Edinburgh, Indiana - - U.S.A.

Larger Quarters

In order to meet the demands of our phenomenal business growth, we have moved to our

New Building

at

Nos. 1036 to 1046 West 37th St., Chicago

This is one of the largest and unquestionably the best appointed Veneer Warehouses in the country, having unsurpassed facilities for giving service, with switch track, which permits loading shipments from warehouse right into the cars to any part of the country, via Chicago Junction Ry., thus avoiding congestion and consequent delays at freight depots.

Orders shipped same day received.

We are occupying the entire building, and carry a full and complete stock of veneer in both the plain and figured woods.

VENEER MANUFACTURERS COMPANY

1036 West 37th Street, CHICAGO, Ill.

Western Office, 516 Lumber Exchange, MINNEAPOLIS, MINN. Mills at GLADSTONE, MICHIGAN

The Northwestern Cooperage & Lumber Co., Gladstone, Mich.

THE HOME OF "PEERLESS" STANDARD BRAND PRODUCTS

Manufacturers of

"PEERLESS" ROTARY CUT VENEERS

in Birch, Elm, Basswood, Maple, Ash and Beech for all purposes

Also hoops, liners and staves for manufacture of packages

Also "Peerless" Rock Maple, Beech and Birch flooring; Hemlock lumber; Lath, etc.

"Peerless" products are standard everywhere and you are always exercising Safety First in using them. Try us next time.

(When writing mention Canadian Woodworker)

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

Poplar and Walnut Veneers

We specialize in large size poplar veneers as we have extra fine poplar logs. We can cut veneer up to 10 feet square.

Our walnut veneer cannot be beat, both in plain and figured wood.

Write us for prices.

Central Veneer Company
Winter Ave. and Belt R. R., INDIANAPOLIS, IND.

Sovemanco

Southern Veneer Manufacturing Co., Inc.
LOUISVILLE, KY.

Manufacturers of all kinds of Sawed, Sliced and Rotary-cut **VENEERS**

Carrying a large stock of selected Mahogany, Figured and Plain Walnut, Walnut Butts, Sawed and Sliced Quartered Oak and Sycamore and all other native woods.

1,000,000 Feet Quartered Red Gum to select from

CAN fill rotary-cut gum orders promptly

WE Respectfully solicit your inquiries

In the Rush of Increasing Demand for Veneers

The natural tendency is for manufacturers to strive toward a greater output often at the expense of quality.

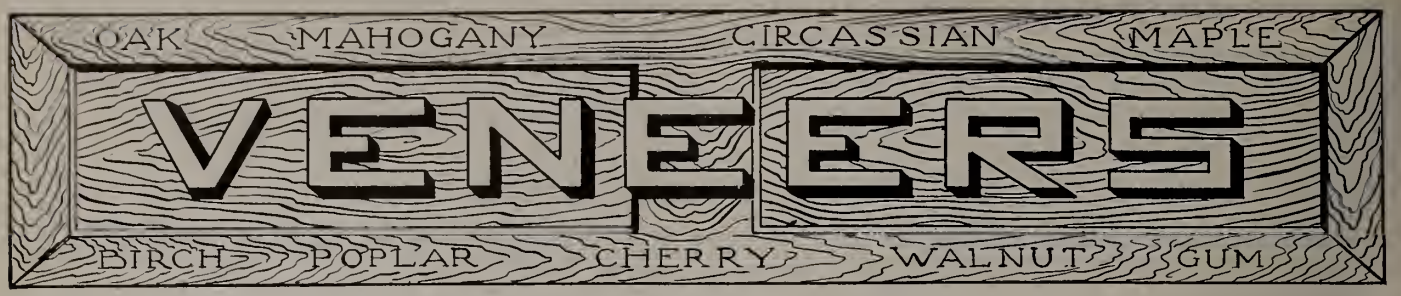
This is a mistake which the Lawrenceburg mills are carefully guarding against and buyers may be sure that in ordering "BATESVILLE QUALITY" Veneer they are getting goods manufactured in strict accordance with that standard of quality maintained for so many years.

Batesville Lumber and Veneer Co.
LAWRENCEBURG, IND.

Superior Quality
Sawed Quartered White Oak Veneer
1/20" and 1/16"
is our "hobby"

And we give SPECIAL SERVICE on L/C/L Orders

Memphis Veneer & Lumber Co.
MEMPHIS, TENN.



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PANELS

Stock Sizes for Immediate Shipment. All Woods. All Thicknesses. 3 and 5 Ply or made to your specifications

VENEERS

5 Million feet for Immediate Shipment

Any Kind of Wood Any Thickness

We are Chicago agents for WOCO FIR PANELS, and carry a full and complete line in all stock sizes and all thicknesses at our Chicago warehouse for immediate shipment.

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We can supply your wants

Milwaukee, Wisconsin

Litton Veneer Co.

Manufacturers

American Walnut, Figured Gum, Sliced Quartered Oak, and all Kinds of Figured Woods

Walnut and Quartered Oak Lumber

Office and Mill

ROCKFORD - ILLINOIS

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Manufacturers of

VENEERS

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LUMBER

22nd St. and So. Crawford Ave.

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Buyers of Veneers and Panels

will find it to their advantage to purchase from the manufacturers and dealers whose advertisements appear in this publication. They are progressive firms—the leaders in the business, which is a guarantee of good service and prompt attention to orders.

Give your business to the man who will spend his time and money to get in touch with you. He deserves it—if his stock and prices are right.

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

P-J SERVICE

One trial means a permanent connection. Give us an opportunity to show you.

VENEERS

Three rotary lathes with a daily production of more than a carload of correctly manufactured veneer, that is dried by mechanical means to any percentage of moisture desired.

LUMBER

Modern band mills at Helena and Penjur, Ark., with a capacity of 75,000 ft. daily of well manufactured lumber that is properly edged and trimmed.

Over 100,000,000 Feet of Choice Standing Timber
DIRECT FROM OUR MILLS TO CONSUMER

PENROD-JURDEN COMPANY

General Offices: Memphis, Tenn.

PENROD WALNUT

Walnut Lumber For Sale

	FAS 6" to 9¾"	FAS 10" & up	Selects	No. 1 Com.	No. 2 Com.
1/2"	20,000	8,000	.....	30,000	5,000
5/8"	25,000	20,000	.....	8,000	3,000
3/4"	30,000	4,200	.....	13,000	3,500
4/4"	40,000	7,000	5,000	35,000	23,500
5/4"	35,000	2,300	2,500	10,000	25,000
6/4"	28,000	4,800	7,500	14,500	22,500
8/4"	21,500	1,500	16,600	23,200	42,500

WRITE US FOR PRICES

We also have everything in Walnut Veneers. Write us for samples and prices.

Penrod Walnut and Veneer Co.

Kansas City, Missouri, U.S.A.

Can You Make a Shearing Test?

Tests That Can be Made to Determine the Comparative Values of Different Glues—Viscosity Forms Reliable Means of Comparison—Shearing Test Shows Up Fake Salesman

By John Welmers

Most every user of glue has at some time or other made or tried to make tests to see what particular advantage one glue had over another, or tried to find the value of different glues by comparison. The methods of testing vary, but regardless of the method every effort put forth is a step nearer the "good glue" goal.

There are glues of different values and various prices on the market, some of which are bargains and again others that would be folly to buy. Generally the glues made by reliable concerns are dependable, but still there is the question of what grade is it, or how much water will it take? It remains for the factory or users of the glue to experiment and find out for themselves all they wish to know about it; so a little information on how the glue user can set up his own standards and buy glue accordingly would not be amiss.

The methods of testing glues are comparatively simple and can be done by most anyone at a very small expense. The tests which are given here apply only to animal glue, with the exception of the adhesive test which can be used for all glues.

Testing For Viscosity

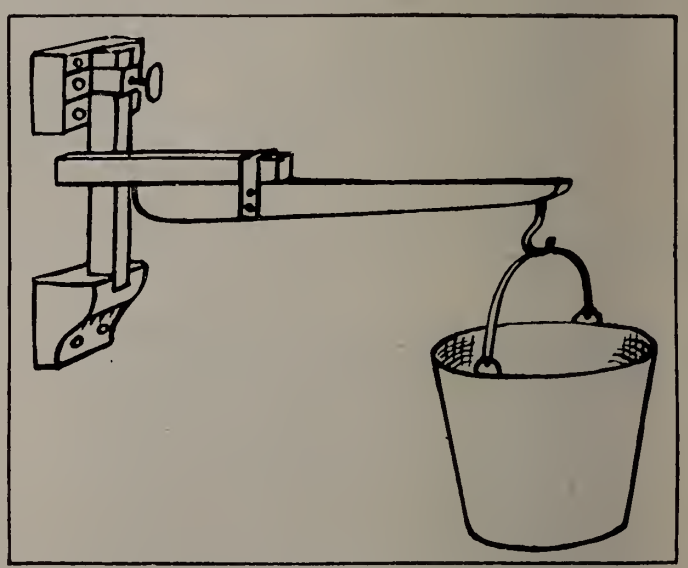
The visosity test is probably the most important test that can be given to animal glue. It is the test which determines the body of the glue, and as the strength of the glue depends largely on the body, it is easy to see why it is of importance. By studying and experimenting with the viscosity test, a chart may be worked up which will show the proper amount of water to mix with the different glues. The viscosity of animal glue is determined by the time a specified amount of the glue of a standard mixture and temperature takes to pass through a standard orifice. The time involved is the measure of its viscosity. A glass tube contracted at one end or a pipette such as will be found at a chemists supply house make good viscosimeters.

In order to make this test, the glue should first be mixed with water, the proper amount is determined by the kind of viscosmeter used. It the hole is small, a greater amount of water is better, while if the hole is large, a smaller amount of water gives good results. For a hole about ⅛ of an inch in diameter, a mixture of 1 part glue to 8 or 10 of water at 140 deg. F. will give a fair test. The glue should be allowed to stand until all the flakes or particles have softened to a spongy mass. It is then placed in hot water When it reaches the proper temperature, the test is made and the results tabulated. The big advantage of this test is that results may be secured quickly, whereas the jelly and adhesive tests require several hours.

Considerable reliance is placed on the jelly test by some, and it does form a very good basis for comparison of the body of different glues. To make this test, the glue is chilled to about 40 deg. F. in cups of standard size, and a round or blunt plunger weighing about 200 grams is placed on the surface of the glue and the distance it penetrates into the jelly is recorded. This measurement is called the jelly test. Any mechanic can make a little rigging which will do the stunt. The best way is to make a pedestal with a ring on the bottom to rest on the surface of the glue. The top of the pedestal may have a hole through which the rod on the plunger runs, and if the rod is marked, the depths may be easily read.

The finger test is frequently used by manufacturers of glue and is quite reliable. This is done by having several jars of the various glues placed on the table, together with jars containing standard samples. Then the glues are pressed with the first and second fingers, the samples matching with the standards are placed in standard groups. Contrary to the opinion of many, this test is very accurate, for the fingers are very sensitive and able to record slightly different densities.

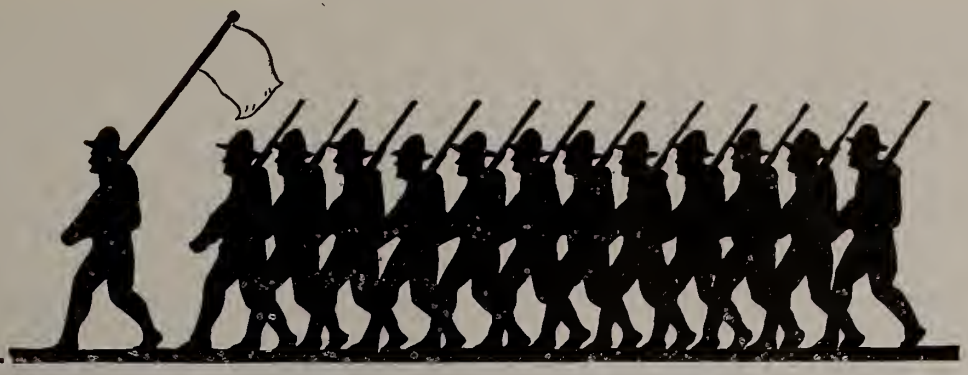
Too much grease in the glue should not be tolerated for grease has no adhesive qualities. A little grease, however, does no perceptible harm. If a small quantity of aniline dye is mixed with some glue and spread on white paper, the grease, if any, will show up in small, white spots. The reason for this is that the grease does not mix with the aniline dye.



Method of making shearing test

Acid or alkaline glue is easily determined by dipping strips of red and blue litmus paper into the glue solution. If the glue is acid the blue litmus paper will turn red, while if it is alkaline, the red litmus paper will turn blue. A natural glue will not change the color of either paper. Preference should be given to a glue which is slightly acid, for it is not quite as favorable a medium for the growth of organisms which cause the glue to decay.

The foam test is made by beating some of the glue remaining from the viscosity test with an egg beater for a certain length of time. The height to



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Toronto Veneer Company Limited

1100-1104 Queen St. West. Toronto, Ontario

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AND LUMBER

Prompt delivery

LONG-KNIGHT LUMBER COMPANY

INDIANAPOLIS, IND.

which the foam rises and the time it takes to subside, form the basis for comparison. A foamy glue is not desirable, for the bubbles get into the joint and cause spaces where there is no adhesive, thus reducing the glued area. A foamy glue is worse when used in a glue spreader, for it receives much greater agitation than if it were spread by hand.

Adhesion Test Not Favored

The adhesive test is the test that appears to be the most important in the eyes of many, but unfortunately, it is the test which is most inaccurate. As yet no system has been devised or made public whereby two joints made identically alike can be sheared or broken by exactly the same tension or exertion. The Forest Products Laboratory has made hundreds of tests with the same glue under identical conditions, to get an average result. It stands to reason if the laboratory with its elaborate testing machines cannot get anything more than an average, how can we with our simple home-made devices expect to get satisfactory results. But if average results amount are worth anything we can probably reap some benefit from our home-made instruments.

The accompanying sketch shows the method I employ and from which I have obtained fairly satisfactory results with all types of glues. The test pieces are made of maple or birch and are one inch square by about seven inches long. These pieces are glued crossing each other, as shown in the sketch, and are tested when thoroughly dry. They are placed in the bracket attached to the wall or post and the beam suspended on the horizontal member. A pail is then placed on the hook and slowly filled with an even stream of water, through a hose attached to a nearby tap. In this way there is absolutely no jarring. A box should be placed under the pail so that there is a space of about one inch for the pail to drop when the joint breaks.

Calculating The Breaking Strain

When the joint gives away the pail and water should be weighed and the result multiplied by the number of inches the hook is from the joint (in this case it is fifteen inches) to give the approximate strain on the joint. At least a half a dozen tests should be made to secure good results. This test is properly termed a shear test and is more fair than gluing two pieces together end to end. In the former the exertion is pretty well equalized over the one square inch, while in the latter the upper half is under tension and the lower half is under compression.

Of all the different tests in my estimation that for viscosity is the best and most accurate one from which to form a basis for buying animal glue, for if the same glue is tested under identical conditions, the results should always be the same. It is important, when buying glue, to test not only the sample, but also the lot that is purchased on the merits of the sample, to see that both are alike.

Recently an agent wanted to sell us some dope to mix with our vegetable glue. He claimed it would not only strengthen the glue but also cheapen it, for it would take a greater quantity or water. We tried the sample and tested both the sample and the regular stock on the outfit shown in the illustration and found that the joints of the new sample broke at about one-half the exertion that the regular stock did. Needless to say we turned the agent down.

Advantages of Redrying Veneers

One of the best practices in connection with the veneer industry is that of redrying the stock before using it. This not only insures having stock dry at the time of using but even though stock has been dried previously the redrying of it helps reduce the tendency to swell and shrink. Many times the user thinks his stock is dry when it contains enough moisture to cause trouble if used as it is.

Take, for example, flat stock that has been thoroughly dried, then shipped in and piled down flat in a basement or some storage room. This flat stock takes considerable moistures from the air on damp days. On dry days some of the moisture from the outside is given off again, but that which has found its way to the inside of the pile stays there. In fact, veneer that is flat piled and weighted down to straighten out the wrinkles, no matter how thoroughly it may have been dried primarily, will soon take in enough moisture to cause trouble unless it is redried before using.

Another good reason is that often veneer, like lumber, though it may come to the factory presumably kiln-dried or thoroughly air-dried, is too often not really dry; it needs the redrying process as a matter of safety and insurance.

Another good service rendered by the redrier is the flattening out of stock that has wrinkled in the proces of drying. It is almost imposible to thoroughly dry veneer except in some of the patent driers without wrinkles. These can be flattened out and made smooth by a trip through the redrier.

Working Thin Veneers

Thin plywood, made of two or three tissue-like sheets of veneer, is suggested by the Forest Products Laboratory, Madison, Wisconsin, as a material apparently having many possible applications. The new product is extremely light, strong, and flexible. It shrinks and swells very little with changes of moisture, and will withstand long continued soaking in hot or cold water. It can readily be made fire-resistant. Cloth, paper or wire screen may be combined with the veneer to increase toughness and resistance to tearing, and the plies may be arranged with their grains running at any angle, to give the plywood more strength in a particular direction.

A method of manufacturing extremely thin plywood has been worked out by the laboratory and will be explained in detail to anyone upon request.

On account of its fragility, thin veneer is difficult to glue with wet glue by the ordinary methods. It cannot be run through a glue spreader without first being reinforced. If the glue is spread by hand, the veneer absorbs water and swells excessively, producing wrinkles and poor joints. Large sheets of thin veneer, which are wet and heavy with glue, are almost impossible to handle without tearing.

The method of gluing developed by the laboratory avoids all such difficulties. The glue used is of the blood-albumen type. Instead of being spread directly on the veneer, it is spread on sheets of tissue paper. After the coated tissue is dry it is inserted between the sheets of veneer, and the joint is made in a hot press. The practicability of this process has been demonstrated by the manufacture of several thousand feet or thin plywood from 1-20-inch veneer.

As smooth as
Miladys' Face ∞
N.B. Quality
Sliced Figured Gum Veneer

NICKEY BROTHERS, INC.

MEMPHIS, TENN.

TRADE MARK
NICKEY BROTHERS INC
LUMBER VENEERS
NB
NONE BETTER
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An Emblem of Dependability—

Write for Samples and Prices

ON account of its rich color, beautiful figure and general air of elegance, Figured Red Gum has won for itself a unique position. It is the only light colored wood that is classed with the dark woods in the aristocracy of fine cabinet veneer.

The most discriminating purchasers of veneer for fine productions, find, through experience, that Figured Red Gum which carries the N. B. Quality mark, may always be relied upon for all of the essential elements in this beautiful wood.

A handsome panel, 5-ply, finished natural, 14 x 22, made from N. B. Quality Figured Red Gum, will be sent free on request.

Concentrate Your Purchases and Save Money

Through Buying

Sliced Figured Red Gum and Rotary Cut Gum Veneer
Sawed and Sliced Ash, Poplar and Gum Grand Piano Rims
Sawed and Sliced Quartered Oak

In Cars with Band Sawed Hardwood Lumber

Carload buyers get closer prices, save freight on local shipments, and eliminate damaged goods.

NICKEY BROTHERS, INC.

MEMPHIS, TENNESSEE

Why You Should Use Thin Veneers

In Addition to Saving of Wood Effected the Glue Holds the Thinner Stock to Better Advantage

The popular idea that veneer is cut thin to economize in wood is correct; but it does not cover the entire matter. There are other reasons which when pointed out, should be readily understood by those conversant with veneer and its uses, even though they may not be so clear to a layman. One reason why face veneer is thin is because it will hold and stay put better than if it is in thick sheets. Take as an example a job in fine matched, crotch mahogany. If a job of this kind were made in veneer 1/8 inch thick the chances are it would not be so good a job after finishing as if made with a sheet of veneer 1/30 inch thick.

The reason is that the glue with which the joint is made will hold the thinner face veneer more firmly, and thus prevent shrinking and distortion which might result in open joints. There is room for some argument on this point, but in the main it all sums up in this: A thin sheet of fine face veneer is held by the glue with exactly the same power that the same glue will hold a thicker sheet. In taking up moisture during the gluing process and in drying out afterward, which causes swelling and shrinking, the thicker sheet, being a heavier body, will not only take in more moisture, but it will exert more pressure in various directions, and generally as a result will develop more cracks and checks in the finished face than if thin veneer is used.

There is a point here for those to consider who are prone to kick about veneer being so thin that it sands through on the face and gives trouble generally. You will usually find, that the finest faces in veneer are made of very thin stock, and this is not altogether because of a desire to economize in timber, making the fancy figured wood cover as much surface as possible. Saving wood and getting more figure is one object but not the only one in making veneer thin. Most of the figured wood gets its figure because of distortion in grain, and, because of this distortion it has very poor structural qualities, therefore. thickness would add little to the strength. Finely figured veneer is a face product and can be kept in better shape if cut very thin.

In the cutting of common veneer for centres and backs, the matter of thickness is governed by other factors, but even there a general tendency toward thinner work is seen, because it is found that bulk is not always an advantage. However, it is in the cross-banding and face veneer that we have the real thin stock and it is here also that we have the question of why veneer is cut thin.

Some arguments may be adduced for and against the use of thin cross-banding, but perhaps the best evidence of quality in thinness within certain limitations is found in the fact that the experienced veneer workers are to-day using thinner cross-bandings than were used some years ago. Formerly 1/16 inch cross-banding was used but to-day, it is used 1/20 inch or even thinner. Here, as in the case with the face veneer, is an evident advantage aside from the saving of wood, otherwise the more experienced users would not be adopting this thin cross-banding.—Hardwood Record.

Three Ply Wanted in Australia

An Australian importer who annually handles large quantities of three-ply material, has written the Canadian Trade Commissioner at Melbourne, Aus., as follows:

"We have had considerable experience with 3-ply timbers for many years past, and we find that 72-inch by 36-inch by 1/8-inch and 3/16-inch are the most suitable sizes, and we feel sure that if the Canadian manufacturers can make a cheap 3-ply in these sizes, either in cottonwood or any other cheap timber, that considerable business could be done in this country.

"We might mention that we have for some years past been handling the cottonwood 3-ply from Canada, but have not been able to get sufficient supplies at reasonable prices. nor have we been able to get the sizes which we mention, as our suppliers insisted on us taking a range of sizes of 60-inch by 36-inch to 66-inch by 42-inch. While we have found these sizes not altogether unsuitable, cannot too strongly recommend you to impress upon your manufacturers the necessity of quoting for the particular size asked for, that is 72-inch by 36-inch, and if they are prepared to do this, we would be able to handle some millions of feet each year.

"Regarding quality we understand that the cottonwood 3-ply is manufactured in four grades, and we find that the third and fourth grades are the most suitable here, because the price is more reasonable than the higher grades."

Serious Shortage of Veneer Logs

At the meeting of the Veneer and Panel Manufacturers' Association, recently held in Chicago, a number of veneer manufacturers spoke on the seriousness of the log situation. It transpired that certain mills were forced to suspend operations, while others had sufficient logs on hand to last for periods up to sixty days. Taken as a group it was estimated that the veneer manufacturers had about two months' work ahead. Not only are logs hard to obtain, but unheard of prices are being asked. In certain districts poplar suitable for veneers has been quoted at $100 per M. in the log, with gum at $90.00 and choice oak at $125 per M. Even in districts where logs were comparatively plentiful high prices prevailed.

Abounding Prosperity in Canada

Having completed a tour of Canada as far as the Pacific coast, which included twenty-seven cities, after an absence of eight years, Harrison Watson, Canadian Trade Commissioner, and senior of the commissioners in England, on the eve of returning, said he was greatly struck with the great prosperity of the country as a whole. In fact, this very prosperity. said Mr. Watson, rather hindered the promotion of Canadian export trade to Great Britain, for he had come across manufacturers who had been eager to get orders from Britain a year ago, to-day regretting having accepted them, as they found they could command higher prices here.

A sanding belt works best when it has a cushion under it. A sanding belt lasts twice as long when it is worked so it can give under any undue pressure.

In estimating how long a sanding belt will last, its length and width should be taken into consideration.

Brief Review of 1919 Lumber Market

Figures Showing Comparative Stocks and the Enhanced Values of the Various Hardwoods—Latest Carload Quotations on the Chicago Market

As far as hardwood lumber was concerned, the year 1919 was one of surprises. The buyers, who early in the year figured on abundant stocks and decreasing prices, suddenly awoke to the fact that the available supply of manufactured hardwoods was not sufficient to meet the demand and that prices were soaring rapidly. This condition exists even to-day, so that we find that on certain items, such as gum and oak, the quotations are still climbing.

The statistical department of the American Hardwood Manufacturers' Association have prepared a series of charts which show the fluctuations in prices and stocks on hand for the past season. The following figures pertaining to the different woods were taken from these charts. The prices are figured on the Cincinnati basis:

Stocks and Prices of Oak

The stock of quartered red oak on hand in January, 1919, totalled 3,688,000 ft. In July this had been reduced to 1,626,000 ft., while in November it had increased to 3,080,000 ft. At the same time the price of F.A.S. increased from $76.00 to $204.00. No. 2 common and better, from $60.00 to $173.00; No. 1 common, from $52.00 to $156.00; No. 2 Common, from $36.00 to $65.00. Plain red oak stock in January, 54,560,000 ft., and in November, 1919, 57,779,000 ft. The price varied during that period from $71.00 to $134.00 for F.A.S., $46.00 to $103.00 for No. 1 Common; $45.00 to $87.00 for 2 common and better, $34.00 to $63.00 for No. 2 common. Quartered white oak, stock January, 1919, 11,942,000 ft. November, 11,078,000 ft. Price of quartered F.A.S. increased from $108.00 to $256.00; No. 2 common and better, from $86.00 to $201.00; No. 1 common, from $75.00 to $174.00; No. 2 common, from $43.00 to $94.00. Plain white oak stock, January, 1919, 104,222,000 ft.; November, 1919, 55,873,000 ft. Quotations increased from $66.00 to $146.00 for F.A.S., $41.00 to $99.00 for No. 1 common, $39.00 to $86.00 for No. 2 common and better, $31.00 to $66.00 for No. 2 common.

Changes in the Gum Market

The stocks of plain and quartered red gum were not included, but the prices increased from $52.00 to $166.00 for quartered F.A.S., $48.00 to $129.00 for plain F.A.S., $41.00 to $132.00 for No. 1 common quartered, $40.00 to $101.00 for No. 1 common plain, and from $38.00 to $62.00 for No. 2 common plain.

The sap gum stocks were reduced from 138,488,000 to 89,042,000 ft. in November and prices increased from $51.00 to $92.00 for wide box boards, $46.00 to $79.00 for narrow box boards, $35.00 to $69.00 for F.A.S., $29.00 to $53.00 for No. 1 common, $27.00 to $35.00 for No. 2 common.

Figures Covering Other Woods

The stocks of ash show a marked depletion. In January, 1918, they stood at 16,025,000! They had been reduced to 8,860,000 ft. by November, 1919. The price on F.A.S. rose from $93.00 to $177.00; on No. 1 common from $76.00 to $128.06, and on No. 2 common from $42.00 to $56.00.

Chestnut stocks stood at 33,969,000 ft. in January, 1919, and increased to 36,600,000 ft. in April, and then declined to 29,506,000 ft. in November. F.A.S. prices rose from $56.00 to $97.00, No. 1 common from $40.00 to $71.00, No. 3 common and better from $36.00 to $52.00, and sound wormy from $36.00 to $48.00.

A similar situation exists with regard to poplar. The stock in January, 1919, was 30,835,000 ft. This was increased to 32,435,000 ft. in March, and dwindled to 26,950,000 ft. in November. Prices increased from $86.00 to $134.00 on F.A.S., from $60.00 to $78.00 on No. 1 common, and from $44.00 to $51.00 in the case of No. 2 common.

Recent Chicago Quotations

A price list recently issued in Chicago gives the following quotations for carload lots on the Chicago market: Quartered white oak, 1 in., 1st and 2nd, $300.00; quartered red oak, 1 in., 1st and 2nd, $250.00; plain white oak, 1 in., 1st and 2nd, $180.00; plain red oak, 1 in., 1st and 2nd, $175.00; red birch, 1 in., 1st and 2nd, $165.00; unselected birch, 1 in., 1st and 2nd, $150.00; red gum, 1 in., 1st and 2nd, $175.00; sap gum, 1 in., 1st and 2nd, $100.00; yellow pine, 1 in., B. & B., $115.00

Conditions Governing European Demand for Hardwoods

Mr. N. B. Mitchell, representing the Gayoso Lumber Company, of Memphis, Tenn., has just returned home on the Steamer Lapland after an extended trip in the interests of his company to the United Kingdom, and various countries on the Continent, including France, Belgium and Holland.

Upon being interviewed, Mr. Mitchell states that he found conditions at the present very chaotic. The British Isles have been flooded with large consignments of hardwoods by exporters, who were willing to take a long chance, and this in connection with the fact that there has been a decided fall in pounds sterling, and an unwillingness on the part of the English buyers to take the risk of exchange, makes conditions so far as immediate business is concerned practically impossible.

On the Continent, and especially in Belgium, he found conditions quite different. Belgium has no large stocks of hardwoods and is really in need of large amounts of building material, but with francs around 8.45 the Belgians find it practically impossible to purchase on anything like a large scale. The Belgians express themselves as being hopeful that their financial condition will be greatly benefited by the recent visit of King Albert to the United States, as it is rumored that their king expected to make certain arrangements while here which would better their finances.

On the whole it is Mr. Mitchell's impression that as soon as the present congested conditions are relieved in the British Isles and a better rate of exchange is to be had, there and on the Continent, it will be possible to do a large and profitable business in Southern hardwoods.

We Are Doing Everything Possible To Meet Demand
Supply and demand for hardwoods are equally beyond human control. The causes are obvious to the experienced. May we state though that while even our vast organization has fallen short of complete success in meeting the issue, we are doing everything humanly possible to speed up; we are even enlarging our facilities in order to more fully live up to our reputation as
Exponents of the Golden Rule in Business.
Anderson-Tully Co.
MEMPHIS,
TENN.

News of the Trade

The Otto Higel Co., Limited, Toronto, are installing a new dry kiln.

John H. Hughes, Stayner, Ont., recently purchased an Elliot Combination Woodworker.

The Nelson Lumber Manufacturing Co., Nelson, B.C., are constructing a new woodworking factory.

Chesley Chair Co., Limited, Chesley, Ont., are in the market for a two spindle horizontal boring machine.

Incorporation papers were recently taken out by the Northern Box Co., Ltd., Edmonton, Alta., capital $20,000.

Dominion Glass Co., Limited, Hamilton, Ont., are erecting a one-storey brick building 60 x 80, to be used as a box factory.

R. Truax & Sons, Walkerton, Ont., are erecting a sash and door factory and are in the market for the necessary equipment.

Batts Ltd., West Toronto, are planning on building an 80-foot addition to their plant. This will be used as a cutting-up room.

The plant of the Wilkin Co., Limited, Adamsville, P.Q., hub manufacturers, was completely destroyed by fire. Will probably rebuild.

The Sheppard & Gill Lumber Co., Drayton Ave., Toronto, contemplate the erection of a new planing mill and woodworking factory.

The Summerland Lumber Co., Summerland, B.C., recently purchased a site, with trackage, for the purpose of erecting a box factory.

The Valley City Seating Co., Limited, Dundas, Ont., have secured the contract for the desks for the House of Commons building at Ottawa.

The Phonola Company of Canada, Limited, Kitchener, Ont., manufacturers of phonographs and records, are moving their head office to Eimira, Ont.

A large number of patterns and some machines were badly damaged by a fire which occurred in the pattern shop of the Katie Foundry Co., Galt, Ont.

A new saw factory is to be erected on Granville Island, Vancouver, B.C., a permit having been taken out by T. H. Tait, manager of the Aetna Saw Works.

Wm. Dawe & Sons, Bay Roberts, Newfoundland, have installed a veneer manufacturing plant and are producing veneers in various grades and thicknesses.

The planing mill of the McKinney Lumber Co., Woodstock, Ont., was recently destroyed by fire. The loss is $25,000, and is partially covered by insurance.

The Office Furniture & Supplies Co., Limited, Brockville, Ont., are making changes in their plant that will enable them to double their present output.

The Baetz Bros. Specialty Co., Ltd., Kitchener, Ont., manufacturers of parlor and table lamps and other specialties, are moving their plant to larger quarters.

C. F. Smith, Harrow, Ont., contemplates erecting and equipping a new planing mill. It is not anticipated that this work will be undertaken before the spring.

The McDonald Mfg. Co., Carlyle, Ont., are manufacturing a line of wooden toys. They report that they have not been able to supply the demand for their product.

P. E. D'Anjou & Fils, Ltd., Rimouski, P.Q., has been formed with a capital of $399,900, to deal in wood, and to establish shops for repairing and manufacturing wood.

D. S. Lawson, 119 Board of Trade Bldg., Montreal, is desirous of getting in touch with any Canadian firms who are interested in exporting their products to Belgium.

H. Leir, Penticton, B.C., is planning on erecting a box factory in the near future. It is anticipated that the new plant will be in operation in time to take care of the demand for fruit boxes during the coming sesaon.

The new box factory, plant No. 2, of the B. C. Manufacturing Co., New Westminster, B.C., will have double the capacity of the plant now in operation. It is anticipated that this factory will be running early in the spring.

Recent Toronto registrations include the American Phonograph Co., the Brilliant Phonograph Corporation, the Davies Toy Mfg. Co., and the Reliable Show Case & Store Fixture Co.

The Potvin Box Co., Blind River, Ont., have taken over the building formerly occupied by the White Pine Lumber Co., and are remodelling it to suit their requirements.

The Aerial Transport & Taxi Co., Ltd., Winnipeg, Man., have been incorporated to manufacture and deal in aeroplanes, and to engage in commercial flying of all kinds. Capital $75,000.

The Ivey Storage Batteries Ltd., Toronto, Ont., have been incorporated to manufacture and deal in storage batteries. Capital $500,000. P. D. Ivey and A. M. Ivey are two of the incorporators.

The Norton Company of Canada, Limited, Hamilton, Ont., have been incorporated to manufacture and deal in abrasives, grinding wheels and all articles of abrasive material. Capital $500,000.

The Gray Furniture Co., Ltd., Neustadt, Ont., has been incorporated to manufacture and deal in furniture of all kinds. Capital $25,000. J. C. Heuther and W. Heuther are among the incorporators.

W. Lee, Aylmer, Ont., has purchased the planing mill formerly conducted by H. Z. Balcom, and intends to convert it into a plant for manufacturing kitchen cabinets and other forms of woodenware.

The Harris Wood Products Co., Ltd., Toronto, have been incorporated to carry on a general woodworking business. Capital $100,000. J. F. Lucas and C. A. St. C. McKay are among the incorporators.

The E. B. Eddy Co., Limited, Hull, P.Q., have put a 43½ hour week into effect. In addition wages have been increased so that while fewer hours are being worked the employees will receive more money.

McKechnie Music Co., Ltd., Ottawa, Ont., have been incorporated to manufacture and deal in musical instruments of all kinds and to take over the business now known as the McKechnie Music Co. Capital $40,000.

The Esmond Co., Ltd., Adamsville, P.Q., have been incorporated to manufacture and deal in handles and other wood products, and to take over the business of the Esmond Co., Adamsville, P.Q. Capital $20,000.

The Shaw Baby Carriage Specialists, Vancouver, B.C., dealers and manufacturers in baby carriages and similar lines, recently erected a factory at West Burnaby, B. C. Operations will commence in the near future.

Lumber is not the only commodity increasing rapidly in price at the present time. During the last few months ground wood pulp has jumped from $26 a ton to $50, an advance of nearly 100 per cent., and the end is not yet.

The Peterboro Paper Box Co., Ltd., Peterboro, Ont., have been incorporated to manufacture and deal in boxes of wood, paper and fibre. Capital $50,000. G. M. Gordon and J. A. O'Brien, of Peterboro, are two of the incorporators.

The Coulter Wood Products, Limited, Hamilon, On., have been incorporated to manufacture and deal in wood products of all kinds and to take over the planing mill and business in Hamilton conducted by W. P. Couter. Capital $50,000.

The Hall & Brown Woodworking Machine Co., St. Louis, Mo., have issued a very useful 1920 wall calendar. The illustrations found on each leaf give an idea of the completeness of the line of equipment manufactured by this firm.

Canada Box & Lumber Co., Quebec, P.Q., has been incorporated to manufacture and deal in wood boxes and all other articles made of wood. Capital $49,000. L. J. Conway and H. R. Van, of Quebec, are two of the incorporators.

The Palmer & Parker Company, Boston, Mass., wholesale lumber and veneers, have issued an attractive and useful wall calendar. The figures are large and easily distinguished. It is just the calendar a busy man wants for his office.

The B. C. Industrial Commission has granted a loan of $15,000 to the Western Toy & Furniture Mfg. Co., Ltd., Vancouver, B.C. This company was recently formed by twenty returned soldiers, who were eager to get in busi-

Accurate Costs

You can only secure cost control by using International Job Time Recorders. That will prevent what is possibly the greatest leak in your business, namely, difference between your productive labor and non-productive labor.

You will make more real money and secure larger dividends from an investment in our Job Time Recorders than anything else you can buy in the way of factory equipment today.

We are selling these recorders in lots of from one to fifty at a time, by telephone, by telegraph, and by mail. If it pays others, it will pay you. Why not be influenced by successful firms, thousands of which use our Cost Recorders.

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See facsimile of Job Card illustrated at the right.

E	Elapsed Time	CLOCK RECORD
2	2.2	S 15 9.2
		B 15 7.0
	1.9	S 15 11.1
		B 15 9.2
	.9	S 15 12.0
		B 15 11.1
	3.4	S 15 15.4
		B 15 12.0
	.6	S 15 16.0
		B 15 15.4

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ness for themselves. They raiseed $14,500 in eash, which, together with the $15,000 advaneed by the government, will be used for equipping a plant and putting the eompany on a producing basis.

The building of cooperage in Prince Rupert is a probability in the near future. It is the intention to lease the sash and door faetory whieh has been elosed down for several years and which was started by the late C. D. Band, of Vaneouver.

A new basket factory is to be established in Thessalon, Ont., in the near future. Mr. Asam, who has been operating a small faetory near Roek Lake, Ont., has aequired the site of the old Gordon Mill in Thessalon, and will erect a suitable faetory.

The W. F. Vilas Co., Limited, Cowansville, P.Q., have been incorporated to manufacture and deal in furniture, sehool and offiee desks and fixtures and wood products of all kinds. Capital $500,000. H. F. Vilas, Cowansville, is one of the ineorporators.

The Dominion Lumber & Building Co., Orillia, Ont., recently ereeted a new factory whieh is fully equipped to take care of milling in transit, resawing and the manufaeture of sash, doors, interior trim and hardwood flooring. J. J. Wilson is manager.

The Peerless Phonographs Ltd., Toronto, Ont., have been ineorporated to manufaeture and deal in phonographs, talking maehines and all form of musieal instruments; capital $40,000. M. Crabtree and J. Parker, barristers-at-law, are two of the ineorporators.

The I. X. L. Manufaeturing Co., Ltd., Palmerston, Ont., have been granted a charter to manufacture and deal in lumber, woodenware, and any article made of wood. Capital $40,000. J. Youngson and C. Forrest, of Palmerston, are among the ineorporators.

The Wiarton Furniture Co., Ltd., Wiarton, Ont., have been ineorporated to manufaeture and deal in furniture, eabinets, store and offiee fittings, sash and doors and wood produets of all kinds. Capital $200,000. G. E. Reekin and C. Hill are two of the ineorporators.

The Safepaek Mills, Boston, Mass., have issued a booklet entitled "How to Build a Box," which deseribes the different forms of boxes and tells how boxes should be construeted to give a maximum of serviee and safety. Copies may be had from the above mentioned firm.

The Offiee Speeialty Mfg. Co., Newmarket, Ont., has taken over the building known as the New Royal Hotel, and is remodelling it for offiees. When the alterations are complete these offiees will be utilized by the company instead of the offiees at the plant, as at present.

Garloek-Walker Maehinery Limited, Toronto, was recently ineorporated with a eapital of $500,000, to manufacture and deal in maehinery and equipment of all kinds and to take over and earry on the business now known as the Garloek-Walker Maehinery Co., Limited, Toronto.

La Compagnie de Meubles Canadienne, Ltd., has been ineorporated to deal in every deseription of wood and manufaeture sawn lumber; to operate planing, saw and pulp mills; and to manufacture doors, sashes, and furniture. The capital is $99,000, and the head office in Quebec city.

Recent Montreal registrations inelude the Pratte Pianos Co., of Montreal, Limited, the Ineomparable Phone Cabinet, the Canadian Sehool Furniture Co., Etherbridge Bros., manufacturers of toys and furniture, Clement, Meunier & Co., show ease manufaeturers, and the St. Lawrenee Box Co.

The Casualties Reed & Rattan Co., Limited, Kingston, Ont., who were recently ineorporated, with a eapital of $40,000, have about completed their factory and will be producing a eomplete line of reed, rattan and fibre furniture, including baby earriages and novelties, in the near future.

The Megantie Broom Mfg. Co., Limited, Lake Megantic, P.Q., are eutting 1,500,000 feet of hardwood this winter. This stock will be used in the manufaeture of clothes pins. The present daily production of their plant is 50 doz. brooms, 400 veneer cheese boxes and 1200 gross of elothes pins.

The Sehool Board of Victoria, B.C., have purchased the following equipment from the Canadian Puget Sound Timber & Lumber Co., of that eity, a band saw with motor, a rip saw and an 11 ft. jointer. These maehines, whieh were used in the box plant of the C. P. S. mill, will be installed in the technieal sehool which is being established in Victoria.

The Sherloek, Manning Co., of London, Ont., have practieally eompleted arrangements for the purehase of the plant and business of the Doherty Piano Co., of Clinton, Ont. It is not antieipated that any ehanges will be made in the Clinton plant, but the two faetories will be operated under one management.

It is understood that a eontrolling interest in the Harriston Furniture Co., Harriston, Ont., has been purehased by Lieut. George Zeigler and E. L. Zeigler. Lieut. Zeigler, who served overseas, has been manager of the Bank of Nova Seotia at Brigden, while E. L. Zeigler is viee-president of the Waterloo Furniture Co., Limited, Waterloo, Ont.

The Curtiss Aeroplanes & Motors, Limited, Toronto, who have been manufaeturing a line of phonographs in their plant on Dufferin St., are vaeating these premises. They plan to continue the manufaeture of phonographs and will equip a new plant, the loeation of whieh is not definitely deeided on. It is likely that a definite announcement will be made in the near future.

Firstbrook Bros., Limited, Toronto, Ont., are ereeting and equipping a box faetory at Thessalon, Ont. The factory is nearing eompletion and the maehinery will be installed at an early date. This plant will manufacture about 8,000,000 feet to 10,000,000 feet of lumber into box shooks annually. W. R. Benson, superintendent of the Toronto and Penetang plants, is looking after the new braneh.

The Listowel braneh of the Karn-Morris Piano Co., which was recently taken over by a new organization, has been put into operation. About 25 hands are employed at present and the number is being rapidly increased. It is expeeted that this plant will be operated to capaeity inside of a month. A. E. Windsor is manager. Additions to the plant and equipment are contemplated.

The Toronto Speeialty Mfg. Co. of Toronto have aequired the plant in Brandford, Ont., formerly operated by Watsons Ltd. It is their intention to fit up this plant to manufaeture their line of reed baby earriages and doll earriages and other forms of reed furniture. The equipment required is already installed in this plant with the exception of a dowel maehine, whieh may be added in the near future.

The building of the lumber manufacturing and dry kiln plant adjaeent to the drydoek site at Prinee Rupert has now reaehed a point that will enable operations to start within a few weeks. Approximately $86,000 has been expended on the plant to date, and the total outlay will amount to $150,000 when eompleted. Major Cowper-Young, formerly assoeiated with the Imperial Munitions Board, is head of the new enterprise.

The employees of the Hespeler Furniture Co., Hespeler, Ont., were reeently entertained in the showrooms of the eompany. A Christmas tree was in evidenee and gifts were distributed to all present, the men reeeiving a box of cigars, while the women were given a box of chocolates. In addition suitable gifts were distributed among the children present. About 400 were entertained and a very pleasant evening was spent.

A. Barthelmas and J. E. Hoare, of the Ceeilian Piano Co., are negotiating to aequire the plant of the Karn-Morris Piano Co., Woodstoek, Ont. An option has been taken on this plant and a proposition made to the City Council of Woodstoek, asking for a loan of $28,000 to refit the plant. A by-law to this effeet will be plaeed before the ratepayers, and, if earried, the plant will in all probability be in operation in the near future. The new eoncern will be known as the Karn Manufacturing Company.

A eompany known as the Golf Mfg. Co., has been organized to manufaeture golf shafts. They have seeured a contraet from an English house for a large number of these shafts, in the rough. The plant, which ineludes a speeial automatie lathe and swing cut-off and rip saw, was purehased from A. R. Williams Maehinery Co., and will, in all probability, be loeated in Peterboro. As soon as an adequate supply of hickory is assured, additional equipment will be added. They expect to eommenee manufaeturing about the end of January.

Shipbuilding appears to be very brisk in Nova Seotia, the following firms having boats under eonstruetion:—W. R. Huntley & Son, Parrsboro, N.S., a four-masted sehooner; J. W. Kirkpatriek, Parrsboro, N.S., has laid the keel of a four-masted vessel. O. A. Hamm, Mahone, N.S., is completing one vessel and will immediately start work on another. The McLean Construction Co., of Mahone, N.S., have com-

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General Offices
GREENWOOD, MISSISSIPPI,
U.S.A.

We are not ashamed of our lumber as it goes through your factory—every board is branded—we are proud of it.

This brand is your GUARANTEE and our mutual PROTECTION.

Manufacturers Exclusively

BAND MILLS:

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menced the construction of a freighting vessel. The Ernst Shipbuilding Co., Mahone, N.S., and the Bridgewater Shipping Co., Bridgewater, N.S., are each building a fishing vessel. J. N. Rafuse & Sons are building a schooner at Salmon River, N.S.

Personal

Jos. Kenehan, Jr., carriage manufacturer, Montreal, P. Q., recently passed away in that city.

Wm. Robertson, of Toronto, British Columbia Lumber Commissioner for the East, spent a few days in Montreal lately, calling upon the trade.

C. W. Bell, Ingersoll, Ont., recently passed away. He was widely known throughout Western Ontario and at one time operated a large planing mill.

Frank A. Kent, managing director of Seaman, Kent Co., Limited, Toronto, manufacturers of hardwood flooring, etc., is around again after his recent illness.

Olaf Nerby, superintendent of the Wilson Box Factory, St. John, N.B., was recently presented with a very fine smoking set by the employees of the factory.

George A. Christopher, Ingersoll, Ont., recently passed away in his 88th year. He was engaged in the contracting business and for a long period operated a planing mill.

G. Lippert, C. Baetz and A. Schrieter, furniture manufacturers, of Kitchener, were the recipients of civic honors in the recent elections, having been elected to the city council.

James C. Scott recently passed away in Toronto. Mr. Scott was a well-known Toronto woodworker, having founded the general woodworking business known as J. C. Scott & Co., some forty years ago.

M. Uhrig has resigned his position as finishing room foreman at the Walkerton plant of the Knechtel Furniture Co., and has taken a similar position with Krug Bros. & Co., Limited, Chesley, Ont.

D. Yager, one of the foremen in the Listowel plant of the Andrew Malcolm Furniture Co., was recently given a pleasant surprise when the men in his department presented him with a pair of gold cuff links and a Masonic watch fob.

Prior to his departure on a trip to England, H. A. Grimsdick, managing director of the Bell Piano & Organ Co., Limited, Guelph, Ont., was presented with a cane and smoking set by the employees of the company. Mrs. Grimsdick and their son Master Derek were also remembered. In expressing his thanks, Mr. Grimsdick referred to the excellent progress made by the Bell Company during the last few years.

Exhibition of Timber and Timber Products

The British Trade Commissioners in Canada have been notified by the Department of Overseas Trade of the British Government that the Department are organizing an Exhibition of Timbers grown within the British Empire to take place in London from the 5th day of July to 17th, 1920.

The classification embraces: (a) Specimens of Timber (polished and unpolished); (b) Exhibits demonstrating the various uses to which timbers are put, viz:—floors, panelling, staircases, furniture, ply wood, and other articles of every day use; (c) Wood pulp.

The main object of the Exhibition is to bring prominently before architects, inspectors, firms who have to specify timbers in their contracts, as well as the users and consumers of timbers, the full range of Imperial grown timbers and especially those timbers which up to the present are only very slightly, if at all, known in this country, and at the same time to demonstrate the chief uses for which such timbers are suitable.

A catalogue will be issued giving full particulars of all exhibits displayed, and in order to arrive at uniformity in the compilation of this work it is suggested that at least the following information should be inserted:—

(a) A short concise statement regarding each kind of timber exhibited, showing the size in which it is usually obtainable, and the purposes for which it is specially suited; also giving the following particulars, viz—
1. Weight in lbs. per cubic foot.
2. The result of tests carried out with regard to; Tension ,compression, both with and across the grain, Detrusion, Modulus of Rupture, Modulus of Elasticity, Fire Resistence.

(b) A list of the shippers of the various kinds of timber in each of the Dominions.

(c) A list of importers and large timber merchants in the United Kingdom who would be prepared to supply the various timbers to users in this country.

It is hoped that the Catalogue will not only be useful to visitors to the Exhibition but will in future serve as a book of reference on all commercial timbers grown within the British Empire.

The British Trade Commissioners in Canada are as follows:—G. T. Milne, O.B.E., 367 Beaver Hall Square, Montreal; F. W. Field, 260 Confederation Life Building, Toronto; and L. B. Beale, 610 Electric Railway Chambers, Winnipeg.

Tasteful Calendar for 1920

The Canadian Woodworker is in receipt of a beautiful calendar, compliments of the Laidlaw Bale-Tie Co., Limited, Hamilton, Ont. The scene depicted shows Pocahantas, the daughter of an Indian chief, being brought captive to Jamestown. It is an incident closely connected with the fortunes of the Virginia colony of early English settlers, and the artist has made the most of his subject. The body of the calendar lists the products of this firm, which include wire nails, staples, wire barrel hoops, bale ties for box shooks, etc., and wire of all kinds for mattress manufacturers, brush and broom makers, etc.

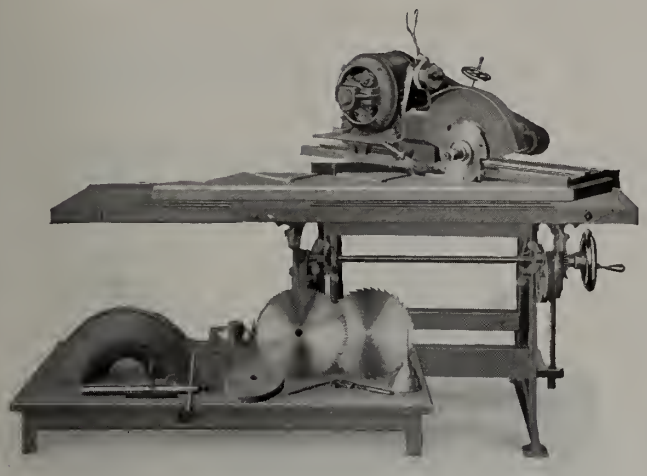
Will Some Reader Help?

A firm of cigar box manufacturers in Montreal want suggestions for the profitable working of the waste lumber produced in manufacturing their line. This material which is approximately ½ in. wide ⅛ in. thick and from 3 to 5 feet long, consists of basswood, spruce, cottonwood and cedar.

The publishers of this journal will be very grateful to any reader who will send in a practical suggestion.

Gentlemen, the demands that some of the radicals are making cannot be satisfied with increased wages, for they demand nothing less than turning industry over to them. There is no justification for that kind of partnership, for the only kind that is successful in business is that which is earned and paid for.—Chas. Piez, President of Link-Belt Co.

A leading business man said the other day there was nothing more discouraging than a competitor financially embarrassed—no, nothing, except being financially embarassed yourself.



ELLIOT WOODWORKER. (Made in Canada)

The Elliot Woodworker

Will Save You a Quarter of Your Labor and Material Cost by Efficient Operation.

Elliot Woodworkers will give you perfect service for cutting Joist, foot plumb and side cuts of Jack and common Rafters, use up cuttings for bridging, make all your drawers, cupboard doors, door and window frames, house out stair-stringers, dado, groove, miter, bore and run mouldings. Transportable and easy to operate.

Elliot Woodworkers operate from the ordinary lighting circuit or any electric power.

Let us send you further particulars regarding the merits of these machines.

The Elliot Machinery Co. Limited

Belleville - Ontario

The first round of 1920

Buy Hardwoods

We offer the following:

60 M′ 4/4″ No. 3 Com. and Btr. Birch

25 M′ 12/4″ Birch Hearts

5 M′ 8/4″ No. 2 C. & B. Soft Maple
(Only small percent No. 2 Com.)

1 Car 8/4 Black Ash.

1 Car as follows:—

4 M′ 5/4″ No. 1 Com. & Btr. Basswood

5 M′ 6/4″ No. 1 Com. & Btr. Basswood

5 M′ 8/4″ No. 1 Com. & Btr. Basswood
Largely No. 2 Com.

60 M′ 4/4″ No. 2 Com. & Btr. Basswood
Guaranteed not over 25% No. 2 Com.
Good width.

1 Car 1″ No. 2 Com. & Btr. Hard Maple.

1 " 1″ No. 2 Com. & Btr. Soft Maple.

1 " 1″ Hardwood Siding.

Above all Dry.

Canadian General Lumber Company, Limited

712 Bank of Hamilton Bldg.
TORONTO

MONTREAL OFFICE: 203 McGill Bldg.

Selling Graves, Bigwood & Co.'s Lumber, Lath and Box Shooks

No. 3 Self Contained Scroll Saw

Colladay Machine Works

Successors to

Jos. O. Colladay Co., Inc.

Manufacturers of a complete line of woodworking machinery

Since 1867 Philadelphia, Pa.

Greater Production with Less Experienced Help

The No. 370 Drum Sander is so simple and accident proof that any boy or girl can feed and take away with absolute safety.

Write for descriptive bulletin.

Patented May 6, 1919

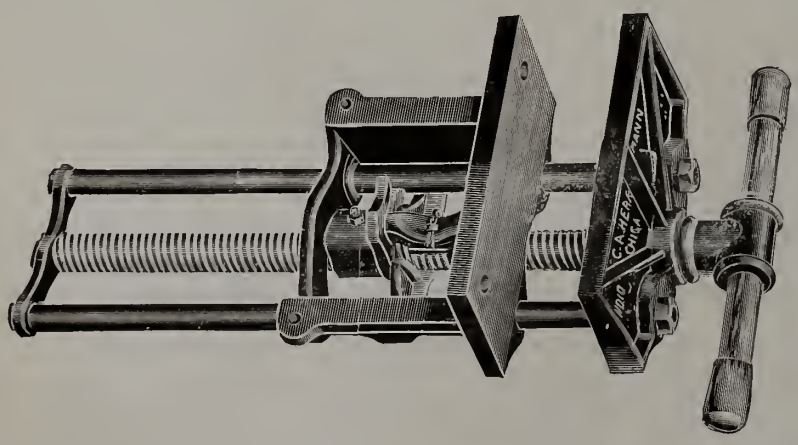
The patented RUBBER PADS used for the bed of this sander are decidedly an improvement and are used in large quantities on every make of Endless Bed Sander. Ask for sample.

Solem Machine Company

ROCKFORD, ILL., U. S. A.

A simple twist of the wrist locks or unlocks this master vise

The Herriman Master Vise



Unparallelled in the rapid action and grip. Unmatchable in the performance of its work.

Time and Labor Cut ½ or Better.

SAVE YOURS

One feature alone is worth more to you than its entire cost in the saving in operating time over any other vise made.

The fact that this vice **need not** be "screw set" or "screw loosened" is the reason of its adoption in all efficiently operated plants.

Exclusive Distributors for the Herriman Master Vises

The O. E. JOHNSON COMPANY

1223 W. Washington Boulevard, - CHICAGO, Illinois.

WORLD'S LARGEST

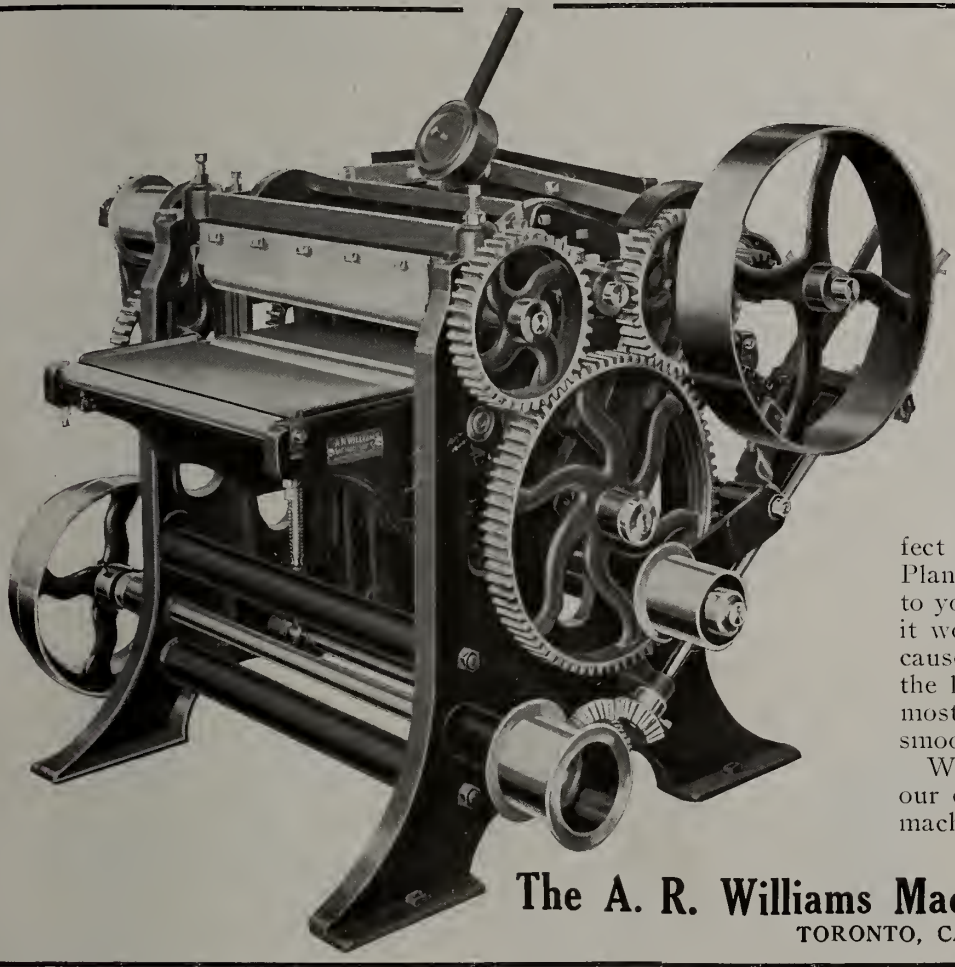
COMMERCIAL BODY PLANT

Like many others, sends **repeat orders** for

THE STANDARD DRY KILN

based on their past experience in drying the many kinds and thicknesses of lumber used in their product. Its flexibility for all conditions makes it the choice of the man who investigates. Ask for our catalogue and make your own comparisons. Address

THE STANDARD DRY KILN CO., 1542 McCarty St., Indianapolis, Ind., U. S. A.



A Record Service by

The "Eclipse"

SURFACE PLANER

With a record of over 2,000 in actual use and giving full satisfaction and perfect results the "Eclipse" Surface Planer is bound to be of interest to you. For the furniture factory it would be an ideal machine because of its ability to produce the highest grade of planing and most suitable where very thin, smooth work is required.

Write us for full particulars on our entire line of woodworking machinery of all descriptions.

The A. R. Williams Machinery Co., Limited
TORONTO, CANADA

OVER 10,500 PLANTS

including woodworking plants, pattern shops, as well as cabinet and carpenter shops, housing projects, etc., have adopted the "Wallace Idea"; they take the machines to the work instead of the work to the machines. They have thereby eliminated foot work, saved hand work and have made a tremendous cut in their costs, and have greatly speeded production. It would pay you to investigate this idea thoroughly."

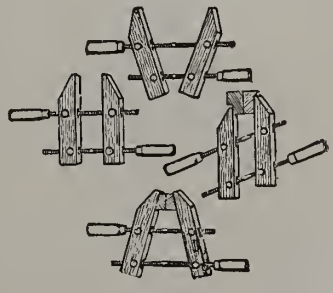
J. D. WALLACE & COMPANY
1414 JACKSON BLVD., CHICAGO, ILL.

Canadian Representatives:
Geo. F. Foss Machinery & Supply Company.
Canadian General Electric Company.

Adjustable Clamp Company

216 N. Jefferson St., Chicago, U.S.A.

Manufacturers of the



"JORGENSEN"

the Original Adjustable Steel Spindle Clamp

Adjustable to any position. Well made to give the service. Efficient in every way they are bound to win your approval.

If you cannot buy them from your Jobber write us direct.

FOR SALE

Single Surfacer, 28 inch, Whitney pattern, in good condition. Will sell cheap. Box 67, Canadian Woodworker. t.f.

WANTED

Machine Woodworking Foreman, capable of setting up any woodworking machines. State references and wages expected. Box 73, Canadian Woodworker.

WANTED

Cabinet Makers. Good wages and steady employment.

The S. Hadley Lumber Co., Ltd.,
1 Chatham, Ont.

WANTED

Bookkeeper and Assistant Bookkeeper for our veneer plant. Knowledge of cost accounting and stenography required. Give age, experience and salary wanted.

BIRDS EYE VENEER COMPANY,
1 Escanaba, Mich.

FOR SALE

Machinery and equipment for complete woodworking plant. A-1 condition and attractive prices. Office furniture, time clocks, cost recorders, draughting table, spray outfits, compressed air rubbers, electric motors and drills, sheet steel, copper, cable.

Curtiss Aeroplanes & Motors, Ltd.
1 **163 Dufferin Street, Toronto**

FOR SALE
Special Bargain

To anyone interested in manufacturing Hardwood Flooring.

No. 610 — "C.M.C." Heavy Hardwood Gang Edging and Ripping Saw, Machine all complete with full equipment and including both front and rear tables — Used only three weeks. Equal to new.

The regular price for this machine now is $1200.00, and to immediate purchaser we will sell at extremely low price of $550.00 F.O.B. Cars Montreal.

Apply:—

Williams & Wilson, Ltd.,
84 Inspector Street,
Montreal Que.

Blower Wanted

18 in. to 20 in. intake. Fully describe same.

T. H. HANCOCK,
1372 Bloor St. West,
1 Toronto, Ont.

For Sale

We have the under-mentioned used woodworking machines, all equivalent to new, and for immediate order will accept the following very low prices:—

1—No. 303 C.M.C. very heavy 10" Four-Sided Moulder. Price, $1,100.00.
1—Cowan 10" Four-Sided Moulder. Price, $650.00.
1—No. 313 C.M.C. 6" Four-Sided Moulder. Price, $425.00.
1—American Heavy 4" Four-Sided Moulder. Price, $400.00.
1—No. 638 C.M.C. Saw Table. ... Price, $145.00.
1—No. 620 C.M.C. Saw Table. Price, $200.00.
1—No. 616 C.M.C. Saw Table. Price, $350.00.
1—Yates 48" "Royal Invincible" Three Drum Sander, Roll Feed, just like new. Price, $1,500.00.

The above prices are F.O.B. cars Montreal.

We will gladly send descriptive circular and any other information upon request.

WILLIAMS & WILSON, LTD.,
84 Inspector St.,
Montreal, Que.

Trend of Machine Wood-working

In the present trend of machine woodworking there is a noticeable current of drift toward the producing of finished parts at the saw mills and central assembling points in the timber territory, and shipping them to the original factory for assembling and finishing. This seems partly due to the passing of the timber supply in the older manufacturing territory, calling for a long freight haul on the raw material, and partly to specializing in the making of various items.

Chair stock and furniture parts especially, are now being made and shipped in the white to central assembling plants, whereas a quarter of a century ago these parts were in the main made at one central factory from standard lumber stock and a small percentage of special dimension sizes. If the present tendency keeps up we will soon be to the point where most of our machine wood-working of the factory class will be in the making of parts as a distinct and specialized business.

PETRIE'S
LIST
of NEW and USED
WOOD TOOLS
FOR IMMEDIATE DELIVERY

Wood Lathes
20" Sidney, "Famous."
16" x 12' American, patternmakers.

Wood Planers
26" Double surfacer, divided rolls.
24" Champion planers and matchers, moulding attachment (2).
24" Galt, planer and matcher.
24" Hermance, double surfacer.
24" MacGregor-Gourlay.
24" Sidney, "Famous," single surfacer.
24" Pony planer.
24" Crescent, single surfacer.
12" Petrie buzz planers, with safety heads (4).

Band Saws
36" Famous, pedestal.
36" Jackson-Cochrane, pedestal.
32" Famous, pedestal.
30" Cowan, bracket.
30" Ideal, pedestal.
60" Fay & Egan, band re-saw.

Saw Tables
No. 16 Famous, variety.
No. 4 Famous, combination.
MacGregor Gourlay railway cut-off.
No. 1 Greenlee automatic cross-cut.
Galt, iron frame, cut-off.
Iron frame, power feed, rip.
7' Williams, swing saw.

Mortisers
Cowan, upright, power.
Galt upright, compound table.
No. 2 Osborne-Baker, foot power.

Moulders
13" Clark-Demill four-side.
12" Woods four-side, inside.
10" Goldie & McCulloch, three side.
10" Houston, four-side.
8" Dundas four-side.
6" McGregor-Gourlay, three side.
6" Dundas sash sticker.

Boring Machines
No. 100 Clark-Demill, post borer.
No. 7 Sidney, Famous, belt driven.
Gear driven, post borer.
Fay, single spindle, horizontal.
Jardine, hub boring machine.
No. 2 Bechtels, hub borer.

Sawmill Machinery
No. 1 Sawyer-Massey, portable sawmil
Boss, automatic, shingle machine.
Vaughan, gasoline driven, drag saw.
Champion, friction, drag saw.

Miscellaneous
No. 1 Ballantine power feed dowel machine.
Fay & Egan 12 spindle dovetailer.
MacGregor Gourlay 12 spindle dovetailer.
M 120 Cowan, panel raiser.
30" Whitney, wood scraper.
20" American, wood scraper.
6" British-American, hand floor scraper.
Dundas, wood frame tenon machine.
Fay, iron frame, double head, tenon machine
No. 3 Defiance, rim & felloe rounder.
No. 1 Defiance, axle shaper.
No. 1 Defiance, spoke driver.

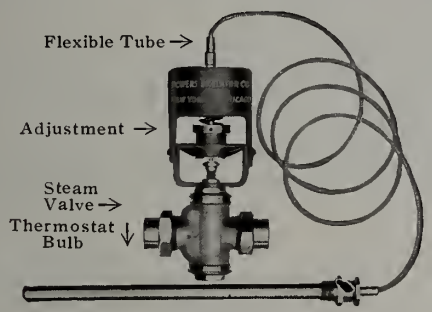
Ask to see our large stock of used supplies—belting, pulleys, machine shop equipment, mill supplies, pipe and fittings., etc. Most of this material is as good as new, and can be bought at greatly reduced prices.

H. W. PETRIE, LTD.
Front St. W., Toronto, Ont.

Reduce Your Fuel Costs

Right now is the time to make every lump of coal do its full duty. Utmost fuel economy is assured by equipping all your dry kilns, glue kettles, varnish rooms, dry rooms, hot water tanks, etc., with

Powers Heat Regulators



Powers Regulator No. 11

Our No. 11 Regulator is entirely self-contained, requiring no outside power for operation. Automatic, reliable and accurate. Peculiarly adapted to the control of liquid temperatures, in hot water tanks, glue kettles, acid baths, etc.

Our Bulletin 138 tells all about it. Sent on request.

It is Economical

A Powers Regulator saves fuel and material by allowing only **necessary** heat to be used on the job. That insures a coal saving. No material ruined by **overheating** or **underheating**. The Powers Regulator never forgets nor procrastinates. It does what it is set to do and does it every time.

It Standardizes Results

"Powers" uniformity in temperature insures uniformity in your product. You can know what your results are to be—no frail mortal's memory is depended upon.

Your Plant Needs Powers Service

All the work in your plant where heat is a factor, should be under Powers control. It is automatic, efficient, economical.

Consult Us

Our experience of more than thirty years in heat regulation is at your service. During that time we have gathered facts that are vital to your business. Write us freely; ask us as many questions as you wish, and we will give you accurate information and intelligent advice.

Act Now

The Canadian Powers Regulator Co.

Limited

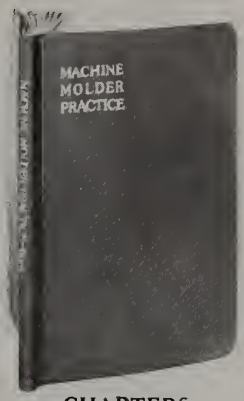
Specialists in Automatic Heat Control

82 Chestnut Street - Toronto, Ont.

"It isn't the size of your plant—It's how you use what you've got."

(1060)

Just who is interested in this new book



MACHINE MOLDER PRACTICE

CHAPTERS

The Alignment of a Molder
Setting Up a Molder
Planning Set-ups and Selecting Knives
Balancing Molder Knives
Making Under-Cuts and Dovetail Grooves
The Use of Special Guides and Forms
Special Surfacing and Milling Knives
Running Molding Face-Down
Braces and Knives for Heavy Work
Making Moldings in Multiples
Miscellaneous Molder Work
High-Speed Molder Work
Knife Making
Babbitting High-Speed Bearings
Belting and Installing Molders
Molding Shapes

The Molderman—Because he can find in it the best methods practiced by expert moldermen in plants working all kinds of patterns. Will increase his efficiency.

The Foreman—Who sometimes is called on to operate or set-up the molder can get suggestions to cut down his time spent at the machine.

The Superintendent—Being responsible for production, this book will enable him to find out if maximum results are being obtained, that no loss is suffered by poorly maintained equipment or injudicious handling of stock.

The Owner—Can get an idea from each chapter and see if applied to his own class of work whether production can be speeded and good lumber saved.

The Machinery Salesman—Can get acquainted with the molder in a practical way—know what he is selling and offer helpful suggestions to the trade.

The Apprentice—Can save several years' time required to learn what can be learned from this book in a week.

Every Woodworker—Can become a more all-around man if he knows more about the molder and molder work.

160 Pages, 100 Illustrations.

Flexible Red Leather Binding. $2.50 Postpaid. Remit by Money Order.

PRACTICAL BOOKS CO., Box 372, Indianapolis, Ind.

"Has Lowered the Cost of Our Production"

That's what one of our customers in Texas says about the H. & B. No. 147 Hollow Chisel Mortiser—the vertical, hollow-chisel, foot-lever feed machine for general use in both hard and soft wood that has made good in practical, every-day service in some of the best equipped mills and factories in the country and is recommended by users for big production of quality work at low cost.

No. 147 Hollow Chisel Mortiser

makes cuts of any size, length, shape or depth within its capacity and leaves the sides and corners clean and true and bottom square, requiring no hand-finishing. Takes chisels up to ¾-in. square and mortises up to 3½ inches deep, exact depth being adjustable at will. Either belt or motor-belt drive. Plain or compound table.

Stroke of spindle 3½ inches—depth can be regulated to exact point desired by means of adjustable stop. It's a machine that merits investigation.

Get all the facts—write for prices and circular.

Hall & Brown Wood Working Machine Co.

Home Office and Factory, 1913 to 1933 N. Broadway

SAINT LOUIS, U.S.A.

Improved Glue Heater

No heat controllers or other safety guards are necessary with this heater, **because it cannot injure glue.** It's simple, substantially made of copper and costs less than any other.

Let us tell you more about it.

We make any size desired.

Cincinnati Glue Heater Company
Cincinnati, Ohio

THE ARMY, THE NAVY
and hundreds of your competitors are using

CASCO Waterproof Glue

More than a Million Pounds Used in Aircraft During the War

If you are a manufacturer using hide glue or any other adhesive, let us show you how to use CASCO which is

STRONGER, CHEAPER, WATERPROOF

For laying veneer, for joints, for laying tile or linoleum over cement, for all purposes which require glue, and many purposes for which ordinary glue cannot be used

SAMPLE ON REQUEST

MANUFACTURED BY

The Casein Manufacturing Co.
15 PARK ROW NEW YORK CITY

NOTE—Send for Casco Red Book. It contains much valuable technical information.

For Better Work at Less Cost Use Carborundum Brand

Garnet Paper
and
Cloth Products

Every roll, sheet, strip and belt, clean fast cutting, long lived, wonderfully flexible and uniformly coated with hard, sharp, pure Garnet.

A large and most complete stock from which immediate shipment can be made is carried by

NORMAN MACDONALD
62 & 64 TEMPERANCE ST. - TORONTO

From Mahogany Tops to Wagon Spokes— From Hair Brushes to Door Panels

IT doesn't make a bit of difference what the sanding condition is there is a Carborundum Brand Garnet Paper or Cloth to meet it.

Clean-cutting, uniformly coated paper and cloth that your sanders can depend upon.

Everything that goes into their making is of the highest possible quality—the glue, the backing, the North River garnet. Then, too, we know how garnet paper and cloth should be made to meet the widely varied conditions—to show economy, to keep up the standards of finish. You can trust your sanding to Carborundum Brand Garnet Products.

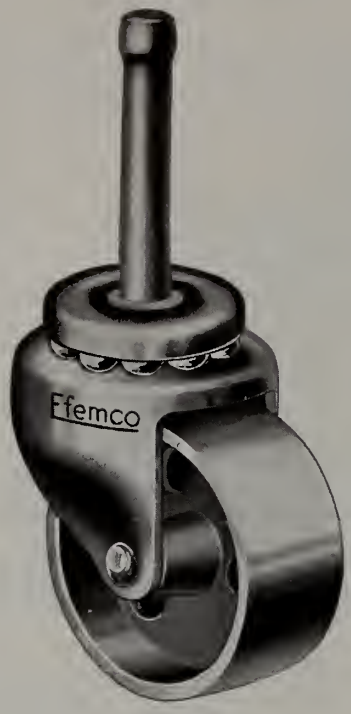
Glad at any time to work with you in making your good sanders better sanders

The Carborundum Company

Niagara Falls, N. Y.

Grand Rapids Cincinnati New York Boston Cleveland Detroit
Milwaukee Philadelphia Pittsburgh Chicago

An Efemco Product



QUICK SALES

This Acme Ball Bearing Caster is one of the best selling items in the Efemco Line. Made with every regard for good looks and staunch durability, it perfectly meets the requirements of furniture makers and all caster users.

To examine this caster is to buy it. To use it is to continue to use it. Its ball bearing action is lastingly dependable and it always rolls and swivels easily. Thoroughly maintains Foster, Merriam standards, so well established during 84 years of manufacturing experience.

Sizes three, four, five, six, seven and eight. Send for our catalog and "Special" Folder showing our new lines of improved Efemco *Casters.*

FOSTER, MERRIAM & CO.

Meriden, Conn. Hamilton, Ontario New York City

Efemco PRODUCTS

Grip Neck Casters
Ball Bearing Casters
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Truck Casters
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Piston Rings
Cast Aluminum Ware
Grey Iron Castings

Standardized by 84 years of service

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Perkins Vegetable Glue

PERKINS
183
Trade Mark

Is recognized nationally and abroad, as the stamp of

QUALITY

It is the SUPER-QUALITY of Perkins 183 and our exclusive FORMULA that makes it supreme.

Let us figure on your requirements for 1920

Process and Product Patents covering Perkins Glue were granted July 2nd and March 19th, 1912, and have been held valid and infringed by United States Circuit Court of Appeals. Corresponding Letters Patent Granted in Canada.

Perkins Glue Company

Factory & General Offices:
Lansdale, Pennsylvania

Sales Offices:
South Bend, Indiana

Vegetable Glues

Do you know that VEGETABLE GLUES may be made in all the varying qualities found in ANIMAL GLUES, such as HIDE GLUE, BONE GLUE, GELATINE, etc., each class having its special and widely different qualities according to the purpose for which it is to be used?

If, therefore, you are interested in the question of the use of ANIMAL or VEGETABLE GLUES, of any kind in industrial work, we ask you to communicate with us, advise us of your exact wants, both in the matter of character of work and cost limits, and we will supply you with JUST WHAT YOU WANT.

Remember that there is NOT ONLY ONE quality of vegetable glue, but just as many grades as in animal glue, and that the selection and use of a vegetable glue requires the same care and knowledge as the use of an animal glue.

Only with a knowledge of this fact can you secure the ideal product for your line of work, or reduce its cost to a minimum.

Let us have your inquiry, if interested in the subject, and an opportunity to PROVE TO YOU that we can serve you to better advantage to yourselves both in the matter of cost and excellence of work turned out, than any one else now engaged in this field of research and application.

We only ask your inquiry and an opportunity, AT OUR EXPENSE AND COST, to demonstrate to you that we understand our business in every detail and can make it to your interest to deal with us.

We operate under our own patents and guarantee full protection to all users of our Glues.

Write today to

Victor G. Bloede Co.

P. O. Station "D"

Baltimore, Md.

The Message of Prosperity Year -- 1920

NAPCO WATERPROOF GLUE

No wastage

Applied cold—and mixed cold

Profitable in its saving

Consistent in all grades of work

Odorless in the glue room

NAPCO is absolutely uniform. It eliminates waste, is easily applied, is impervious to water, and never lets go.

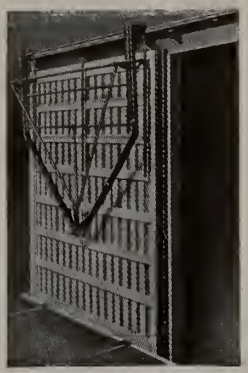
NAPCO joints are as strong as the wood.

H. LEFEBER

Lewis Building, Montreal, Que.

SOLE AGENT FOR CANADA

The Door Carrier System



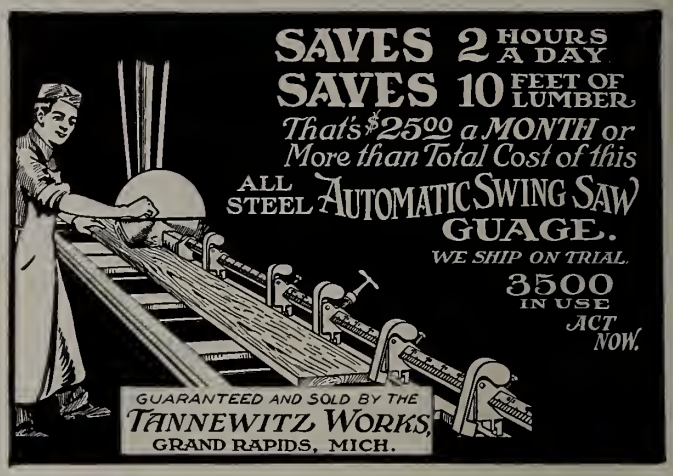
Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

Ask for catalogue.

DRY KILN DOOR CARRIER CO.

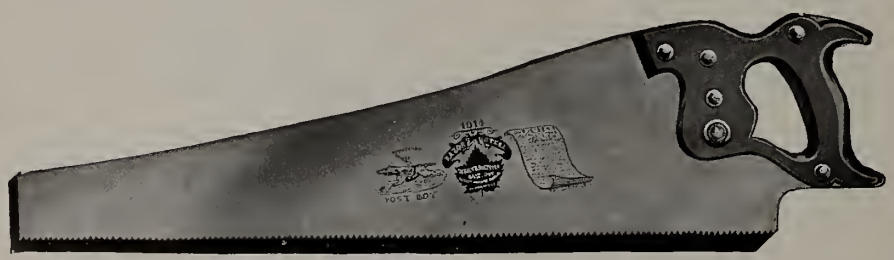
1117 Cornell Ave.
INDIANAPOLIS, IND.


SAVES 2 HOURS A DAY
SAVES 10 FEET OF LUMBER
That's $25.00 a MONTH or More than Total Cost of this
ALL STEEL AUTOMATIC SWING SAW GUAGE.
WE SHIP ON TRIAL.
3500 IN USE
ACT NOW.
GUARANTEED AND SOLD BY THE
TANNEWITZ WORKS
GRAND RAPIDS, MICH.

The Same Dependability

Another of the Famous

MAPLE LEAF SAWS



For almost half a century Maple Leaf Saws have been establishing a greater reputation for reliability in quality and service. From the heavy saws for heavy work to the light saws for the finest work Maple Leaf Saws are daily giving the utmost of satisfaction. The illustration shows the Maple Leaf Hand Saw, a sturdy, well built saw with the saw steel continuing through the handle as an assurance against the breakage of the handle. Made with the care and skill characteristic of all Maple Leaf saws—you'll appreciate the merits of this saw.

Write for a copy of our catalog today.

Shurly-Dietrich Co., Limited

Vancouver, B. C. GALT, ONTARIO Ottawa Ont.

The Peter Hay Knife Co., Ltd.

Manufacture the Best

PLANER KNIVES and CUTTERS

OF ALL DESCRIPTION

The Peter Hay Knife Co., Limited

GALT, ONTARIO

NAILS AND WIRE

For Every Need in the Woodworking Industry

Bale ties, Nails and Wire of every description are manufactured by us. We manufacture to your order.

Laidlaw Bale-Tie Co., Ltd.

A. T. Diggins, Toronto, Ont. H. E. O. Bull, Montreal, Que.
Harry F. Moulden & Sons, Winnipeg, Man.

Head Office and Works: HAMILTON, CANADA

HIGH LABOR COSTS

are giving you as much worry as they are giving us. We can show you how to ***reduce*** them by driving ***seven*** screws in the time formerly occupied in driving four.

Read below what one large furniture manufacturer said about our screws to one of his competiors.

See That Square Hole? ↓

See That Square Hole? ↓

Robertson Patented Socket Head Wood Screws

We are in receipt of your letter of the 17th in reference to the Robertson screw. We were rather backward in trying to make ourselves believe that this screw is as good as the old slot screw, but we have entirely changed and are now using the socket head screw exclusively. It would surprise you how many more screws of this make the workman can drive than of the old style. You will make no mistake in using their screws altogether.

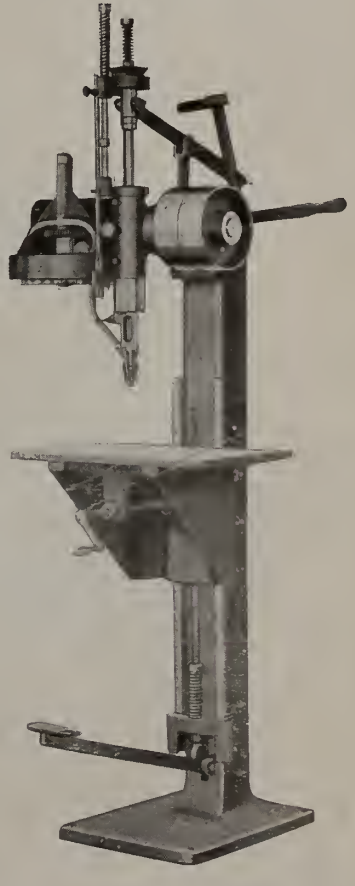
WE MAKE AND SUPPLY FREE WITH FIRST ORDER BITS FOR USE IN REYNOLDS MACHINE OR ANY OTHER TYPE DRIVER.

P. L. Robertson Mfg. Co., Ltd.

Milton - - - Ontario

Machine Driven Screws have Greater Holding Power

The holding power of a screw properly driven with a revolving motion has been proven practically twice as strong as the hammer driven screw. Reynolds Automatic Magazine Fed Screw Driving Machine will drive your screws the entire length, drive them securely, quickly and neatly. The simplicity of these machines will enable your newest hand to become an expert operator with very little practice.



Eliminate Excessive Cost with the Magazine Feed

The speed and accuracy of the Automatic Magazine Fed Screw Driving Machines will assist greatly for greater production and the elimination of excessive costs.

The magazine feed feature of the Reynolds Automatic Screw Driving Machines is a feature that will enable you to drive more screws with less expense. The screws are simply dumped into the magazine and automatically driven to hold.

Write us for further particulars.

The Reynolds Machine Co.

Department "C"

Massillon, Ohio, U.S.A.

Fibre

First Quality Material for Fibre and Upholstered Furniture Manufacturers

Good Furniture is Only Made From Good Materials, Well Selected Carefully Handled and Inspected

In selecting your Fibre Cord and stakes for Fibre Furniture you can secure no better material than that which we produce. Our Cord is carefully watched throughout the entire process of manufacture and kept uniform in strength. It is giving perfect satisfaction.

Our Uniflax Seaming Cord for Upholstered furniture is unexcelled. It serves the purpose perfectly and lasts indefinitely. Prices for these materials are commensurate with the quality and are withal very reasonable.

GRAND RAPIDS FIBRE CORD COMPANY

1101-1157 Elizabeth Ave. **Grand Rapids, Michigan**

SIMONDS SAWS AND KNIVES

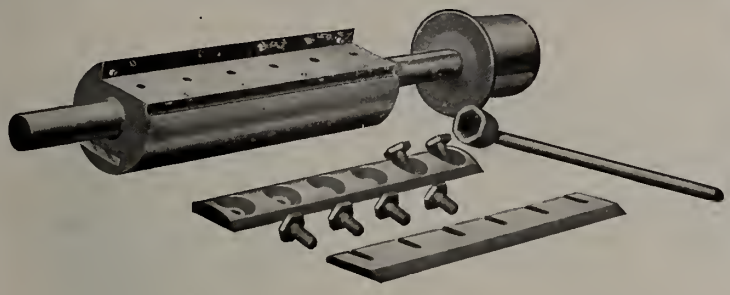
The woodworkers' friend. They are satisfactory and guarantee the best results. Made of Simonds Special Crucible Steel, they are evenly tempered, uniform in construction and have the cutting qualities.

We make all kinds of Saws and Knives for either wood or metal cutting

SIMONDS CANADA SAW CO., Limited

St. Remi Street and Acorn Ave.

VANCOUVER **MONTREAL, Que.** ST. JOHN, N.B.



PROTECTION—

Safety First! How often have we heard or seen this phrase, yet daily, yes, and oftener, accidents are occurring. Silver's Round Safety Cylinder will protect the operators of any of our new jointers from needless injury. They are greatly appreciated by the operators of these machines and they help wonderfully to increase production. Write us for descriptive matter regarding our complete line of machinery that will interest you.

The Silver Mfg. Co. Box 370 **Salem, Ohio, U.S.A.**

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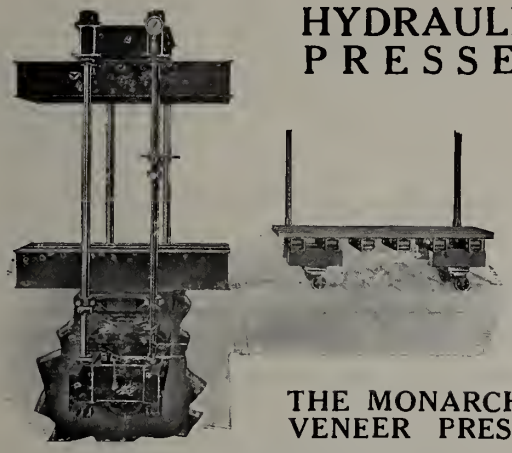
HYDRAULIC PRESSES



THE MONARCH VENEER PRESS

CONSIDER THESE FEATURES.

Heavy Steel Strain Rods.
Steel Cylinder and Detachable Saddle.
Cylinder Repackable without removing Ram.
Double Steel Head and Base.
Quick - acting Pump, Rigid Construction.
Operating Valve at Press.
Improved Retainers.

OUR HYDRAULIC VENEER PRESSES are built to suit all requirements. All proportions are very liberal, while material and workmanship are the best throughout

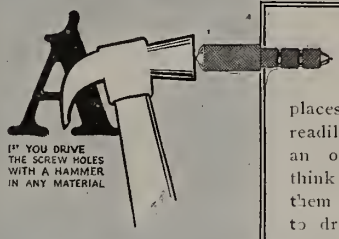
Pressure of 100-lbs. to the square inch is applied to the veneering surface. Stock is handled by the renowned retainer system, unsurpassed for both efficiency and economy.

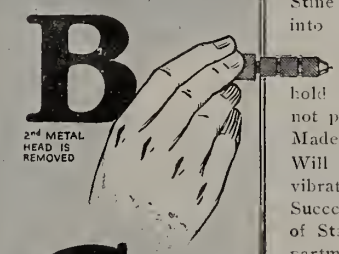
With our process, but five minutes intervene from the time the car enters the press until the stock is released and the press is ready for the next load.

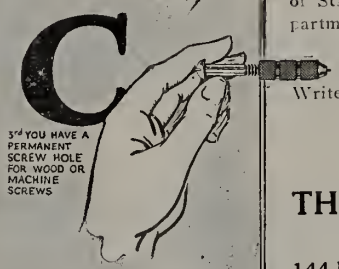
Catalogue, giving full particulars as to sizes and specifications, free on request. We also manufacture all kinds of special Hydraulic Presses to order. Write us concerning your requirements.

A. B. FARQUHAR CO., LTD., Box 171, YORK, PA.

It's Easy as







Just look how easy it is to use Stine Screw Holes! And there is no end of places where you need them. They readily go into any material where an ordinary screw will go, but think of the places you can use them where it would be impossible to drive a screw.

Stine Screw Holes can be moulded into rubber, fastened into metal, fibre, concrete, marble or glass without plugs. They hold with an everlasting grip—can not pull out and will not wear out. Made in all standard screw sizes. Will hold parts permanently against vibration and other severe strains. Successfully tested by the Bureau of Standards. Used in various departments of the U. S. Government.

Write for suggestions and samples.

DEALERS!
Get our proposition!

THE STINE SCREW HOLES CO.,
144 Main St. Waterbury, Conn.

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Every Sheet is WARRANTED and STAMPED "OAKEY'S"

GLASS PAPER

This Superior CABINET GLASS PAPER is made especially for the use of Pianoforte and Cabinet Manufacturers. Carpenters, Carvers, etc., etc.

EXTRA STRONG FLINT, SAND & GARNET PAPERS

In rolls 50 yards long by 18, 20, 24, 30, 36, 40, 42 & 48 inches wide

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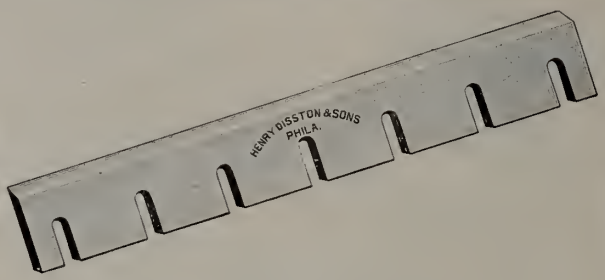
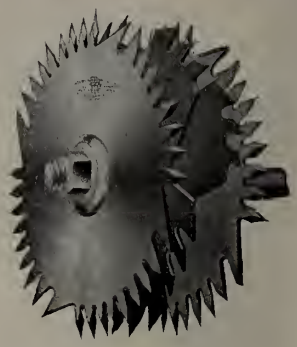
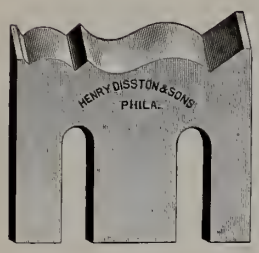


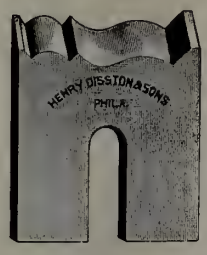


DISSTON

SAWS AND KNIVES



The installation of Disston Saws and Knives—made from the famous Disston Crucible Steel—means more and better work. In the shops where cutting cost and output are carefully checked and counterchecked you will usually find Disston equipment.



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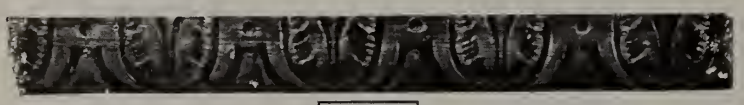
TORONTO CANADA

Branch: Vancouver, B. C.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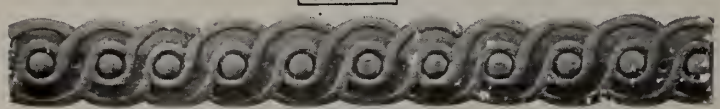
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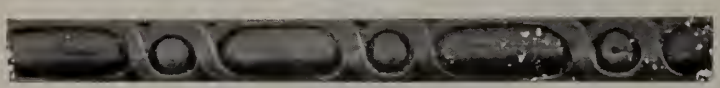
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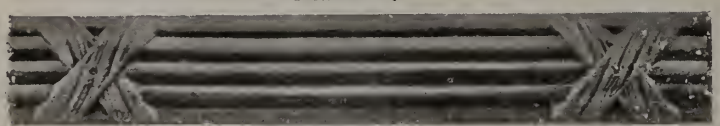
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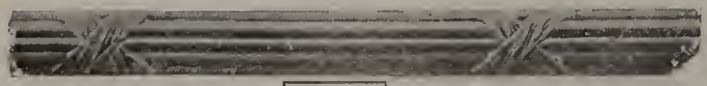
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MOULDINGS We are making more Period Mouldings than ever before. Orders should be placed early to assure your supply when needed.

KNOBS The Period Knobs we placed on the market a few months ago are proving very popular. If you have not received samples ask for them now.

ROSETTES A new Period item to accompany the knobs.

OP8 OP5 OP6

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MADE IN CANADA

EXTRA POWER BELTING

You can find no safer guide in selecting your belting equipment than the experience of others.

In over one thousand of Canada's plants Goodyear Extra Power Belting is being used with marked success. Scores of these have written us telling of their experience with Extra Power Belting.

Read this letter from The Dominion Steel Products Co., Limited, of Brantford, a concern noted for its progressive methods. It tells of a belting experience which must impress you.

Price was a minor factor with Dominion Steel Product, but on this alone they made a saving of $4,000.

Length of service, general efficiency, continuous operation and power saving were the determining factors in their decision to use only Extra Power Belting in their plant.

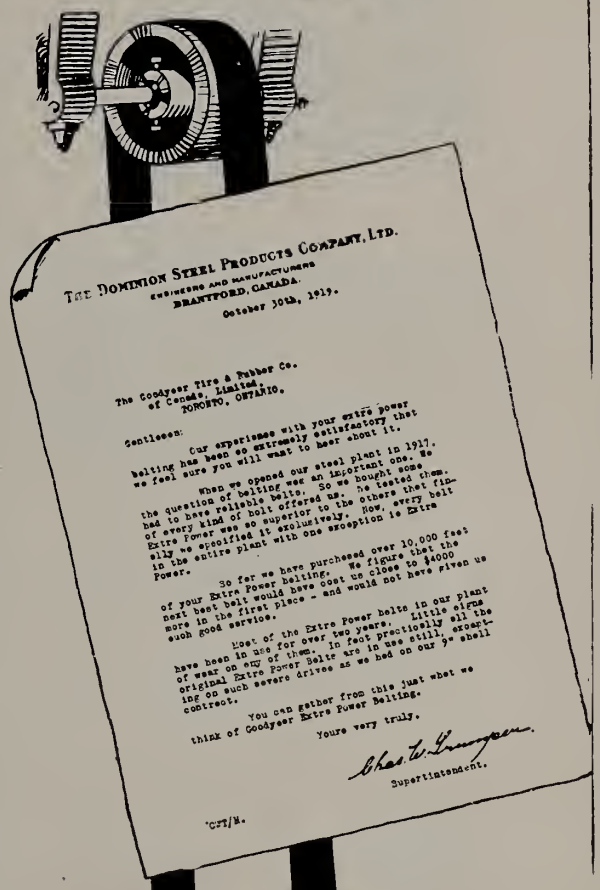
It may be that your plant is much smaller; that your saving would only be $400, but even this plus the greater efficiency of Extra Power Belting is too important for you to disregard.

You can easily prove to your own satisfaction that Extra Power would serve you as faithfully as it has the Dominion Steel Products Co.

Phone, wire or write our nearest branch, so that a man carefully trained in belting problems by Goodyear may call on you and present further evidence of the superiority of Extra Power Belting. No obligation other than fair investigation.

THE GOODYEAR TIRE & RUBBER CO. OF CANADA, LIMITED

Branches—Halifax, St. John, Quebec, Montreal, Ottawa, Toronto, Hamilton, London, Winnipeg, Regina, Saskatoon, Edmonton, Calgary, Vancouver. Service Stocks in smaller cities.


THE DOMINION STEEL PRODUCTS COMPANY, LTD.
ENGINEERS AND MANUFACTURERS
BRANTFORD, CANADA.
October 30th, 1919.

The Goodyear Tire & Rubber Co.
of Canada, Limited,
TORONTO, ONTARIO.

Gentlemen:

Our experience with your extra power belting has been so extremely satisfactory that we feel sure you will want to hear about it.

When we opened our steel plant in 1917, the question of belting was an important one. We had to have reliable belts. So we bought some of every kind of belt offered us. We tested them. Extra Power was so superior to the others that finally we specified it exclusively. Now, every belt in the entire plant with one exception is Extra Power.

So far we have purchased over 10,000 feet of your Extra Power belting. We figure that the next best belt would have cost us close to $4000 more in the first place - and would not have given us such good service.

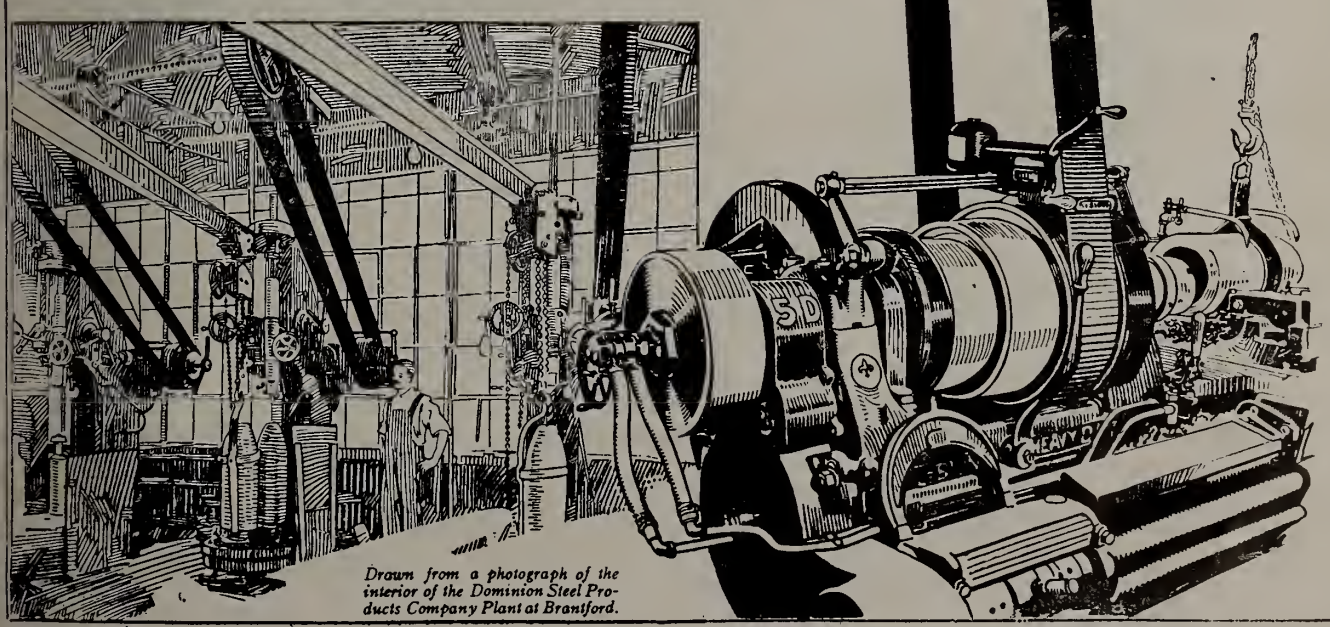
Most of the Extra Power belts in our plant have been in use for over two years. Little sign of wear on any of them. In fact practically all the original Extra Power belts are in use still, excepting on such severe drives as we had on our 9" shell contract.

You can gather from this just what we think of Goodyear Extra Power Belting.

Yours very truly,

Chas. W. Grumpen
Superintendent.

CWT/M.


Drawn from a photograph of the interior of the Dominion Steel Products Company Plant at Brantford.

Reduce the Fire Hazard

Floors and machines covered with sawdust, chips or shavings, increase the fire risk in woodworking plants.

A spark from defective wiring or a hot bearing on a machine might cause a disastrous fire.

Insurance Companies invariably reduce the premiums where adequate precautions have been taken to prevent fires.

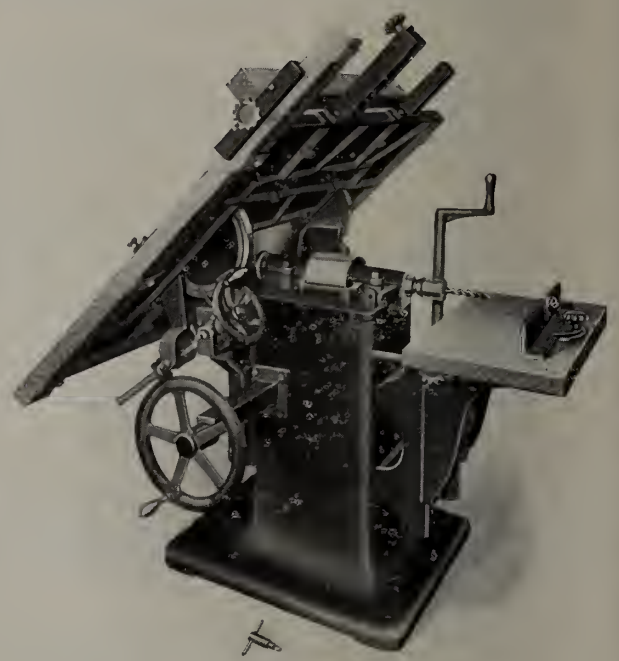
The Canadian Standard Reversible Mill Exhauster will remove all of litter directly from the machine and at a very low up-keep cost.

Why not write for sure information. Will be glad to mail you Catalogue 410-13—gives detailed information.

The Canadian Blower & Forge Company, Ltd.

Kitchener, Ont.

An Excellent Machine for Furniture and Cabinet Work



The "Famous" No. 16 Variety Saw Bench with boring and mortising attachment will do much to increase your output in your furniture and cabinet shops. Accuracy is a main factor in its operation, while the roughest class of work is handled with the same degree of efficiency.

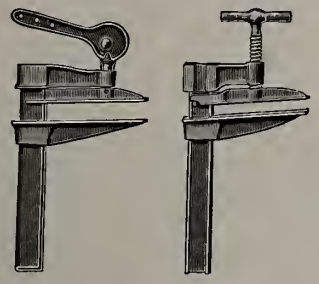
Write us for further information regarding the "Famous" No. 16 Variety Saw Bench and many other machines that you may need and are included in our complete line of woodworking machinery.

The Sidney Machine Tool Company

SIDNEY, OHIO - - U. S. A.

Ontario Agent--H. W. Petrie, Ltd., Toronto

Colt's Clamps
for the
Woodworker



Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

For further information write for Catalogue No. 294.

Batavia Clamp Co.

235 Centre St. BATAVIA, N. Y.

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National Humidity Controlled Dry Kilns

so rapidly that we find it hard to urge you, but, if you wish to be in good company, join the crowd.

Yours for Service

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"INTERNATIONAL"
Electric Glue Heaters

Fireless Cooker construction holds glue at correct working temperatures without guess work.

Operates on less current than any other electric glue heater.

CLEAN — SAFE — ECONOMICAL

International Heaters are portable—fit any lamp socket. Three heats—high, medium and low. Rapid melting, uniform temperature control. No skin, scum or dirt. No burnt glue.

Built in sizes for all classes of shops—from one pint to fifty gallons. Heavy spun copper construction. No seams or soldered joints. Dry heat. No water bath.

Follow the example of prominent concerns everywhere —specify "International" on your next order. Write for booklet—"Correct Temperature in the Glue Room."

"International Electric Heaters are the Best"

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MANUFACTURERS
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Fay & Egan Co., J. A., Cincinnati, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N.Y.

GLUE
Bloede Company, Victor G., Baltimore, Md.
Casein Mfg. Company, New York, N.Y.
Lefeber, H., Montreal, Que.
Perkins Glue Company, South Bend, Ind.

GLUE CLAMPS
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane, & Company, Kitchener.

GLUE HEATERS
Cincinnati Glue Heater Co., Cincinnati, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
International Electric Co., Indianapolis, Ind.
Jackson, Cochrane, & Company, Kitchener.
Pringle, R. E. T., Toronto, Ont.

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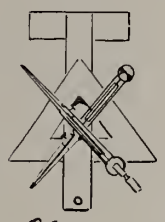

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"Canadian Woodworker" Buyers' Directory—Continued

GLUE JOINTERS
Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GLUE SPREADERS
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane, & Company, Kitchener.

GLUE ROOM EQUIPMENT
Perrin & Company, W. R., Toronto, Ont.

GRINDERS (Cutter)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

GRINDERS (Knife)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane, & Company, Kitchener, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N.Y.

GROOVING HEADS
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.

GUM LUMBER
Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
Anderson-Tully Co., Memphis, Tenn.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Brown & Co., George C., Memphis, Tenn.
Churchill-Milton Lumber Co., Louisville, Ky.
Cornelius Lumber Co., St. Louis, Mo.
Gum Lumber Association, Memphis, Tenn.
Hyde Lumber Company, South Bend, Ind.
Nickey Bros, Memphis, Tenn.
Paepcke-Leicht Lumber Co., Chicago, Ill.
Probst Lumber Co., Cincinnati, Ohio.
Sondheimer Co., E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Thomas & Proetz Lumber Co., St. Louis, Mo.

HAND SCREWS
Fay & Egan Co., J. A., Cincinnati, Ohio.

HANDLE & SPOKE MACHINERY
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.

HARDWARE
Laidlaw Bale-Tie Co., Hamilton, Ont.

HARDWOOD LUMBER
Aberdeen Lumber Co., Pittsburgh, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
American Oak Mfrs.' Assn., Memphis, Tenn.
American Walnut Association, Washington, D.C.
Anderson-Tully Co., Memphis, Tenn.
Astoria Mahogany Co., New York, N.Y.
Atlantic Lumber Company, Toronto, Ont.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Boland Lumber Co., Grand Rapids, Mich.
Bonner & Sons, J. H., Memphis, Tenn.
Brown & Company, Geo. C.
Bury & Company, Robert, Toronto, Ont.
Buskirk Rutledge Lumber Co., Cincinnati, O.
Cornelius Lumber Co., St. Louis, Mo.
Canadian General Lumber Co., Toronto, Ont.
Churchill-Milton Lumber Co., Louisville, Ky.
Darby Hardwood Lumber Co., Memphis, Tenn.
Des Moines Sawmill Co., Des Moines, Iowa.
Dooley Lumber Co., F. T., Memphis, Tenn.
Evansville Band Mill Co., Evansville, Ind.
Felger Lumber & Timber Co., Memphis, Tenn.
Gayoso Lumber Co., Memphis, Tenn.
Hart & McDonagh, Toronto. Ont.
Heeney, Percy E., Kitchener, Ont.
Hunt, Wellington & Smith, Nashville, Tenn.
Hyde Lumber Co., South Bend, Ind.
Kersley, Geo., Montreal, Que.
Korn-Conkling Co., Cincinnati, Ohio.
Kosse, Shoe & Schleyer Co., Cincinnati, O.
Kraetzer-Cured Lumber Co., Greenwood, Miss.
Lawrence & Co., P. J., St. Louis, Mo.
Long-Knight Mfg. Co., Indianapolis, Ind.
McLennan Lumber Co., Montreal, Que.
Memphis Band Mill Co., Memphis, Tenn.
Mowbray & Robinson, Cincinnati, Ohio.
Paepcke Leicht Lumber Co., Chicago, Ill.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City.
Pickrel Walnut Co., St. Louis, Mo.
Probst Lumber Co., Cincinnati, Ohio.
Reese Sherriff Lumber Co., Williamsport, Pa.
Shafer Hardwood Co., John I., South Bend, Ind.
Sondheimer Co., E., Memphis, Tenn.
Spencer, C. A., Montreal, Que.
Stark & Co., Jas. E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Stimson & Co., J. V., Owensboro, N.Y.
Thompson, Katz Lumber Co., Memphis, Tenn.

HYDRAULIC VENEER PRESSES
Perrin & Company, Wm. R., Toronto, Ont.

KNOBS
Waddell Mfg. Co., Grand Rapids, Mich.

JOINTERS
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Onio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochane & Company. Kitchener. Ont.
Mattison Machine Works, Rockford, Ill.
Petrie. H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Smith, C. W., Grand Rapids, Mich.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

LEATHER
Fibro Mfg. Company, New York, N.Y.

MACHINE KNIVES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

METALINE NAILS
Canada Tack & Nail Co., Hamilton, Ont.

MITRE SAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

MOTOR TRUCK EXTENSIONS
Swedish Crucible Steel Co., Windsor, Ont.

MOULDERS
Hall & Brown Woodworking Machine Co., St. Louis, Mo.

MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.

MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

NAILS
Laidlaw Bale-Tie Co., Hamilton, Ont.

NAILING MACHINES
Morgan Machine Co., Rochester, N.Y.

OIL STONE GRINDERS
Mummert-Dixon Co., Hanover, Pa.

PANELS
Waetjin & Co., L., Milwaukee, Wis.

PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago. Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PERIOD MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.

PERIOD TURNINGS
Walter & Sons, J., Kitchener, Ont.

PLANERS
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PORTABLE DRILLS
Wisconsin Electric Co., Wisconsin, U.S.A.

PRESSES (Veneer)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

RESAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A. Cincinnati, Ohio.

RIP SAWING MACHINES
American Woodworking Machinery Company Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Waddell Mfg. Co., Grand Rapids, Mich.

RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.

SAFETY DEVICES
Cowan & Company, Galt, Ont.

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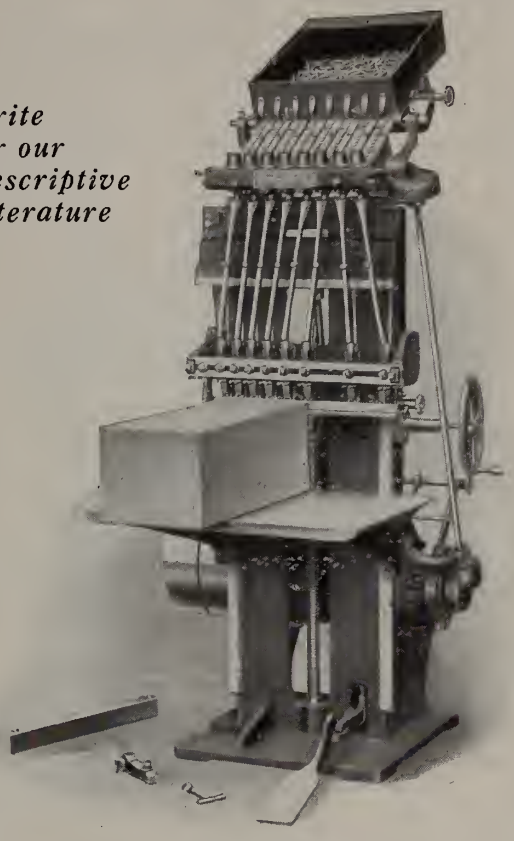

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Irvin Lumber Co., Toronto.

Swedish Crucible Steel Co. of Canada, Limited

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"Canadian Woodworker" Buyers' Directory—Continued

SANDERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford,. Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Solem Engineering Co., Sheboygan, Wis.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS
Atkins & Co., E. C., Indianapolis, Ind.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Silver Mfg. Company, Salem, Ohio.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.

SAW BENCH
Sidney Machine Tool Co., Sidney, O.

SAW FITTING TOOLS
Crowell, D. J., Buffalo, N. Y.

SAW SWAGES
Cowan & Company, Galt, Ont.
Crowell, J. D., Buffalo, N.Y.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES
Canada Machinery Corporation, Galt, Ont. ..
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Company, Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont. ..
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Reynolds Machine Co., Massillon Ohio.

SCREW HOLES
Stine Screw Holes Co., Waterbury, Conn.

SCROLL SAWS
Canada Machinery Corporation, Galt, Ont. ..
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane, & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamiltonfi Ont.

SECOND-HAND MACHINERY
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS
Canadian Bolwer & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

STAINS
Ault & Wiborg, Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ohio.
Shannon Co., Ed. J., Cincinnati, Ohio.

SINGLE SPINDLE BOXING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE
Whitney & Son, Baxter D., Winchendon, Mass.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Colladay Machine Works, Indianapolis, Ind.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Tannewitz Works, Grand Rapids, Mich.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohoa.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES
Walter & Company, B., Wabash, Ind.

TEMPERATURE REGULATORS
Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Compan, Kitchener, Ont.
Preston Woodworking Machincry Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS
International Business Machincs Co., Toronto, Ont.

TRIMMERS
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Preston Woodworking Machinery Company, Pretson, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS
National Dry Kiln Co., Indianapolis, Ind.

TWINES & WEBBING
Doon Twines, Ltd., Kitchener, Ont.

UPHOLSTERERS' TACKS & NAILS
Canada Tack & Nail Co., Hamilton, Ont.

VARNISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto. Ont.
Penfound Varnish Co., Toronto, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N.Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS
Astoria Mahogany Co., New York, N.Y.
Batesville Lumber & Veneer Co., Lawrenceburg, Ind.
Bury & Compny, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christmann Veneer & Lumber Co., St. Louis, Mo.
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Evansville Veneer Co., Evansville, Ind.
Freiberg Lumber Co., Cincinnati, Ohio
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Geo. Kersley, Montrcal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Litton Veneer Co., Rockford, Ill.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Veneer Co., New Albany, Ind.
Southern Veneer Mfg. Co., Louisville, Ky.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Underwood Veneer Co., Wausau, Wis.
Veneer Manufacturers Co., Chicago, Ill.
Waetjen & Co., George L., Milwaukee, Wis.

VENEER TAPE
Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.

VENEER JOINTERS
Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY
Garlock-Walker Machinery Co., Toronto. Ont.

VENEER PRESSES (Hand and Power)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Company, Wm. R., Toronto, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WOOD FINISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Penfound Varnish Co., Toronto, Ont.

WALNUT LUMBER
Des Moines Saw Mill Co., Des Moines, Iowa.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Walnut Company, St. Louis.

WIRE
Laidlaw Bale-Tie Co., Hamilton, Ont.

WOOD SCREWS
Robertson Mfg. Co., P. L., Milton, Ont.

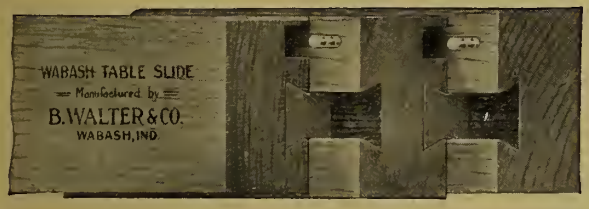
WOOD TURPENTINE
Brown Corporation, Quebec, Que.

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Garlock-Walker Machinery Co., Toronto, Ont.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WODD LATHES
Colladay Machine Works, Indianapolis, Ind.

THE SLIDE IS THE HEART OF YOUR EXTENSION TABLE



If the Slide Does Not Work Properly Your Whole Table is Condemned

Wabash Slides insure
Satisfied Customers

SLIDE MAKING is a SPECIALTY BUSINESS

We can Furnish Better Slides for Less Cost

Eliminate Slide Troubles by using WABASH SLIDES

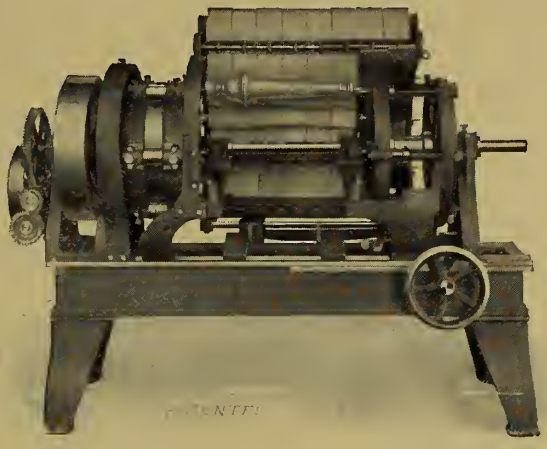
MADE BY

B. Walter & Company

Edsall St., Wabash, Ind.

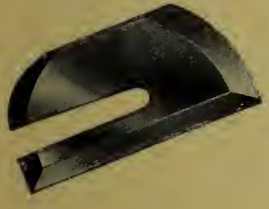
Canadian Representative:
A B. CAYA, 28 King St. ast, Kitchener, Ont.

Paying for Something You Do Not Own



That is precisely your fix if you are sanding your furniture turnings by hand, when the Nash No. 10 Sander would do the work much better and cheaper.

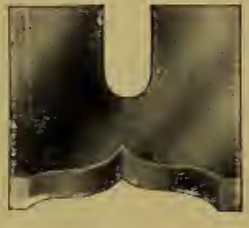
J. M. NASH, Milwaukee, Wis.



ATKINS

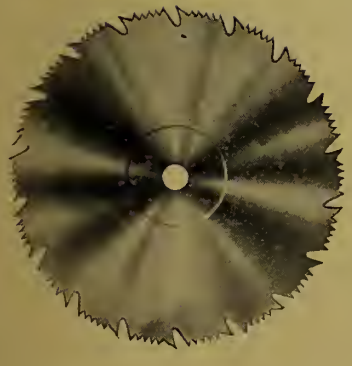
STERLING QUALITY

SAWS and KNIVES

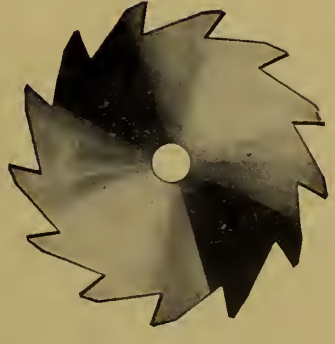


mean continuous, efficient work and 100 per cent. production.

The extraordinary demand for more buildings and homes means that the Lumber output must increase.



Atkins Sterling Quality Saws and Knives will assist you in making the year 1920 the biggest and best in the history of your business.



Write to-day for our Knife Booklet "C W" and Pattern Template Paper.

E. C. ATKINS & CO.

Makers of Sterling Saws

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

- hand - Sanding at Machine Speed

Conserving Labor with Our

"138" Standard Hand Block Belt Sander

AND besides eliminating practically all hand work on flat and curved surfaces, the "138" will finish to better advantage much work that is done in a way on other sanders.

Even a small boy can operate it successfully and do the work of 4 to 8 men sanding by hand.

Why not send a postal for our new "138" circular describing clearly how the saving in labor pays for this sander in a few weeks?

THIS machine, combining as it does, mile-a-minute sand belt travel with the principle of hand-sanding, makes the most practical all-round type of sander for the average shop. In a factory where high-paid cabinet makers waste at least a third of their time sanding and scraping by hand, this "138," operated by ordinary workmen, will eliminate 90% of that waste.

Mattison Machine Works

Rockford, Illinois, U. S. A.

Volume Twenty TORONTO, FEBRUARY, 1920 Number Two

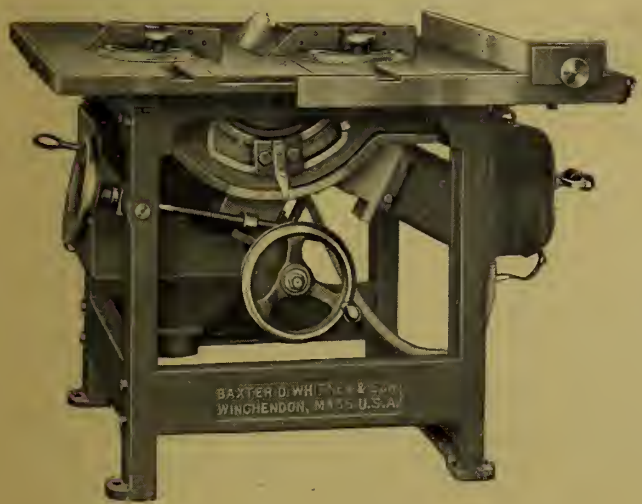
CANADIAN
WOODWORKER
and
Furniture Manufacturer

A Whitney Direct Motor Driven Saw Bench

With a Tilting Arbor

The Motor is Mounted Directly on the Saw Arbor

No Countershafts—No Pulleys—No Belts
Saves Floor Space—Saves Belt Expense



The Saw Arbor tilts instead of the Table making a rigid support for bevel sawing

That is the reason why the

Largest Auto Body Company

in the United States

ORDERED FROM US

Seventy Saw Benches

DIRECT MOTOR DRIVEN

If you want to learn more about the Saw Bench that is reducing the cost of sawing. Let us send you our Booklet.

WRITE FOR IT

BAXTER D. WHITNEY & SON, Inc.

Winchendon, Mass. *Canadian Selling Representative—H. W. Petrie, Ltd., Toronto, Ont.*

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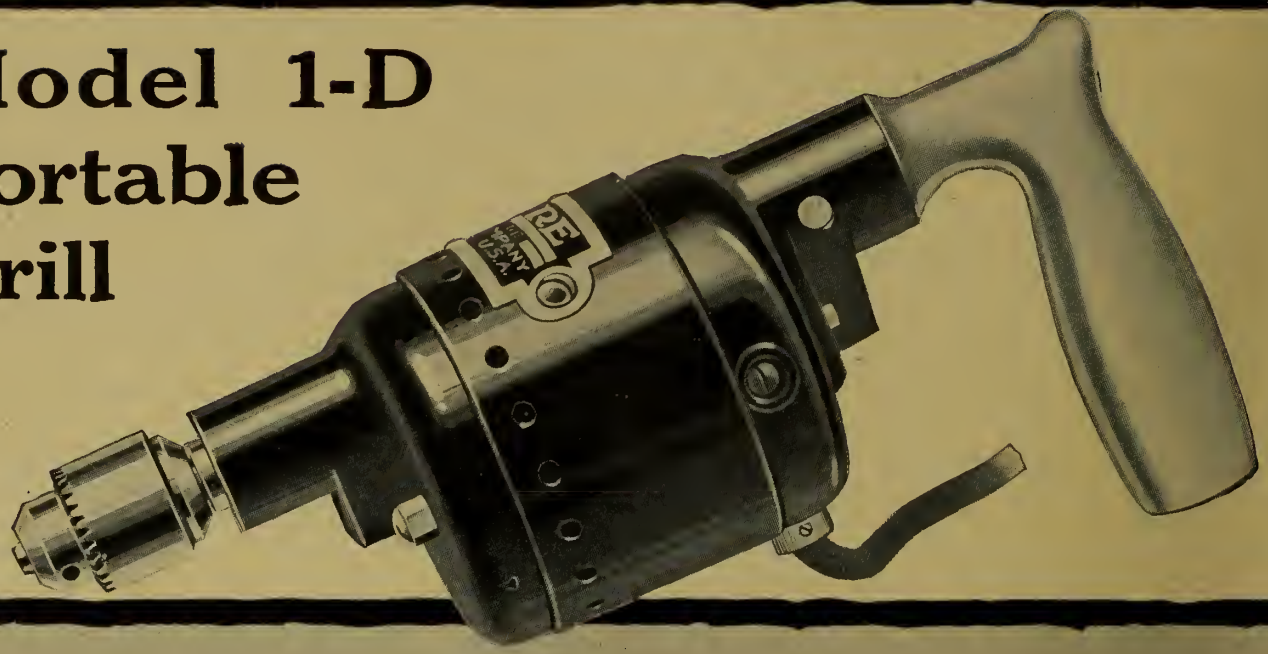
Model 1-D Portable Drill



HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—4¾ pounds.

Capacity—Steel, 0 to 3/16". Wood and alloys, 0 to ½".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3⅜ inches.

Spindle—Offset from center ⅜".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

Jacob's Chucks used as a regular equipment.

FOR speed in drilling and countersinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

Wisconsin Electric Company
7120 Sixteenth Street, Racine, Wisconsin, U. S. A.

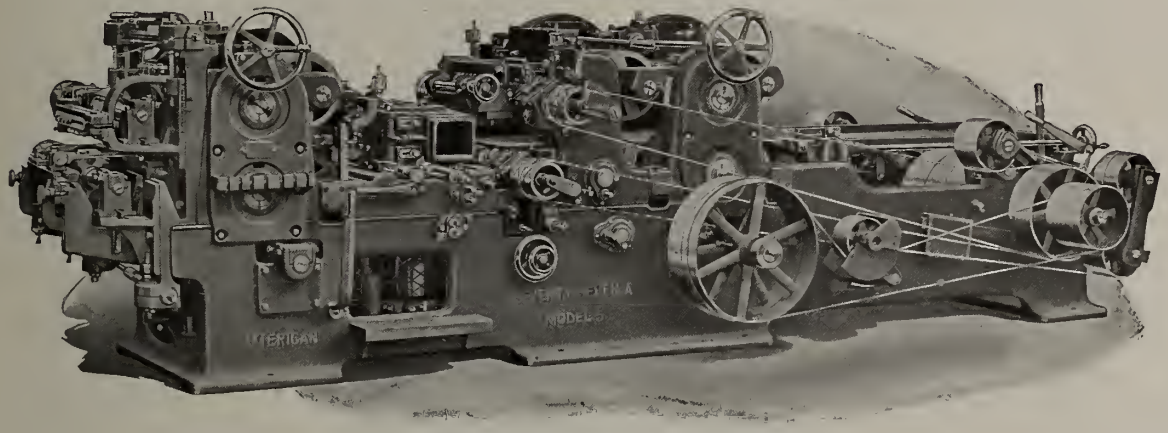
DUMORE GEARED ELECTRIC DRILLS

First in Quality

American Woodworking Machinery Co.

Rochester, N.Y.

LONDON AGENTS—THE PROJECTILE CO.



American No. 77A—Model 5

Mr. LUMBERMAN:

Has your Superintendent or Foreman suggested or insisted upon the need of a fast feed matcher in your mill?

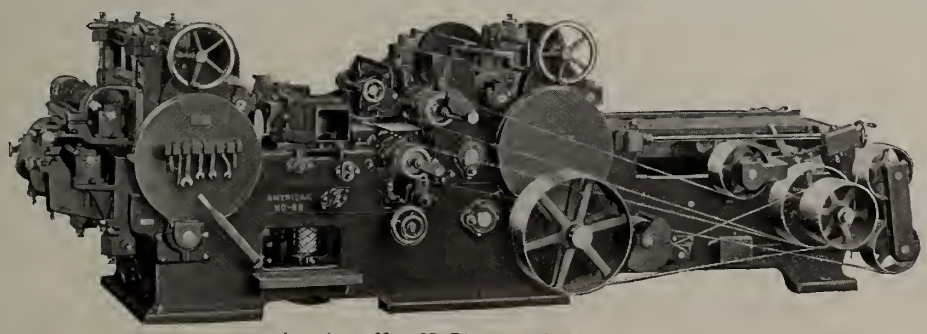
If so, have you investigated the qualities of "AMERICAN MACHINES."

We suggest that you write to any of the following—All users and SATISFIED:—

T. H. Hancock ... ...Toronto.	Adams River Lumber Co. ....Chase, B.C.
Wm. Copping ... ...Joliette, Que.	Giscome Lumber Co. ... .Giscome, B.C.
Ladder Lake Lumber Co. ....Ladder Lake.	Mundy Lumber Co. ... .Three Valley, B.C.
Prince Albert Lumber Co. ...Prince Albert, Sask.	Mickle Dyment ... ...Gravenhurst, Ont.
W. C. Edwards Lumber Co. ..Ottawa, Ont.	Mickle Dyment ... ...Toronto.
Finger Lumber Co. ... ...The Pas, Man.	Fassett Lumber Co. ... ...Fassett, Que.
Can. Puget Sound Lbr. Co. ..Victoria, B.C.	Jas. La Francois Co. ... .Quebec, Que.
Canadian Western Lumber Co.Fraser Mills, B.C.	

And then if you still have doubts, talk it over with our Mr. Garlock.

Its superior points will quickly convince you of the advantages of installing an "AMERICAN."

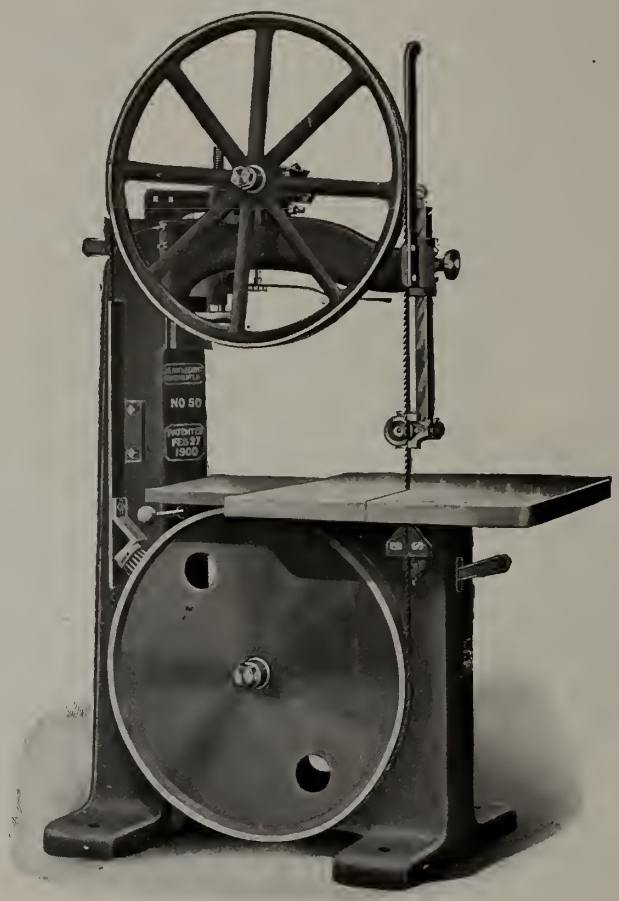


American No. 65 Planer and Matcher

Garlock-Walker Machinery Co., Limited

32-34 FRONT STREET WEST, TORONTO

TORONTO MONTREAL WINNIPEG



Save 25% to 50% of Blade Upkeep and Power Cost
Get Two, Even Three Times As Much Work

It's not the blades that wear out that cost, it's those that break.

It's the broken blades that cut down productive time and cost to repair and to replace.

Blade breakage is reduced to a minimum on Fay-Egan No. 50—36" **Square Column "Lightning Line" Band Scroll Saws.**

The Fay-Egan "Knife Edge" Blade Tension, made on the principle of a fine laboratory balance scale, is so sensitive that it compensates for changes in atmospheric conditions—yet, so flexible, you can pass a block between blade and wheel, while running, without breaking the blade. Folks tell us blade expense on "No. 50" averages 50 to 75 per cent. less than on the old timers.

The solid lower wheel acts like the fly wheel on your engine, its momentum carrying the load, so that the power consumption is reduced fully one-half, while at the same time it controls the light-spoked upper one, preventing over-running and choking down on a heavy cut.

The heavy square column eliminates vibration and permits the wheels to be revolved at 50 to 100 per cent higher speed, increasing the cutting capacity to double, and in some cases, triple that of the ordinary band saw.

As a user of saws, you cannot afford to ignore what Fay-Egan Square Column Band Saws are doing for others and can do for you. An investigation does not obligate you.

Write for Bulletin M-4

J. A. FAY & EGAN CO.

153-163 W. Front St. **CINCINNATI, O.**

Always Cuts Smooth, Always Cuts Straight

Yates

"The Invariable Choice of the Man Who Knows"

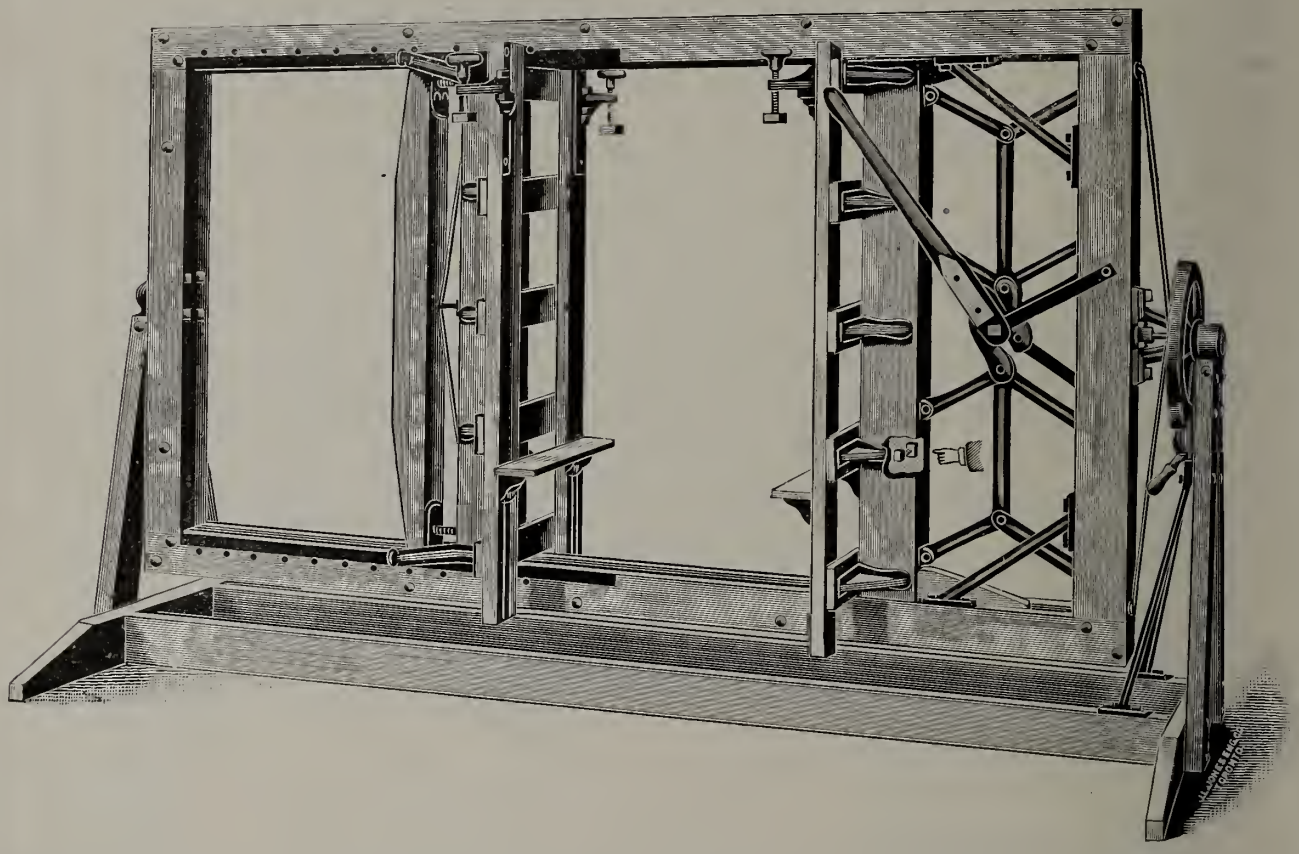
made in Canada

Yates type G-2 is the peer of all straight line edging and ripping saws, because durability and efficiency are combined to such a degree that it will do better work for a longer period of time, than any other machine of its class on the market.

Write for free illustrated circular.

P. B. Yates Machine Co. Ltd.
HAMILTON. ONT. CANADA
United States Plant, Beloit, Wisconsin

No. 190 Improved
Revolving Case Clamp
for dressers, bureaus, wash stands, phonographs, etc.



Will Give You Five Times The Output

This machine eliminates all unnecessary handling of the work. The clamp takes in a wide range of sizes as one end is moveable to any position, while the other end has sufficient movement to allow the case to be tightly clamped. This is done by means of the large lever shown at right of cut. A brake at the extreme right instantly stops the machine in any position.

The clamp requires but one man to operate. It will not spring, does not have to be released before revolving, and the workman can get at all parts of his case while standing in front of the machine. Made in two sizes, 50 inches high, by 5 feet wide; 72 inches high, by 5 feet wide.

Prices and further particulars await your request.

Jackson, Cochrane & Company
KITCHENER - CANADA

The "Shimer Limited" Expansion Head

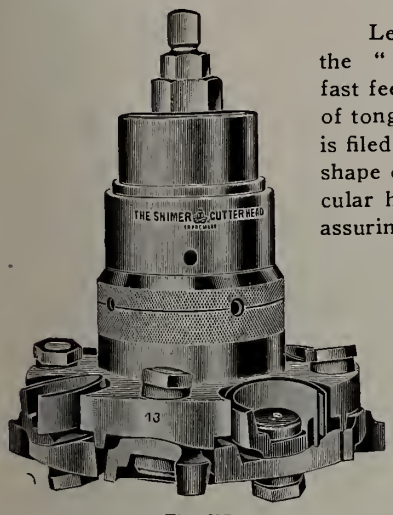


Fig. 627

Let us draw your attention to the advantages of using the "SHIMER CUTTER HEAD" for general Mill and fast feed Planer work. The Cutter is turned to cut the shape of tongue and groove desired, so that to sharpen the cutter it is filed or ground on its face, guaranteeing the user the same shape of cut during the life of the cutter. The bit being circular has from 3½ in. to 5 in. cutting length to the cutter, assuring long wearing life to the cutters.

Note that the cutter, being fastened to a concave seat on a compound angle, assures the user of the proper clearance of cutters, consequently they never burn.

These heads are fitted with or without the Self-Centering Sleeve, and made Expansion or Solid, to suit the customer's wishes.

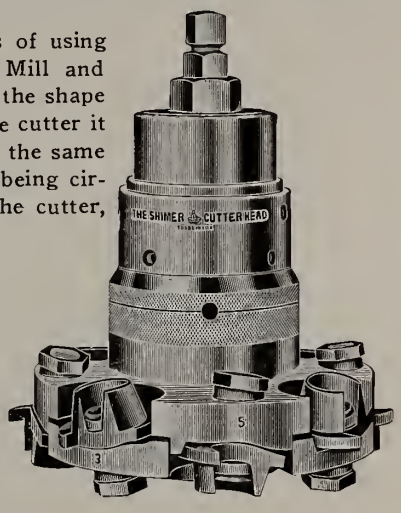


Fig. 268

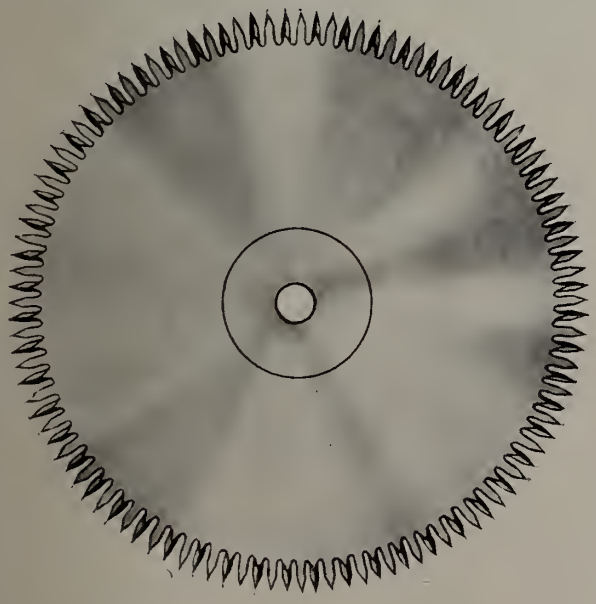
Shimer Heads have been in use for sixty years, and their reliability and reputation have spoken for them in the past. Let us know your wants and we will guarantee their reliability at the present.

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

Successors to Samuel J. Shimer & Sons, Inc.

GALT, ONTARIO

Have You Used Radcliff Circular Saws?



They are the perfect saw because only the best Jessop crucible process steel is used in their manufacture. They are tempered in modern oil furnace regulated by electrical pyrometer. They are finally finished by saw makers of many years experience.

A trial will convince you that our claim is founded on results

Radcliff Saw Manufacturing Company, Limited

1550 Dundas Street West TORONTO, ONT.

AGENTS FOR L. & I. J. WHITE CO., MACHINE KNIVES

Efficiency in Veneer Taping

Black Bros. Veneer Taping Machine

Write for our Catalog showing a complete line of Woodworking Machinery

"Treat your machine as a living friend."

Designed to handle all thicknesses of veneer speedily and efficiently. Black Bros. Veneer Taping Machines are meeting with approval in many of Canada's largest factories.

Built in two sizes, 24" and 36". Black Bros. Veneer Taping Machines will use either the ordinary gum tape or plain tape, applying the gum or glue as it works.

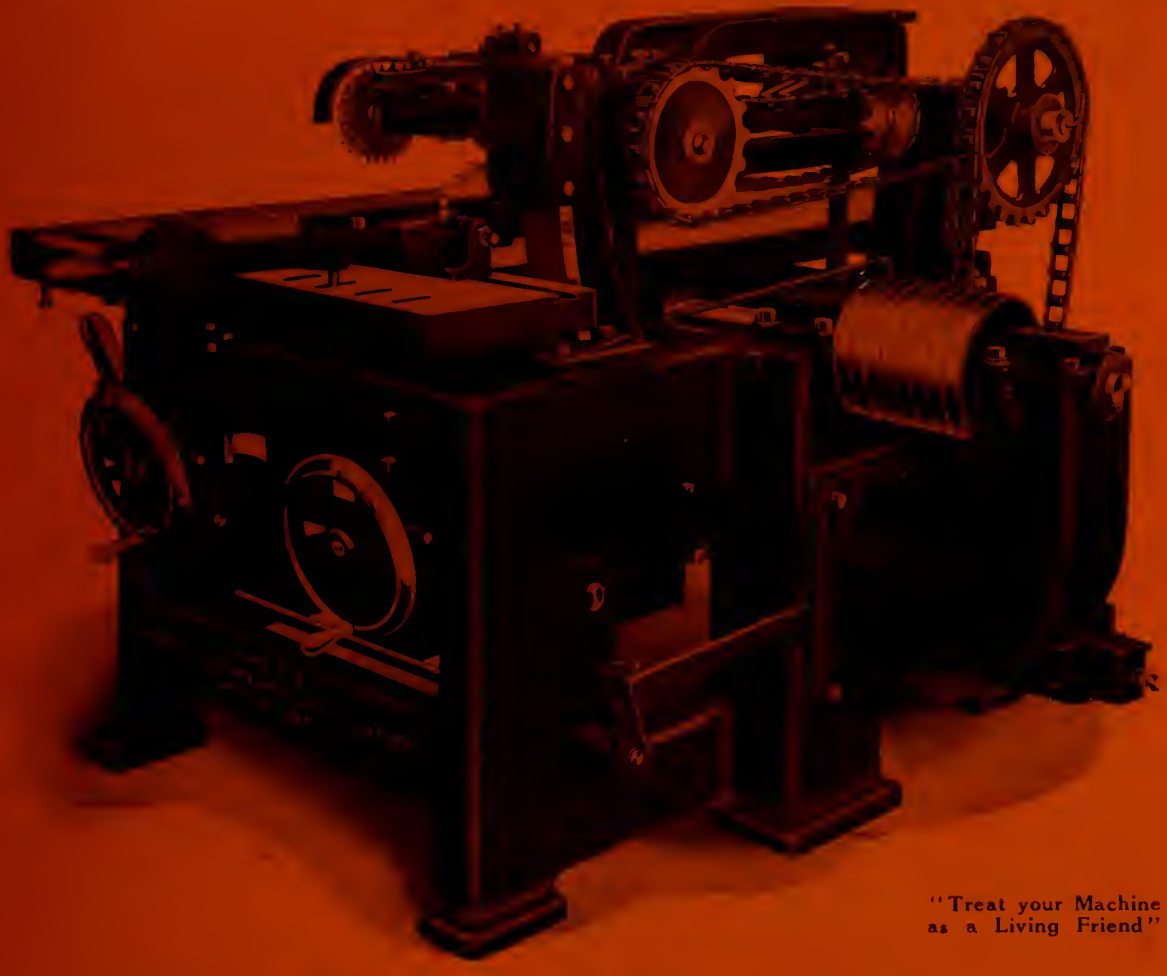
Write today for particulars regarding our trial offer on this machine—it will interest you.

The Preston Woodworking Machinery Co. Limited

PRESTON, ONTARIO

Another PRESTON Favorite

Combining Our Standard of Quality and Workmanship



"Treat your Machine as a Living Friend"

No. 129 Power Feed Rip Saw

Carefully made to give genuine service the PRESTON No. 129 Power Feed Rip Saw, with variable feed will increase production and cut down your labor costs.

The frame is one solid casting, each bearing is self oiling and both table and upper works are raised and lowered by hand wheels.

The PRESTON No. 129 Power Feed Rip Saw will merit your approval by its efficient service.

Let us send you a copy of our catalog

The Preston Woodworking Machinery Co.

PRESTON, ONTARIO Limited

UNIVERSAL ADJUSTABLE CUTTER HEAD Patented.
Infringements (maker or user) will be vigorously prosecuted.

Two Heads

that have put 100% more profit in the production of Dowel Stock.

FOR SHIP TREENAILS

W. S. HAWKER.

Inventor and Designer of the World's most efficient Tubular Turning Machinery

THE

Money Maker Adjustable Rod

and

Dowel Machine

The machine that is sent under a guarantee to show you a gain of from 100 to 400 per cent. before you buy it.

The improved dowel machine that 90 per cent. of the largest and oldest machinery builders and dealers now endorse and recommend in preference to the solid chuck machines they themselves previously built.

One cutter head turns from 1/4 in. to 2 in. diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

Works stock as short as five inches.

Rolls automatically centre variations in squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid chuck dowel machine.

We can save you from one dollar out of every two, to four out of every five, that the operation of solid chuck machines costs you.

Engagements for competitive test solicited.

Formal orders not solicited. All sales made after demonstration.

The only question is, are you willing to cut cost of your dowel turning to one-half or one-third of what it costs with any make of solid chuck machine?

Machine delivers the goods before you buy.

State conditions of stock closely.

Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY

DAYTON, OHIO.

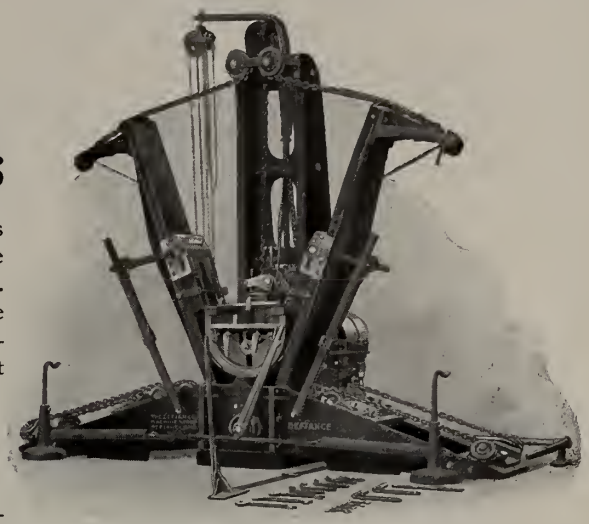
Why Struggle Along Continually With Obsolete

Wood Bending Methods

when a little time spent investigating Defiance bending machines would lead to the salvage of your present material wastage—increase your present output, and reduce losses in breakage to a minimum. Defiance bending machinery is serving wood benders everywhere throughout the world. Its success, so pronounced and so long continued, proves Defiance methods of wood bending the most correct in use today.

DEFIANCE HIGH PRODUCTIVE WOOD BENDING MACHINERY

is built in various designs and sizes, and particularly adapted to bending rims for artillery wheels, automobile, auto-truck, wagon and carriage wheels, table rims, plow and truck handles, hames, bows for vehicle tops, and steering wheel rims. For the complete manufacture of the foregoing products many of the largest manufacturers all over the world are using Defiance equipment—all of which is a proven success and high productive machinery.



12″ Patent Rim, Felloe and Round Bending Machine

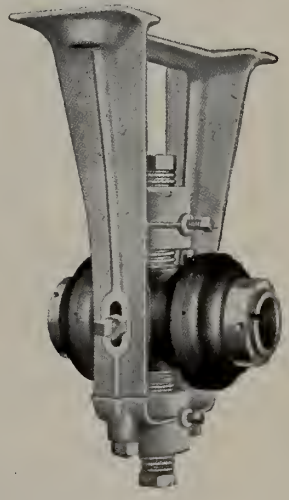
Illustrated and descriptive matter on your requirements in wood bending machinery will be mailed on request.

THE DEFIANCE MACHINE WORKS

New York City ***DEFIANCE, OHIO, U.S.A.*** *London, England*

Chapman Double Ball Bearings

Will Place a Saving in Your Safe



Each day that you delay the installation of Chapman Double Ball Bearings in your plant you are throwing away profits and power. Chapman Double Ball Bearings will yield you a saving of from 15 to 30 per cent. over the roller and oiling journal bearings.

Years of experience are behind the manufacture of Chapman Double Ball Bearings. Years of greater efficiency are ahead of your plant if you install Chapman Ball Bearings.

Write for our bulletin No. 107, you'll find it interesting.

The Chapman Double Ball Bearing Co. of Canada, Limited

Toronto **339-351 Sorauren Ave.** **Ontario**

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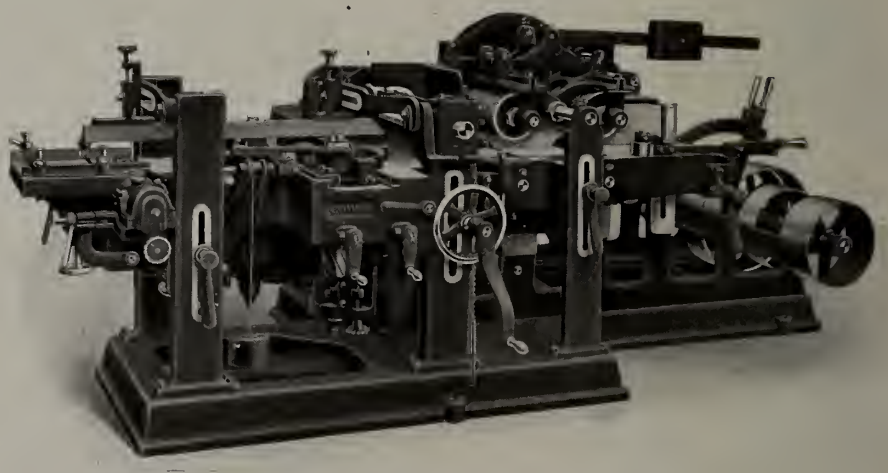
Moulder No. 289

10″ or 12″

Table lowers 8″

Full of Distinctive Features

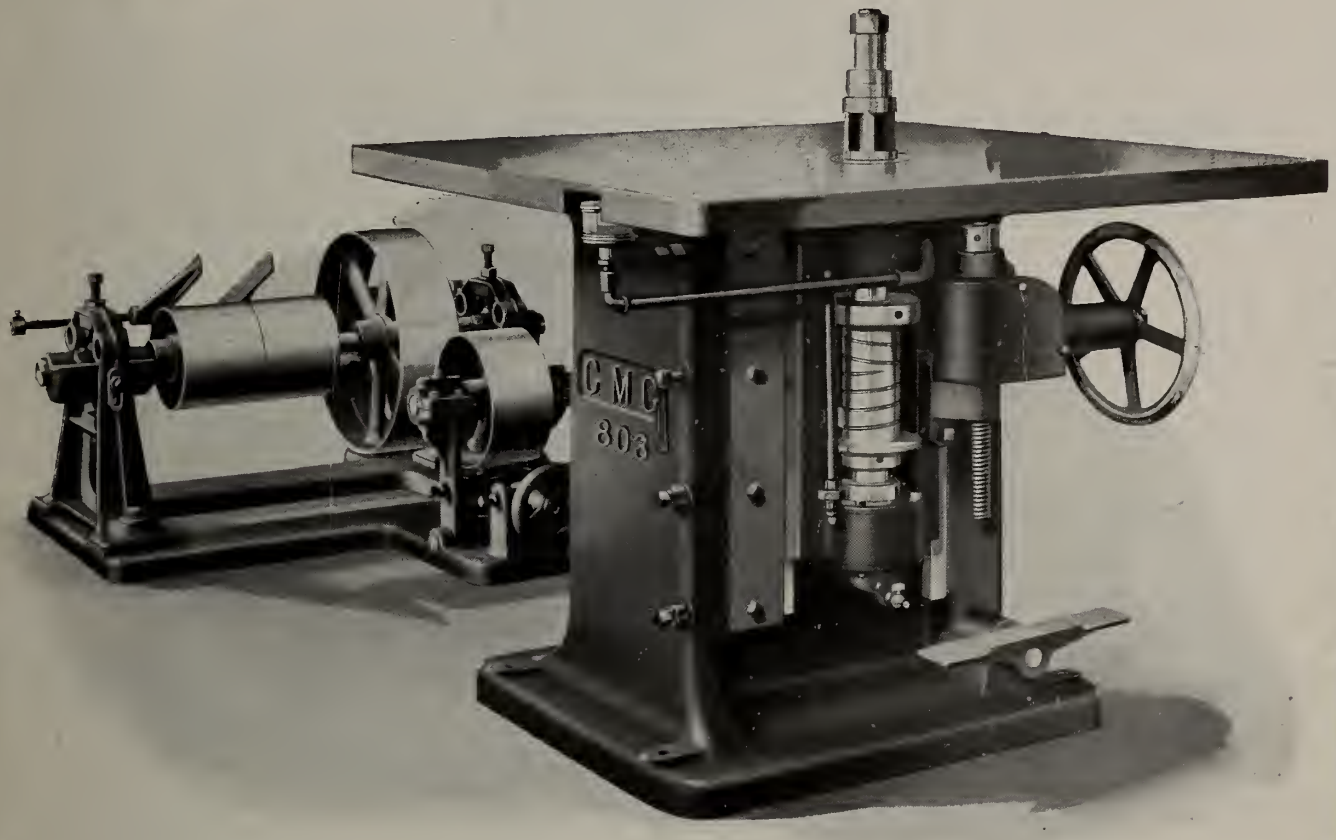


Cowan Woodworking Machinery is dependable, efficient and creates a great saving in operating costs. We manufacture

Planers	Mortisers	Band Saws	Sanders
Moulders	Borers	Scroll Saws	Grinders
Shapers	Lathes	Cross Cut Saws	Clamps
Tenoners	Resaws	Rip Saws	Veneer Presses

COWAN & CO. OF GALT LIMITED - Galt, Ontario

C.M.C. 803 SHAPER



Single Spindle **Ball Bearings** **High Speed**

DESIGNED as a strictly high speed shaper for the production of the highest grade of work, this machine embodies new and distinct features not found in other shapers upon the market. The fact that practically all work to be shaped in any ordinary manufacturing plant can be performed on a high speed spindle without reversing the cut or stock makes it unnecessary to supply two spindles on such a shaper. This necessarily enables us to effect a considerable saving in the first cost to our customers. With one spindle the shaper table need not be so large as on double spindle machines, which results in a saving of shop room. With only one spindle the operator can concentrate his attention to the work in hand and is much less liable to accident.

Special bulletin cheerfully furnished upon request

CANADA MACHINERY CORPORATION, LIMITED, GALT, ONTARIO

Toronto Office and Warerooms, Brock Avenue Subway

On Your Payroll

WHETHER poring over a blue print, figuring a cost sheet, or mounting a ladder to inspect line shafting, the S K F representative virtually goes on your payroll the minute he enters your plant.

So every S K F man justifies the basic S K F policy. He is a salesman only as he serves.

Not to hear bearings exploited, but to absorb the latest ideas on reducing friction—this is why the manufacturer sends for the S K F sales engineer.

And what more authentic advice is to be had than the engineering knowledge of anti-friction experts, supported by the impartial research of thorough, well-equipped laboratories?

Manufacturers are invited to avail themselves of this service.

CANADIAN SKF COMPANY, LIMITED

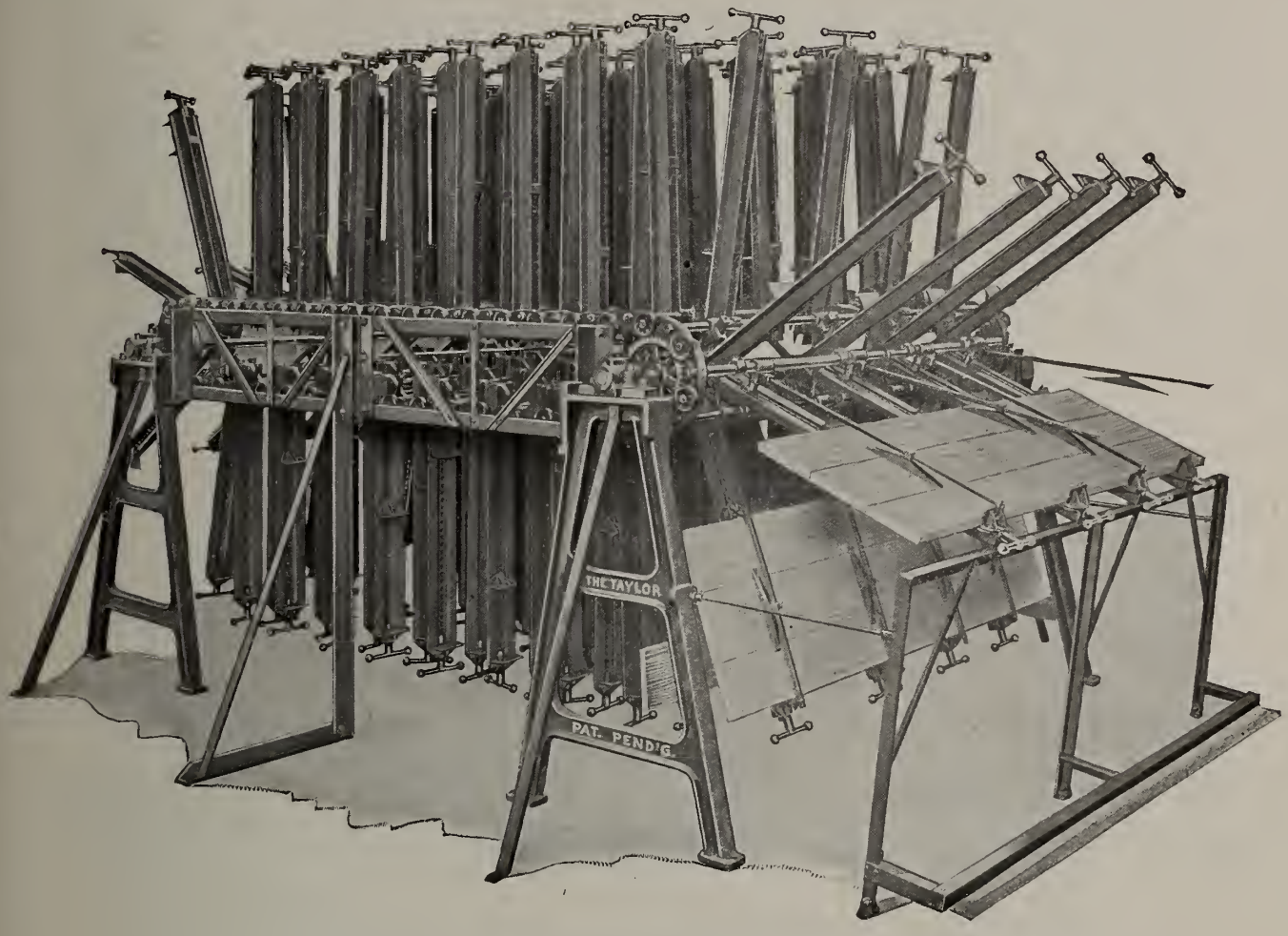
412 St. James St.
MONTREAL

83 King Street W.
TORONTO

SKF INDUSTRIES

Hess-Bright Ball Bearings
S K F Ball Bearings
Atlas Steel Balls
Gronkvist Chucks
Transmission Hangers

CLAMP The Taylor TRADE MARK CARRIER



Forty section machine carrying 160 clamps, measuring 8 ft. 2½ in. between shaft centers.

The clamp is one of the most interesting features of the clamp carrier. A remarkable strain can be applied with greatest ease; the work it turns out—both thick and thin stock—is 100 per cent. perfect.

An Engineering concern recently wrote:

"I am recommending Taylor clamps to the Germain Mfg. Co. because I have proven the clamps more efficient through scientific time studies on both and all existing types of gluing-up machines and devices."

As a result of the above recommendations, The Germain Mfg. Co. referred to bought two Taylor carriers. They installed them, and tested them and have since purchased two more. We can tell you numerous instances where customers are using from two to nine Taylor carriers each as a result of similar experiences.

Let us prove the truth of these claims by showing you one of these carriers in operation, or you can try the clamps out on your own work. Ask for C. C. Folder and further information.

A. R. Williams Machinery Co., Toronto, Canada — Representatives

James L. Taylor Manufacturing Co.

POUGHKEEPSIE, N. Y.

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DRY AND PARTLY DRY STOCK

Ready for Shipment

GUM

21,246 ft. 8/4 1st and 2ds Qtd. Red
24,462 " 8/4 No. 1 Com. and Sel. Qtd. Red
80,125 " 6/4 No. 1 Com. and Sel. Red
15,000 " 6/4 No. 2 Common Red
40,609 " 4/4 1st and 2ds Red
41,859 " 4/4 No. 1 Com. and Sel. Red
7,296 " 1 x 9-12" Box Boards
8,103 " 1 x 13-17" Box Boards
42,860 " 4/4 1st and 2ds Sap
210,246 " 4/4 No. 1 Com. and Sel. Sap
151,246 " 4/4 No. 2 Common Sap
15,000 " 4/4 No. 3 Common Sap
14,000 " 5/4 No. 1 and No. 2 Com Sap
21,135 " 6/4 1st and 2nds Plain Sap
49,080 " 6/4 No. 2 Common Sap
17,060 " 6/4 No. 3 Common Sap
11,429 " 5/4 No. 2 Common Sap

LA. CYPRESS

53,085 ft. 4/4 No. 1 Shop
128,000 " 4/4 No. 1 Common
18,205 " 4/4 No. 2 Common
9,000 " 4/4 No. 3 Common
24,125 " 4/4 Peckie
20,175 " 4/4 Log Run
14,246 " 4/4 Boxing
11,428 " 5/4 No. 1 Common
6,125 " 5/4 No. 2 Common
5,696 " 5/4 Peckie
12,007 " 6/4 No. 2 Common
7,263 " 6/4 Peckie
7,590 " 8/4 1sts and 2nds
11,024 " 8/4 Select
7,106 " 8/4 Shop
11,220 " 8/4 No. 1 Common
11,150 " 8/4 No. 2 Common
2,250 " 8/4 Peckie

HICKORY

10,976 ft. 2/3-6/4 1/3-4/4 Log Run Dry
12,011 " 8/4 Log Run, Partly Dry
11,428 " 6/4 8/4 Log Run
Can cut 2 Cars 8/4 10/4 Log Run

MAPLE

12,428 ft. 8/4 Log Run, mostly Hard
25,000 " 8/4, 10/4, 12/4, 16/4 No. 2 Com. and Btr., 75 per cent. Hard
50% 3" 4", 40% 2½", 10% 2"

ARKANSAS YELLOW PINE

51,296 ft. 1x6", 8", 10", 12" No. 1 and 2 Com. Air Dried. Rough or Dressed

RED OAK

14,930 ft. 10/4 No. 1 Com. and Sel.
11,080 " 10/4 No. 2 Common
5,400 " 6/4 1sts and 2nds Plain
32,486 " 4/4 1sts and 2nds Plain
61,527 " 4/4 No. 1 Com. and Sel.
71,146 " 4/4 No. 2 Common
11,426 " 4/4 1sts and 2nds Qtd Red
29,118 " 4/4 No. 1 Com. and Sel. Qtd. Red
9,186 " 4/4 No. 2 Com. & Btr. Qtd. White
2,429 " 4/4 No. 2 Com. Qtd. Red
13,425 " 3/4 No. 3 Com. Plain
45,000 " 4/4 No. 3 Common Plain
38,611 " 4/4 Sound Wormy
14,296 " 4/4 No. 1 Com. and Btr. Qtd. W.
17,247 " 4/4 No. 2, No. 3 Com. Qtd. W.
11,429 " 4/4 8 ft. Tie Siding
12,426 " 6/4 No. 1 Com. and Btr., largely Red
13,290 " 4/4 No. 1 Com. and Btr., largely Red

LA. WHITE ASH

8,242 ft. 6/4 No. 1 Common
11,164 " 5/4 No. 2 Common
12,400 " 8/4 No. 2 Common
17,584 " 5/4 No. 3 Common Wormy
1 Car consisting of:
2,500 ft. 4/4 Log Run
6,500 " 6/4 Log Run
2,500 " 8/4 Log Run
1,000 " 10/4 Log Run
1,000 " 12/4 Log Run
500 " 16/4 Log Run
Can cut 2 Cars 10/4, 12/4, 16/4 Log Run
Can cut 1 Car 8/4 Log Run
Can cut 1 Car 6/4 Log Run

ELM

10,426 ft. 4, 6, 10, 12/4 Log Run
6,230 " 8/4 Log Run, Green
5,820 " 4/4 Log Run, Green
2,500 " 2½", 3" Log Run, Green
3 Cars 10/4, 12/4 No. 2 Com. & Btr., Green

6/4 & 8/4 DOG BOARDS

11,000 ft. mostly 6/4 Cypress
14,142 " mostly 8/4, 10/4 Cypress
12,486 " mostly 6/4, 8/4 Gum
14,292 " mostly 6/4, 8/4 Oak

PECAN

5,724 ft. 8/4 No. 3 Common

SOUND WORMY CHESTNUT

1 Car 8/4 No. 2 Com. & Btr.

ABERDEEN LUMBER COMPANY, Pittsburgh, Pa.

Hardwoods

From the Forest to You

Direct from our select timber tracts and up-to-date mills to you will come your order through a service that will give you absolute satisfaction. Each step in the production from the forest to you is done efficiently to assure your approval.

We can ship your order quickly and just as you desire it. May we serve you?

Memphis Band Mill Company

Memphis - Tenn.

Boland Lumber Company

Murray Bldg., Grand Rapids, Mich.

Manufacturers Northern and Southern Hardwoods

Northern Woods:

Ash, Basswood, Beech,
Birch, Hard Maple,
Quartered Maple,
White Maple, Soft Maple,
Soft Elm, Rock Elm.

Southern Woods:

Cherry, Chestnut,
Cottonwood, Cypress, Gum,
Hickory, Magnolia,
Oak, Poplar, Sycamore,
Walnut, Willow.

Please send us your inquiries and it will be a pleasure to quote you and describe our stocks

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

WHITE ASH

	Clear 1 & 2	Strips	No. 1 Com.	No. 2 Com.
1 in.	10,000	3,800	45,000	85,000
1¼ in.	78,000	5,500	91,000	31,000
1½ in.	26,900	1,200	30,000	36,000
2 in.	80,300	500	19,000	50,000
2½ in.	13,500	.....	.....	3,500
3 in.	13,500	.....	10,500	4,500
4 in.	6,500	.....	1,000	500

BUTTERNUT

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	12,300	35,800	23,600
2 in.	8,400	17,000	10,000
2½ in.	3,000	3,000	.....

CHERRY

	Clear 1 & 2	Strips	No. 1 Com.	No. 2 Com.
1 in.	175,000	.....	160,200	94,500
1¼ in.	11,500	.....	600	16,500
1½ in.	32,000	.....	12,700	78,300
2 in.	8,100	.....	18,200	31,900
2½ in.	4,500	.....	2,100	1,200
3 in.	20,700	.....	1,500	3,300
4 in.	9,900	.....	.....	.....

CHESTNUT

	Clear 1 & 2	Strips	No. 1 Com.	S.W.& No. 2 Com.
¾ in.	.....	.....	.....	.....
1 in.	22,900	1,500	43,300	180,500
1¼ in.	119,800	1,800	58,200	175,200
1½ in.	92,500	.....	82,000	20,000
2 in.	46,200	.....	73,300	107,200
2½ in.	4,000	.....	1,150	.....
3 in.	2,800	.....	1,300	500
4 in.	1,500	.....	300	.....

PLAIN RED OAK

	Clear 1 & 2	Strips	No. 1 Com.	No. 2 Com.
⅜ in.	30,200	.....	.....	.....
¾ in.	77,000	.....	39,400	29,200
⅝ in.	7,500	.....	87,000	53,600
1 in.	243,200	.....	56,000	73,400
1¼ in.	107,700	2,400	3,000	13,200
1½ in.	137,900	4,300	25,200	35,000
2 in.	83,100	.....	84,800	15,000
2½ in.	61,100	.....	10,000	2,100
3 in.	28,800	.....	14,500	7,000
4 in.	16,600	.....	7,900	.....

PLAIN WHITE OAK

	Clear 1 & 2	Strips	No. 1 Com.	No. 2 Com.
⅜ in.	1,000	.....	.....	.....
½ in.	.....	.....	.....	.....
⅝ in.	25,150	.....	2,000	16,900
¾ in.	53,900	.....	115,000	28,000
1 in.	44,300	1,200	99,000	60,200
1¼ in.	73,300	.....	3,000	8,000
1½ in.	41,500	.....	15,000	12,000
2 in.	33,000	.....	80,000	35,000
2½ in.	166,800	.....	47,500	1,000
3 in.	75,800	.....	51,800	7,400
3½ in.	5,500	.....	3,000	1,500
4 in.	72,000	.....	16,500	16,000

QUARTERED RED OAK

	Clear 1 & 2	Strips	No. 1 Com.	No. 2 Com.
¾ in.	300	.....	3,700	200
1 in.	20,200	2,300	500	.....
1¼ in.	2,000	.....	.....	.....
1½ in.	.....	.....	.....	.....
2 in.	1,000	.....	7,400	.....

QUARTERED WHITE OAK

	Clear 1 & 2	Strips	No. 1 Com.	No. 2 Com.
½ in.	5,500	.....	.....	.....
¾ in.	18,500	.....	44,600	9,000
⅝ in.	.....	.....	.....	.....
1 in.	32,400	7,000	16,400	17,000
1¼ in.	6,000	.....	400	1,300
1½ in.	9,500	.....	8,000	.....
2 in.	31,500	.....	25,100	4,700
2½ in.	1,000	.....	.....	.....

POPLAR

	1 & 2 18" & up	Box Boards 1 & 2 13" & up	Boards Saps
⅝ in.	.....	20,600	.....	.....
1 in.	.....	45,000	5,600	3,200
1¼ in.	2,800	.....	.....	2,000
1½ in.	4,300	.....	.....	9,000
2 in.	.....	13,600	.....	.....
2½ in.	.....	25,800	.....	11,000
3 in.	.....	7,900	.....	38,600
4 in.	.....	6,000	.....	7,300

	Stained Saps	No. 1 Com.	No. 2 Com.
⅝ in.	13,800	.....	22,300	2,600
1 in.	40,600	.....	110,900	121,000
1¼ in.	7,600	.....	23,600	8,000
1½ in.	6,700	.....	41,000	2,500
2 in.	4,000	.....	118,500	27,500
2½ in.	3,700	.....	1,000	.....
3 in.	1,500	.....	17,000	32,000
4 in.	700	.....	17,750	5,000

Also Large Stock of BEECH, BIRCH and MAPLE

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

Band Mill and Yards, Memphis Plant.

STOCK LIST. This list supersedes all former issues. All stock listed is subject to prior sale. It will give us pleasure to quote you delivered prices on any stock listed. LET'S GO.

ASH

9M 5/4 FAS
10M 6/4 FAS
200' 5" and 6" Com. and Btr.
5M 5/4 No. 1 Com.
75M 6/4 No. 2 Com.

COTTONWOOD

14M 4/4 FAS
75M 4/4 No. 1 Com.
20M 4/4 No. 1, 2 and 3 Com.

CYPRESS

7M 4/4 FAS
10M 4/4 Select
25M 6/4 No. 1 Com.
5M 4/4 Pecky
16M 4 x 6 Pecky

ELM

8M 4/4 Log Run
5M 6/4 Log Run
15M 12/4 Log Run
2M 5/4 No. 3 Com.
8M 6/4 No. 3 Com.
20M 8/4 No. 3 Com.

QRT'D. RED GUM

6M 4/4 FAS
1M 6/4 FAS
30M 8/4 FAS
20M 8/4 No. 1 Com.

QRT'D RED GUM
(SAP NO DEFECT)

2M 8/4 No. 2 Com.
2M 12/4 No. 2 Com.
4M 10/4 No. 3 Com.

HACKBERRY

4M 4/4 Log Run

TUPELO GUM

200M 4/4 Com. and Btr.
1M 4/4 No. 2 Com.

QRT'D WHITE OAK

15M 4/4 FAS
100M 6/4 Com. and Btr.
150M 4/4 No. 1 Com.
50M 5/4 No. 1 Com.
45M 8/4 No. 1 Com.
900' 10/4 No. 1 Com.
7M 6/4 No. 2 Com.
3M 8/4 No. 2 Com.
11M 4/4 No. 2 and 3 Com.
1M 5/4 No. 3 Com.

PLAIN WHITE OAK

5M 6/4 FAS
2M 8/4 FAS
2M 3/4 Com. and Btr.
3M 10/4 Com. and Btr.
40M 11/4 Com. and Btr.
30M 4/4 No. 1 Com.
3M 6/4 No. 1 Com.
4M 8/4 No. 1 Com.
2M 5/4 No. 2 Com.
12M 6/4 No. 2 Com.
1M 8/4 No. 2 and 3 Com.
6M 4/4 No. 3 Com.
10M 5/4 No. 3 Com.
5M 6/4 No. 3 Com.

QUARTERED RED OAK

50M 4/4 FAS
100M 4/4 No. 1 Com.

SOUND WORMY OAK

75M 6/4

PLAIN RED OAK

150M 6/4 FAS
16M 8/4 FAS
6M 11/4 FAS
3M 14/4 FAS
50M 10/4 Com. and Btr.
50M 11/4 Com. and Btr.
50M 12/4 Com. and Btr.
4M 14/4 Com. and Btr.
50M 4/4 No. 1 Com.
20M 5/4 No. 1 Com.
50M 6/4 No. 1 Com.
60M 8/4 No. 1 Com.
5M 10/4 No. 1 Com.
4M 11/4 No. 1 Com.
11M 12/4 No. 1 Com.
100M 4/4 No. 3 Com.
50M 5/4 No. 3 Com.
20M 6/4 No. 3 Com.
2M 8/4 No. 3 Com.

PLAIN SAP GUM

300M 4/4 No. 2 Com.
50M 6/4 No. 2 Com.
17M 8/4 No. 2 Com.
6M 10/4 No. 2 Com.
60M 4/4 No. 3 Com.
5M 6/4 No. 3 Com.
40M 8/4 No. 3 Com.
9M 3" No. 3 Com.

PLAIN RED GUM

14M 6/4 No. 1 Com.
200M 4/4 No. 2 Com.
2M 6/4 No. 2 Com.
6M 6/4 No. 2 and 3 Com.
20M 8/4 No. 2 and 3 Com.

"DIRECT FROM PRODUCER TO CONSUMER"

GAYOSO LUMBER COMPANY

MEMPHIS, TENNESSEE

Reese Sheriff Lumber Co.

WILLIAMSPORT, PENNSYLVANIA

Manufacturers of

Northern and Southern Hardwoods White Pine, Spruce and Hemlock

With special attention to **Oak, Chestnut, Poplar, Cherry, Walnut, Gum and Basswood.**

OUR MOTTO

REASONABLE PRICES - that you can afford to pay.
EFFICIENT SERVICE — that you have a right to expect
FAIR TREATMENT — that you can depend on getting

We would appreciate an opportunity of furnishing a portion of your lumber requirements.

Are You Prepared "To Ride the Crest" of the Steadily Rising Tide of RED GUM *Popularity?*

Manufacturers of Desirable Grades of Furniture, those who have their fingers on the pulse of public taste, are rapidly *increasing* their lines of good

RED GUM

"Slow beginners" (known as the ultra-conservatives)—those who follow public taste at a safe distance behind—are *also* using a most unaccustomed quantity of **Red Gum.**

*This is the final proof that "**Red Gum** has COME."*

HOW IS YOUR LINE? ARE YOU "TO BAT" or on the bench, "waiting"?

The appropriate grades of **Red Gum**, "America's Finest Cabinet Wood," for good furniture (and trim), for every sort of use, are READY for PROMPT DELIVERY—and at prevailing prices are "the wisest buy for wise buyers" in the whole list of high-class furniture woods today.

Up-to-date architects and "interior landscape artists" are waking up and "giving their clients what they want"—i. e., **Red Gum**. (*ARE YOU?*) IT WILL PAY YOU TO *RIDE THE TIDE.*

WRITE US FOR ANY INFORMATION YOU WANT. WE'LL GIVE IT TO YOU RIGHT.

ADDRESS: RED GUM DIVISION,

AMERICAN HARDWOOD MANUFACTURERS' ASSOCIATION

1314 Chamber of Commerce Bldg., Memphis, Tenn.

I offer the following West Virginia stock for immediate shipment:

100,000 Ft. 4/4 Sound Wormy Chestnut.
100,000 " 5/4 " " "
75,000 " 6/4 " " "
70,000 " 8/4 " " "

No. 1 Common and Better Chestnut

100,000 Ft. 4/4
100,000 " 6/4
100,000 " 8/4 60% 14 and 16 feet long, 50 to 60% 10" and wider.
15,000 " 4/4 FAS Plain White Oak.
75,000 " 4/4 No. 1 Com. Pln. Wh. Oak.
100,000 " 6/4 No. 1 Com. Pln. Wh. Oak.

I have also a car of 4/4 No. 1 C & B Tennessee Red Cedar in transit.

I can make immediate shipment of Crating Lumber, Excelsior and Wood Wool.

Write, Wire or Phone for Prices.

PERCY E. HEENEY
202 Weber Chambers, KITCHENER, ONT.

H. W. Darby Hardwood Lumber Company

Manufacturers of

Hardwood Lumber

Red and Sap Gum a Specialty

Gum, Oak, Tupelo, Poplar
Ash, Elm, Cypress

Rooms 1531-33 Bank of Commerce & Trust Bldg
MEMPHIS, TENN.

Mills at :
Sidon, Miss Money, Miss.
Greenwood Miss.

& YET AGAIN

here's proof that we are not only PULLING FOR GOOD OLD

OAK

but also *for those WHO SELL IT*—

IS THIS YOU?

Month by month we are working on the CONSUMER (*Your Customer*) for a big, strong "COME-BACK" **of OAK!**

Watch us!

Does your line meet the issue? If not, it can by next season.

STILL ANOTHER OAK FURNITURE ADV. APPEARING IN THE BEST MAGAZINES IN AMERICA.

OAK, as a CABINET WOOD, is serene in its conscious superiority.

Responsive alike to the best skill of the artisan and the artist, OAK combines all the qualities which contribute most to a home whose FURNITURE must (because of the little folks) at the same time impart ideas of beauty, dignity, poise and permanence—and good-naturedly repel the onslaughts of buoyant youth.

no finer heirloom than good OAK furniture."

...fe and enduring investment—none b...

American Hardwood Mfrs' Assn.
Let Us Consult Together for the Good of All Concerned. Write Us. We'll Answer.
Oak Division
ROOM 1408, 14 MAIN STREET, MEMPHIS, TENNESSEE

I O W A
BLACK WALNUT

NO cabinet wood responds as fully to the art of the furniture designer or the skill of the workman as American Black walnut. It meets every requirement.

Furniture of Walnut possesses a lasting charm and beauty that age does not destroy and the liberal use of this wood in furniture factories, guarantees the quality of their product

Our customers assure us IOWA WALNUT is superior to all other varieties for its texture, grain and beautiful coloring. We can prove this by our first shipment

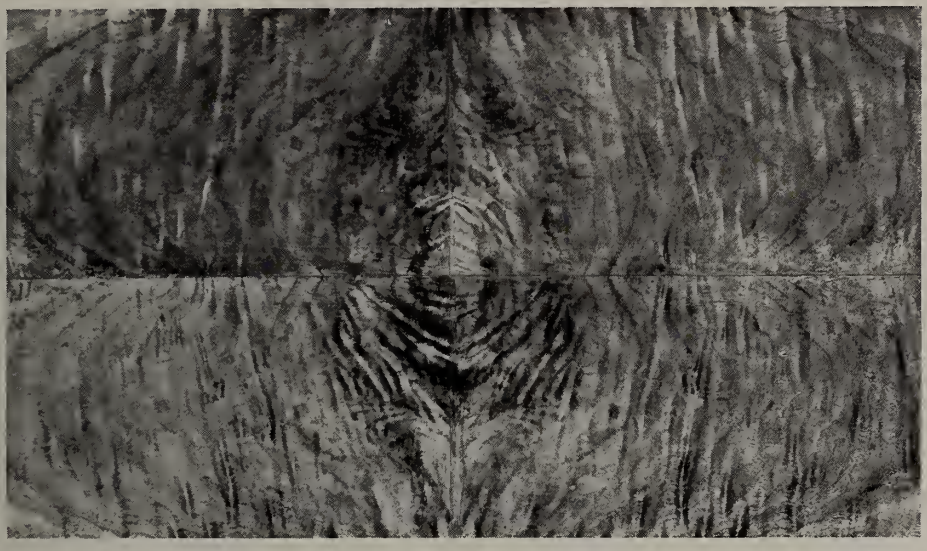
Send us your list of Walnut requirements in lumber and veneers

Des Moines Sawmill Co

DES MOINES, IOWA

"Hartzell" Lumber and Veneers "Hartzell"

American Walnut Exclusively



"Hartzell's Choice Walnut"

Furniture manufacturers will do well to note that we produce only American Walnut, and therefore can be classed as the logical source of supply in this wood, and our years of experience in handling American Walnut will prove valuable to you if you desire to take advantage of it.

By saying that our long experience will prove advantageous to you we mean that you should by all means take time to examine our line before purchasing, because the quality will be far superior to the average line and the price no greater.

We study your particular interests and produce veneer of the kind and quality that is best adapted to your work, and whatever class of figure you are using we can give you a complete uniform line of just the wood you want for your selection, and it will not be necessary for you to handle a great lot of all sorts of samples and then find only a few stocks suitable for your needs.

When you purchase our line you can rest assured that you can duplicate your purchase just as near as it is possible to do so in Veneers, that is our part in serving you and we see to it that you are served right.

"SEND YOUR INQUIRIES FOR VENEERS TO US."

"Hartzell" Piqua, Ohio "Hartzell"

When
Dry Lumber
Gets Scarce

Remember !

Our dry-kiln is at your service—500,000 feet per month capacity and 10,000,000 feet Of lumber from our own band-mills to draw upon.

James E. Stark & Co., Inc.
MEMPHIS, TENN.

HUNT, WASHINGTON & SMITH
Nashville, - Tennessee

Manufacturers of

Quartered and Plain White Oak

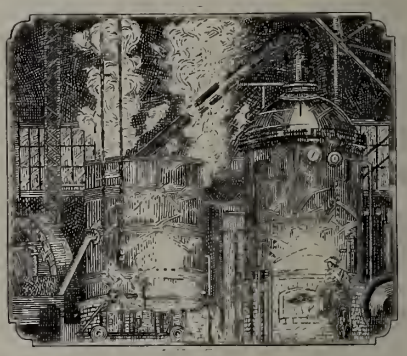
Poplar - Ash - Chestnut

Tennessee Red Cedar

Gum and Cypress

Canadian Representative
W. R. YOUMANS
Parkview Hotel Toronto, Ontario

Wood Turpentine
(MADE IN CANADA)



THE Canadian Wood Turpentine—made at our mills at La Tuque, P.Q., is an excellent diluent and solvent and contains no free rosin.

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For Veneer and Veneer Drying

Made in Canada

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Tennessee Aromatic Red Cedar

Is a wood of charm and romance that has met with much favor in the States and is being used in greater quantity each year to produce a very necessary household article—namely—the Aromatic Moth Proof Chest—for the storage of woolens, furs, etc. There is also an increasing amount being used for the manufacture of Ceiling and Flooring, for lining wardrobes, clothes closets, and so on.

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Tupelo, Ash, Elm, Oak

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Aromatic Tennessee Red Cedar

CAR LOAD LOTS
OR LESS

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Murfreesboro, Tenn.

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Our large supply of well selected logs makes it possible to produce and maintain an abundant stock of high grade walnut lumber.

A part of our log supply being cared for in a pond of water.
The picture shows surface of pond.

All Grades and Thicknesses.
American Walnut Exclusively.

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8000	10/4"	No. 1 Com. and Btr.
12000	12/4"	No. 1 Com. and Btr.
3000	14/4"	No. 1 Com. and Btr.
3000	16/4"	No. 1 Com. and Btr.
3000	5/4"	No. 1 Com.
5000	6/4"	No. 1 Com.
1000	8/4"	No. 1 Com.
2000	4/4"	No. 2 Com.
2000	5/4"	No. 2 Com.
5000	6/4"	No. 2 Com.

PLAIN RED OAK

25000	4/4"	1s and 2s
2500	5/4"	1s and 2s
2500	6/4"	1s and 2s
8000	8/4"	No. 1 Common

QUARTERED RED OAK

16000	4/4"	1s and 2s
25000	4/4"	1s and 2s 10" and up
2500	5/4"	1s and 2s
3000	6/4"	1s and 2s
11000	4/4"	Clear Face Strips, 3" to 5½"
10000	4/4"	No. 1 Com. 10" & up
75000	4/4"	No. 1 Common
5000	5/4"	No. 1 Common
3000	6/4"	No. 1 Common
6500	4/4"	No. 1 Com. Strips

PLAIN WHITE OAK

9000	8/4"	No. 1 Com. and Btr.
40000	4/4"	No. 1 Common
30000	5/4"	No. 1 Common
5500	4/4"	No. 2 Common

QUARTERED WHITE OAK

13000	5/4"	1s and 2s
19000	5/8"	No. 1 Com. and Btr.
15000	8/4"	No. 1 Com. and Btr.
70000	4/4"	No. 1 Common
22000	5/4"	No. 1 Common
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20000	4/4"	No. 1 Com. Strips

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1300	4/4"	Log Run
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12000	5/4"	No. C. & B. Pl. Sap

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9500	4/"	Box Boards, 13-17"
150000	4/4"	1s and 2s, 12" and up, S2S to 13/16
150000	1/2	1s and 2s, 10" and up, S2S to 3/8
18000	4/4"	2-A Common
6000	5/4"	2-A Common
3000	6/4"	2-A Common
5000	5/4"	2-B Common
3000	6/4"	2-B Common
2000	8/4"	2-B Common

ELM

1 car 3 " No. 1 Com. and Btr.
2 cars 3½" No. 2 Com. and Btr.

MAPLE

1 car 3" No. 2 Com. and Btr.

Send us your inquiries for Ash, Beech, Cottonwood, Elm, Gum, Hickory, Oak, Poplar, Sycamore, and Walnut.

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Right now dry lumber is scarce. Here's a list of dry stock ready for prompt shipment. Remember there's 30 years' experience back of every board.

1 car 5/8 FAS Plain Red Oak.
1 car 5/8 No. 1 Com. Plain Red Oak.
10 cars 4/4 No. 2 Com. and Btr. Plain Red Oak.
1 car 5/4 FAS Plain Red Oak.
1 car 5/4 No. 1 Com. Plain Red Oak.
2 cars 6/4 FAS Plain Red Oak.
2 cars 6/4 No. 1 Com. Plain Red Oak.
1 car 8/4 FAS Plain Red Oak.
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3 cars 10/4 FAS Plain Red Oak.
1 car 10/4 No. 1 Com. Plain Red Oak.

Write for our Complete List with Prices

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NORTH VERNON, IND.
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Every Board Branded "NVLCO." Quality Guaranteed

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Quartered Red and White

OAK

1,000,000 feet of dry stock carried at all times

ALSO PLAIN OAK AND ASH

We manufacture all stock carried

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
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Mills at EVANSVILLE, Indiana

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10 cars 2″ 1s and 2s.
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5 cars 2½″ Common and Better.
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Crating Fir Spruce
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Quartered White Oak
Quartered Red Oak
Elm
Tupelo
Cottonwood

Plain Red
Quartered Red
Sap
Qtd. Red, Sap
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GUM

GUM

Our Specialty is DELTA GUM

GUM

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Inc.

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Send us your inquiries

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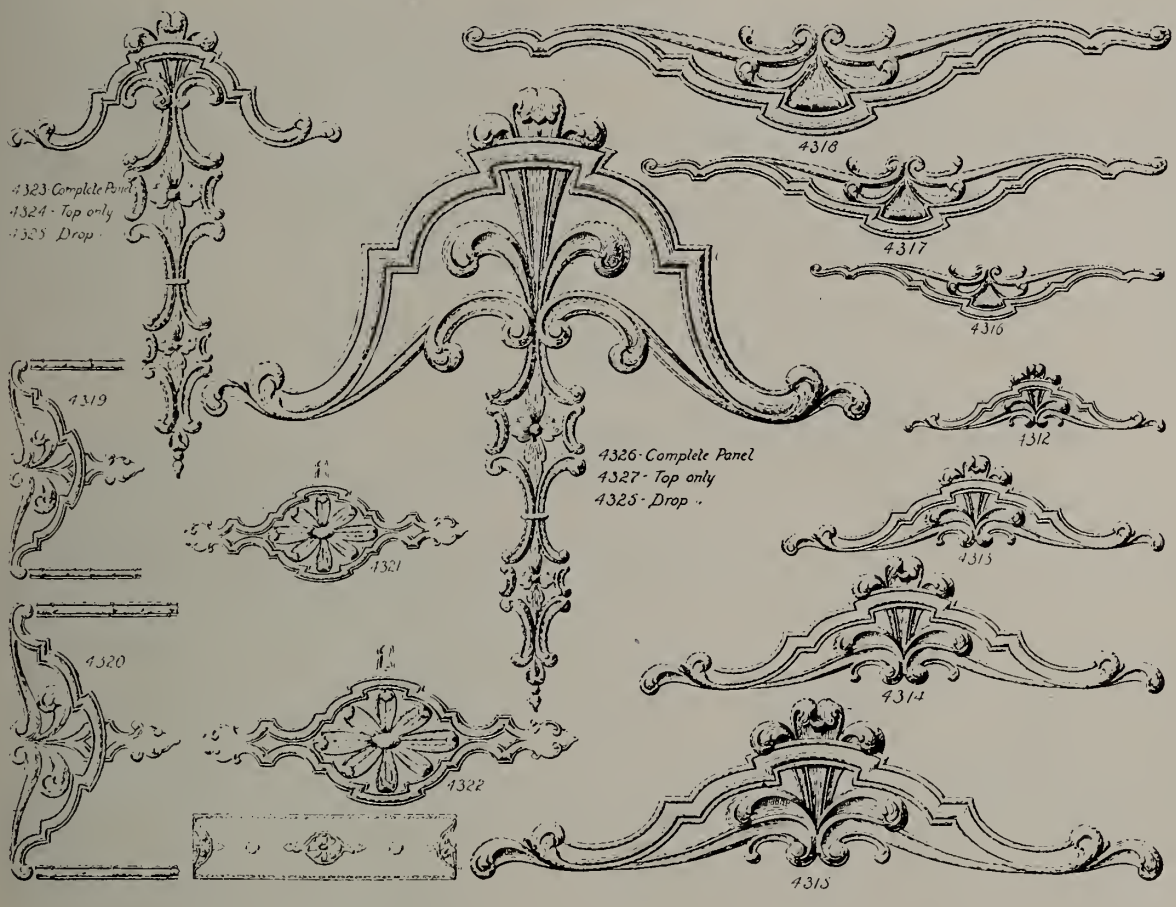

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Wood Fibre Ornamentation

WE SOLICIT YOUR INQUIRIES

J. WALTER & SONS

KITCHENER - ONT.

HIGH LABOR COSTS

are giving you as much worry as they are giving us. We can show you how to ***reduce*** them by driving ***seven*** screws in the time formerly occupied in driving four.

Read below what one large furniture manufaeturer said about our screws to one of his competiors.

See That Square Hole? ↓

See That Square Hole? ↓

Robertson Patented Socket Head Wood Screws

We are in receipt of your letter of the 17th in reference to the Robertson serew. We were rather baekward in trying to make ourselves believe that this screw is as good as the old slot serew, but we have entirely ehanged and are now using the soeket head screw exelusively. It would surprise you how many more serews of this make the workman ean drive than of the old style. You will make no mistake in using their screws altogether.

WE MAKE AND SUPPLY FREE WITH FIRST ORDER BITS FOR USE IN REYNOLDS MACHINE OR ANY OTHER TYPE DRIVER.

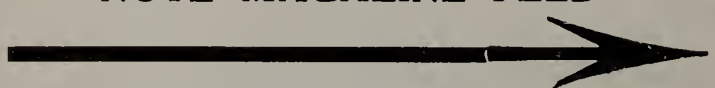
P. L. Robertson Mfg. Co., Ltd.

Milton - - - Ontario

Drive Your Screws Speedily and Accurately

Recent tests have proven the revolvingly driven serews to have holding power forty-nine per eent. stronger than serews driven by hammer. The hand method of serew driving is daily wasting time and profits that you may save by installing Reynolds Automatie Magazine Fed Screw Driving Maehines.

NOTE MAGAZINE FEED



Simply dump the serews into the magazine and the maehine does the rest. Ease of operation and simplieity of eonstruetion has made the Reynolds Automatie Magazine Fed Serew Driving Maehine simple to operate, your newest hand would operate these maehines with very little praetice. An average of from 1000 to 2000 ordinary screws can be driven in one hour by these machines, eaeh perfeetly driven and driven to hold.

Write us today for further particulars.

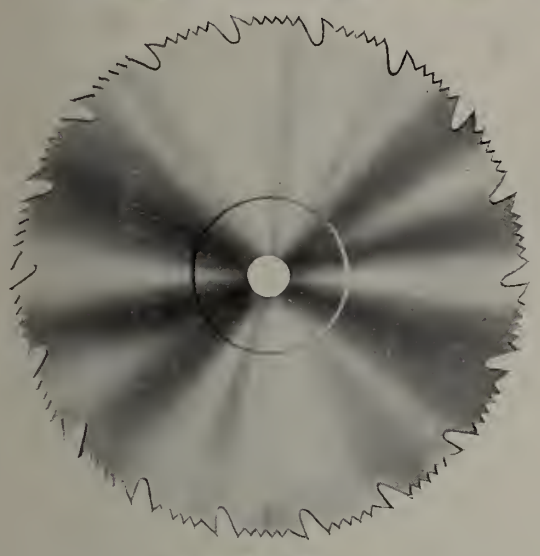
Simply dump a gross of screws (either wood or machine) into the hopper. The machine does the rest.

The Reynolds Machine Co.

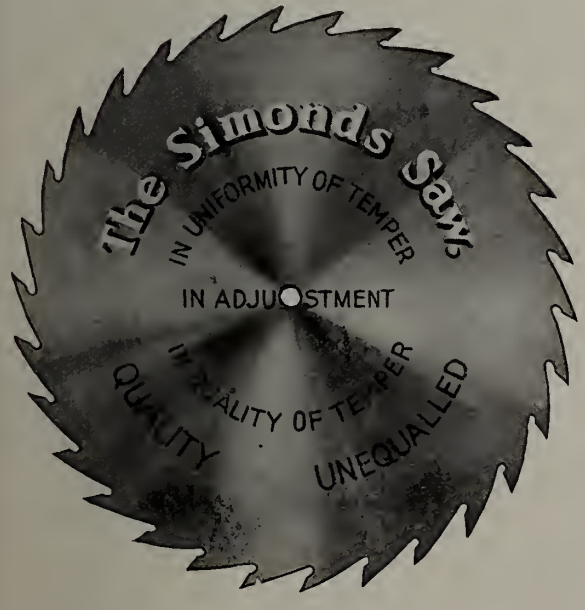
Department C

Massillon, Ohio U. S. A.

SIMONDS



SAWS AND KNIVES



A cutting service that helps cut the cost of cutting in the woodworking shop or mill is something which operators look for, especially in these times of high cost of material and operating expenses. There is no surer way of meeting the problem squarely than by selecting a line of Simonds Saw Steel Products, because they are a proven success, and in no way an experiment. If it is a Circular Saw, or Narrow Band Saw you need, first investigate the Simonds. Our Circular Mitre and Novelty Saws are the peerless saws you will want. They are taper-ground to the collar, to run without set, and provide ample clearance. These saws are especially designed for smooth, clean cutting on work such as cabinet and kindred production. When you require machine knives remember that you will find none to compare with Simonds. These knives are of the highest quality with a cutting edge of tough steel which retains its keenness and cuts smooth, finished lumber.

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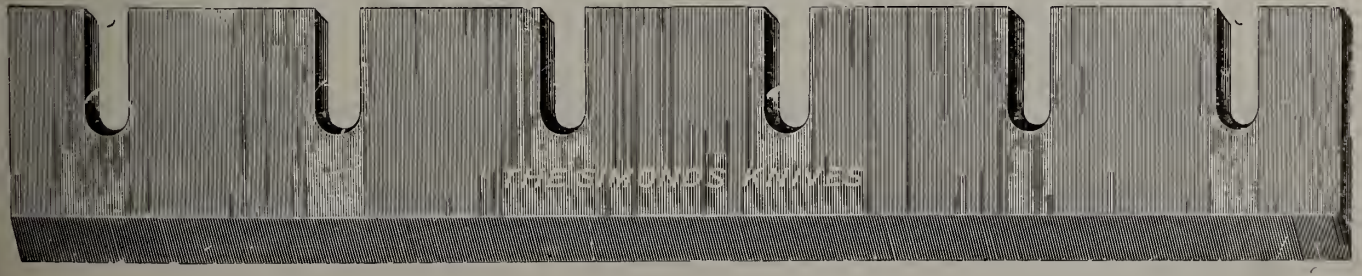
"THE SAW MAKERS"

ST. REMI STREET AND ACORN AVENUE

Vancouver, B.C. MONTREAL, QUE. St. John, N.B.



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No heat controllers or other safety guards are necessary with this heater, **because it cannot injure glue.** It's simple, substantially made of copper and costs less than any other.

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We make any size desired.

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Cincinnati, Ohio

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Waterproof Glue

STRENGTH

Admittedly greater than the **best hide glues,** infinitely stronger than the vegetable glues.

COST

FOR JOINTING. Very much less than the hide glues.

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CLOTH PRODUCTS
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Thus are the roll ends amply protected.

Then, too, the entire roll is wrapped in a moisture proof covering, securely tied, intelligently labeled.

The rolls are in perfect condition when they leave us. We want you to receive them just that way — that is why we are so particular.

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Well Manufactured from Good Timber

Unexcelled Quality and Service

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Strict uniformity of inspection and quality year after year, with a truly superior service, have consistently kept old customers on our books.

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And all U. S. A. Hardwoods

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And all other Canadian Hardwoods.

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Vol. 20 **Toronto, February, 1920** **No. 2**

Mirror Plate Situation is Serious One

Under present conditions the life of the average furniture manufacturer is not one of ease and of the many difficulties with which he is confronted that of securing an adequate supply of mirror plate is not the least. The lumber situation presents many problems of its own but lumber may be secured at a price while the mirror plate market is fast approaching a state where it will be extremely difficult if not impossible to secure an adequate supply of this material at any price.

For some time past conditions have been gradually getting more acute but it was anticipated, in some quarters, that when the Belgian glass ovens resumed production this shortage would be made good. However owing to conditions in Belgium production is only one-third of normal and it is unlikely that it will be increased to any appreciable extent in the near future. On the other hand there is a world wide demand for glass.

In addition to the glass required by the furniture trade, which is all small sizes, the show case manufacturers and the automobile industry are big factors in the market, particularly the latter. The auto manufacturers require immense quantities of small sizes for windshields and windows in closed cars, and are willing to pay almost any price to secure their requirements. In fact this demand from the motor car industry is probably the largest single contributing factor to the present shortage of stock.

In view of this unprecedented demand from this particular trade the dealers in glass and mirrors find that they can dispose of all the small sizes they can secure at prices equal to those being paid by the furniture men for the silvered article. There is also the added advantage that the motor trade does not demand as high a grade of glass as the furniture trade, as small imperfections will pass in the windshield of a motor car. On the other hand the glass men realize that present conditions will not exist indefinitely and being desirous of keeping their connection with and holding the good will of the furniture trade they are striving to the fullest extent of their ability to satisfy the demands of the furniture men.

This condition is general as evidenced by the fact that some American furniture makers are shipping case goods minus the mirrors. They are instructing the dealers that the glass will be forwarded as soon as obtainable and even suggesting that they dispose of the goods to the buying public without the plates and promise delivery of the mirrors at a later date.

While the Canadian trade has not been forced to this extreme as yet, the situation is serious and some steps must be taken, at once, to conserve the existing supply of mirrors. On many lines being manufactured the mirror could be dispensed with entirely without detracting from the beauty or value of the piece. In fact a good designer could probably eliminate the glass from certain articles and at the same time improve the appearance of the product. The suggestion was made in an article which appeared in the May issue of the "Canadian Woodworker" that the mirror in china cabinets and buffets be replaced by a flowered curtain or piece of brightly colored drapery. The illustrations accompanying this article showed two very attractive pieces of furniture without mirrors. In addition to doing away with the glass on buffets and china cabinets the mirror in chiffoniers should be dispensed with wherever possible. If this were done it would be a big factor in ameliorating present conditions.

True the stocks of glass in this country are not absolutely depleted but the greater part of available supply is in large sheets and as such has an enhanced value. To cut this down and silver it would increase the price of the finished mirror to a degree that would almost make it prohibitive. It could be done if the trade would stand for the increased cost.

Another item that might well be considered is the quality of the glass. It is practically impossible to secure the quality of mirror plate that was on the market a few years ago. Many of the pieces now being shipped out contain slight imperfections. Owing to present conditions and the fact that the automotive industry will take this glass at the same price the shippers will not replace or make allowances for such faults. Perhaps they cannot be blamed. At any rate the furniture manufacturer is so placed that he must make the best of a bad business and accept the plate sent him. He in turn should take the dealer into his confidence explaining the situation to him and convincing him that it is utterly impossible to secure as high a grade of glass as formerly. The suggestion might be carried further and the buying public educated to the fact that the day of perfect mirrors is past, temporarily at least.

Canadian Furniture Makers Meet

Furniture Manufacturers' Association Hold Enthusiastic Gathering in Toronto—Prospects for Present Year Considered Bright—Achievements of Committees Very Gratifying—Questionnaire to be Issued

The Furniture Manufacturers' Association held their annual meeting in Toronto on Thursday and Friday, February 6th and 7th. While a few of the members were absent through illness the attendance was a large and representative one. H. M. Snyder, Waterloo, Ont., the retiring chairman, gave an interesting address and reports and papers were presented dealing with various phases of the work and the good

W. J. Anderson, Stratford, Ont.,
Chairman of the Association for 1920

showing made by the Association. There has been an increase in the membership of the Association which brings the total to 87 members.

The retiring chairman in his address stated that the past year had witnessed the inauguration of a cost accounting department under the capable supervision of J. E. Ferguson, Woodstock, Ont. A number of the furniture manufacturers have now got the cost system in full swing and are able to take off monthly balances covering all the activities of their factories. Others are installing time-recording clocks and taking other steps, which will enable them to keep accurate costs. It is anticipated that 1920 will see the system in full swing in the majority of the furniture factories. This work is taxing the cost accounting department to the utmost. From the information at hand it is felt that it is only a question of time before the whole furniture industry in Canada will have a reliable cost accounting system based on true cost accounting principles.

Proportion of Profits Speculative

While the past year has been a prosperous one for the majority of the furniture makers, still it must be borne in mind that a large proportion of the profits obtained were speculative profits and the danger to be guarded against is that the same calculated profit under normal conditions would not be sufficient to show a working net profit. If the price of raw materials were to recede, not only would this profit be wiped out altogether but a loss would accrue. The point for the manufacturer to consider is what portion of the profits have been obtained through speculative buying. This is a matter which will require careful consideration when making calculations for future business. .

As far as can be foreseen, the furniture trade will be taxed to its utmost during the present year to supply the requirements of the retailer. Beyond that time it is not wise to prophesy although there are no signs of business dropping off or any likelihood of a slump occurring as there is a world-shortage of all commodities required by man.

Ordering in Excess of Requirements

The secretary in his remarks pointed out that some retailers might be placing orders in access of their requirements, working on the principal that they would not be likely to receive more than fifty per cent. of the amounts ordered. This creates a fictitious demand; a condition that must be guarded against,

F. W. Trebell, Stratford, Ont.
Chairman of Freight Committee

otherwise a serious state of affairs might arise which would be prejudicial to the trade as a whole. The furniture producers were advised to examine into the previous requirements of their customers and distribute this year's output in something like the same proportions, so as to give a fair distribution of their product.

Among other duties the tariff committee has been

H. S. Robertson, Stratford, Ont., Chairman of Credit Committee

Jas. E. Ferguson, Woodstock, Ont., Chairman, Labor Committee

J. H. Baetz, Kitchener, Ont., Vice-chairman and Chairman of Credit Committee

giving special attention to the exchange situation, in particular the question of stimulating the production of furniture supplies in Canada was discussed. It was felt that if Canadian manufacturers once realized the vast quantity of material such as casters, locks, furniture hardware, etc., which is used annually by the furniture industry they would take steps to install the necessary equipment and supply this market. With the object of compiling this data a questionnaire will shortly be issued to the furniture manufacturers asking them to furnish information and figures pertaining to the supplies used during the course of a year giving the quantities and grades of the various items. It is thought that when this information is tabulated and totalled the amounts involved will come as a complete surprise to local industries.

Studied Labor Situation

During the past year the furniture industry has not been confronted by any serious labor troubles or strikes. The credit for this desirable state of affairs is due to a large extent to the work of the labor committee of the association. These gentlemen made a study of labor conditions in the Canadian furniture industry and also kept a close watch on any new developments in the labor situation in the American field. Their efforts and helpful suggestions have been of real assistance to the members of the association and the industry as a whole.

Work of Credit Committee

The credit committee are doing a good work and their efforts have prevented the furniture producer from accumulating a large number of bad debts. In their work they have co-operated with numerous retailers and have given helpful advice and assistance which has been in all cases welcomed by the retailer.

The election of officers was held at this meeting the following gentlemen being elected: Chairman, W. J. Anderson, Stratford, Ont; vice-chairman and chairman of the tariff committee, J. H. Baetz, Kitchener, Ont.; chairman of the credit committee, H. S. Robertson, Stratford, Ont.; chairman of the freight committee, F. W. Trebell, Stratford, Ont., and chairman of the labor committee, James E. Ferguson, Woodstock, Ont. Secretary, Wm. Cawkell, Toronto, Ont.

The January Furniture Exhibitions

The furniture exhibitions, which were held recently at the different producing centres proved very successful. The large number of dealers who visited the various exhibits were a very representative body, having come from practically all sections of the Dominion. The majority of the furniture manufacturers made their usual showings, although a few found it impossible to gather sufficient furniture to make a display, so simply closed their show-rooms.

The exhibits themselves were, with few exceptions, confind to staple and regular lines. Some new designs were displayed but the furniture manufacturers, realizing that production is the great need of to-day, were content to show their regular stock. Some had even reduced their lines, showing a fewer number of designs, so that they could increase production and reduce manufacturing costs by concentrating their efforts on fewer items.

The visitors showed a marked tendency to buy, and many fair-sized orders were placed. In most instances it was a question of how large an order the manufacturer would accept rather than how much the retailer could be persuaded to buy. The demand was strongly for the better-grade lines. It would almost appear as if, under present conditions, the higher the quality, and necessarily the price, the greater the demand. It seems that the buying public from the humble laborer to the wealthy capitalist, are all clamoring for the same grade of furniture—the best.

There was a slight tendency on the part of some of the furniture men to over-buy. As was pointed out at the recent meeting of the manufacturers, this attitude must be guarded against. The manufacturer should divide his product pro rata, basing his figures on the amounts supplied his various customers during the last year or two.

Attractive Living Room Tables

The Simplifying and Standardizing of Existing Lines will Increase Production and Help Solve Some of the Problems Confronting Furniture Manufacturers

By James A. Anderson*

The present strong demand for furniture is unprecedented and was to a certain extent unexpected. The combined capacity of the various furniture factories are taxed to the fullest extent of their productive ability and yet are unable to keep up with the requirements of the trade. The cry is for more furniture and still more furniture.

While the buying public is clamoring for quality, owing to this shortage of available stock almost any grade of furniture finds a ready sale. The lines being most assiduously sought after are those consisting of the very best grades that it is possible to produce—pieces that would not have found such a ready sale a few years ago.

The simplifying and standardizing of existing lines will tend to increase production and will to a certain extent help relieve the present situation. Another point worth mentioning is to have the different parts of various pieces interchangeable as far as possible. In addition to increasing production this has a twofold advantage. It lessens the variety of work going through the plant, lessens the amount of manufactured parts that require to be carried in stock and the workmen being constantly at work at certain operations become more expert and produce a greater quantity of better manufactured stock.

Living room or library tables in adaptations of the Louis XV., Queen Anne and Cromwellian period designs.

The accompanying sketches show three different designs in library or living room tables. These have the proportions and lines of the high priced articles and yet can be produced to sell at moderate rates. These designs can be detailed for either the standard or the knock down type of table but in either case the construction is very simple and quantity production is possible.

The Louis XV design would likely be made in either walnut or mahogany, although gum might be employed and stained as required to imitate either wood. The carvings which are planted on are composition and may be had from almost any manufacturer of furniture carvings.

The other two designs are adaptations of the Queen Anne and the Cromwellian period designs and would look best in either walnut or quartered oak. Suitable carved mouldings may be secured from the Waddell Manufacturing Co., Grand Rapids, Mich. The finish would be a dull rub or in the case of the oak tables a waxed fume.

The French legs and the turned legs are readily made on the modern automatic turning lathe. The carvings on the foot of the Louis XV leg and the coves at the sides could be done by hand. However the coves could be worked to better advantage on a spindle carver or carving machine. If this were done it would be necessary to use a gauge for depth and another for the edge of the leg.

The demands of the trade both for quality and quantity are such that the furniture manufacturer cannot afford to overlook any item no matter how small, in the construction and design of the various pieces that go to make up his line.

*Consulting Designs, Grand Rapids.

Every millman, foreman, or anyone else holding an executive position should make it his business to be well posted on the latest developments of woodworking machinery.

Going one better in running risks while working woodworking machinery is acting like a fool, and generally ends in disaster.

Bungalow designed along Colonial lines.

An Attractive Colonial Bungalow

Desirable Arrangement of Rooms Secured—Ample Storage and Closet Room Provided—Adequate Lighting Not Overlooked

The cosy appearance and the many attractive features of the modern bungalow have made it the choice of numerous home builders. Since its introduction a few years ago, this type of dwelling has proved very popular and is today being erected in large numbers.

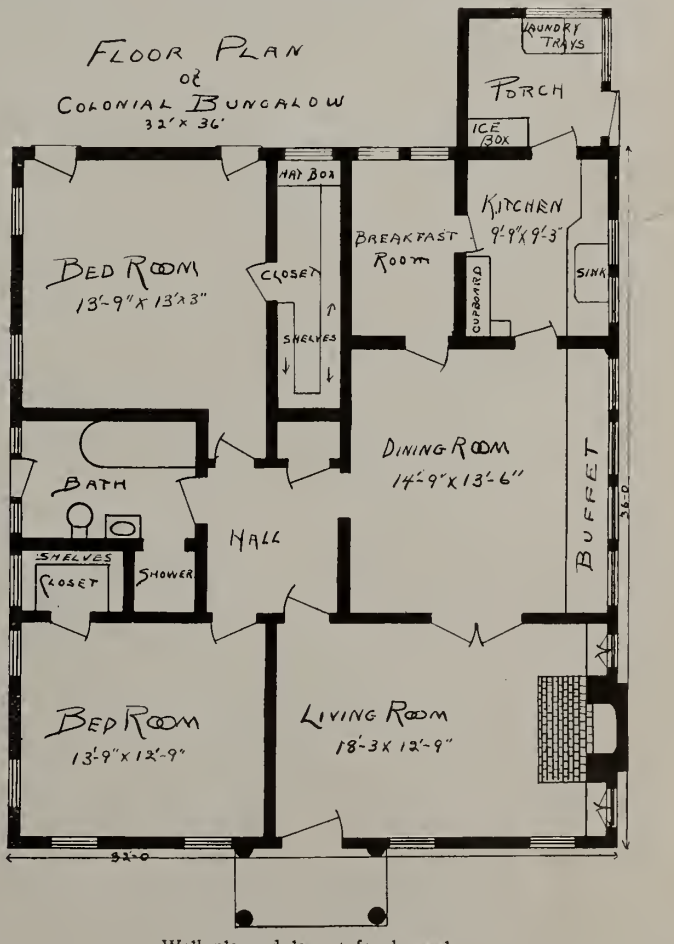
The term "Bungalow" is often used when referring to many distinctive types of homes, but, strictly speaking, should only be applied to a dwelling in which all the rooms are on the one floor. The accompanying sketch shows a very plain but attractive design of the true bungalow type. It is worked out along colonial lines, the wide eaves and the low shady porches of the California bungalow being replaced by the simple colonial porch with its gracefully tapered columns, the green shutters and other features that are associated with the colonial design.

The floor plan shows an unusually desirable arrangement of rooms and fixtures. The front door opens directly into the living room. When entering the attention is irresistively drawn to the cheery fireplace at the far end and at the same time the wide doorway leading into the dining-room gives a view of the built-in buffet, which fills one side of that room.

In this house the breakfast nook, which is being included in many residences, is replaced by a small breakfast room opening directly off the kitchen. This could be converted into a large roomy pantry if desired. The kitchen is provided with a large built-in cupboard and a wide shelf or table, with sink in the centre, along the outside wall. In the back porch is found laundry tubs, refrigerator and a fair amount of storage room.

Access to the bedrooms is gained through a small hall, thus doing away with having the sleeping quarters open directly into either the living room or dining room.

One feature worthy of mention is the large number of windows provided. If there is one item in the construction of a home that contributes more than any other to health and cheerfulness, it is an abundant supply of natural light in every room. Many of the present-day houses are not supplied with sufficient windows. The bright, cheery rooms would sell this bungalow to many a prospective purchaser.



Well planned layout for bungalow.

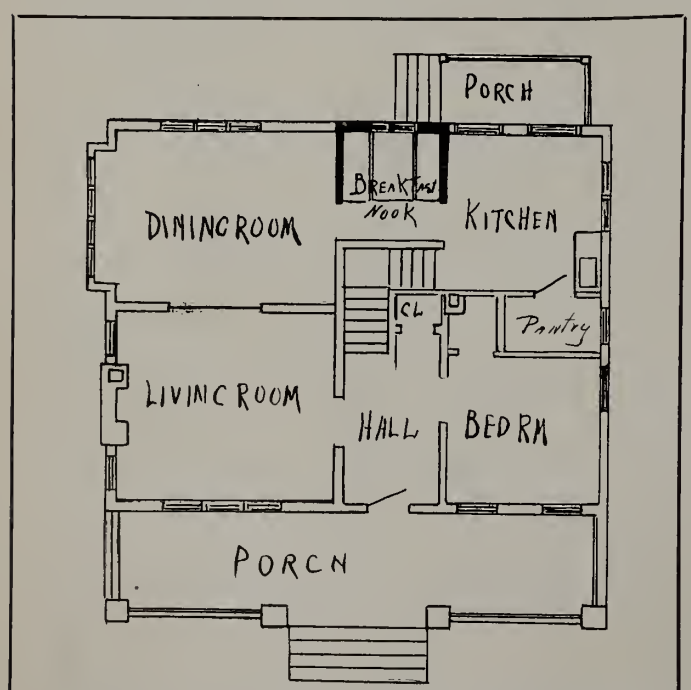
What is More Convenient Than an Alcove?

The Newer Type of Home Has Many Conveniences and Comforts—Breakfast Alcove, Den, Spacious Living Room are Practically Necessities—Seats and Tables Should be Simple in Design and Suggestive of Comfort

By W. H. Shaw

In the old days "A man's house was his castle." Do we realize that now the home of the average Canadian citizen includes luxuries unheard of even in the great houses of the old countries, until quite recently He has comforts which even the very wealthy could not compass, only a short time ago. Really, the good time to live, as far as material comforts are concerned, is here and now.

The home is the centre and the heart, around which the whole of life circulates. Give a man a little plot of ground and he has achieved independence. This is the foundation of Canadian institutions. That which fosters and encourages the individual home, helps to build up and strengthen the nation. Most people build but one home. When it is completed and they live in it for a few months, they begin to say,"If I were building again I would," and they enumerate the things which their building experience has taught them. It is always difficult to get experience at second hand; yet to a certain extent it is possible. It is not uncommon for the prospective home builder to find that his taste for all that is artistic and convenient



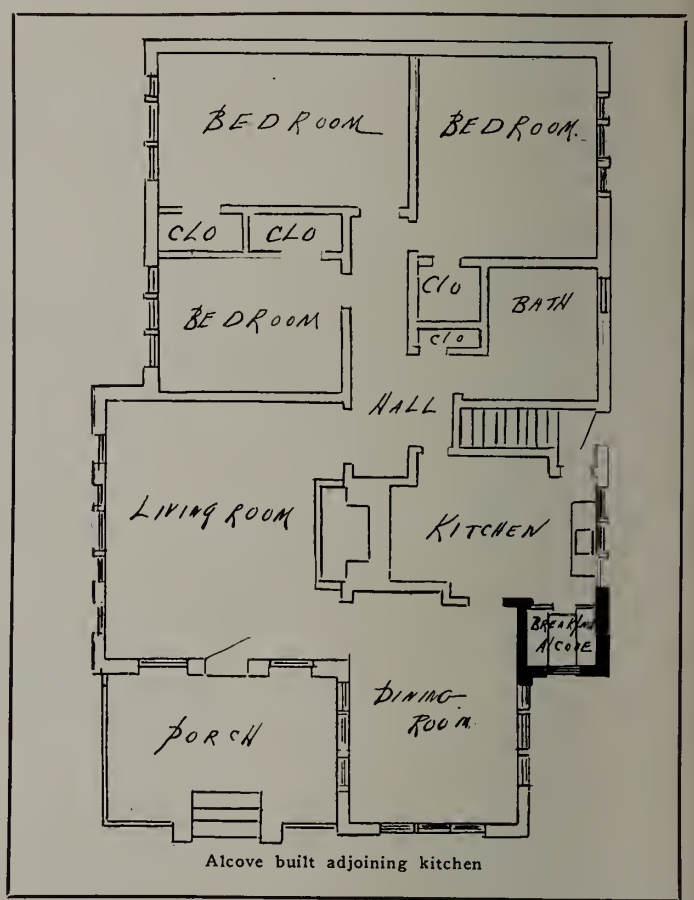
Layout showing alcove between kitchen and dining room

in a home far exceeds the limitations of his bank account.

The Bungalow has Changed

Originally the bungalow was a lightly-constructed, inexpensive building with but few of its present-day characteristics, which now comprise everything modern ingenuity can devise to make a home complete. Kipling, in the "Letters of Marque"—in which are jotted down the impressions of a young Englishman travelling for the first time in India,—coins the word bunga "loathesome" to express the hero's disgust of the usual one-story dwelling.

Long ago the American bungalow threw off the early traditions and limitations. This metamorphosis has been brought about by the great wave of popularity for the bungalow, which has swept over Southern California and other parts of the Pacific Coast, and



Alcove built adjoining kitchen

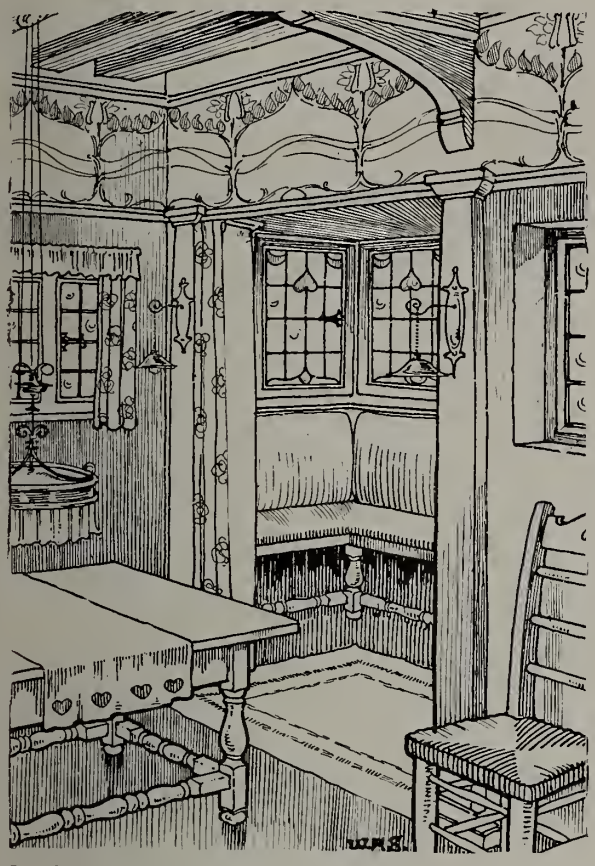
has now spread and is continuing to spread all over Canada, both in city, town, and country, until to-day, when the country throughout is sorely in need of homes, this is the popular class of building, both from the viewpoint of the builder, buyer and renter. As this popularity is no respecter of persons, it has captured the rich man as well as the poor, and the best of architects and designers have turned their attention to bungalows, and, naturally more attention has been given to the expensive than the inexpensive.

Attractive Features in Demand

So, as the man of moderate means begins to look around for ideas to incorporate in his new home, he is often attracted by that which proves too expensive. This is not because it is impossible to obtain artistic effects in the inexpensive bungalow, but because it requires so much artistic skill and vastly more labor to adjust all the real requirements to the price of the

inexpensive house. This skill is one of the costly elements.

The popularity of the bungalow has created a demand for homes which are smaller on the outside and at the same time larger on the inside, than the old-fashioned homes. This is only reasonable as many will remember the sprinting that used to be done in the rambling old kitchen when breakfast was late,



Showing the attractive appearance of alcove off dining room

and yet how no one room in the house was big enough to gather a group of guests.

Several women were defining their ideas of a bungalow not long ago. One of them expressed her ideas in the following manner:—"A spacious living room, a sleeping porch, a Dutch breakfast alcove, plenty of verandah space, a cosy den with built-in bookcases, seats, a fireplace for rainy days, and where housekeeping is possible when a maid is impossible."

Attractive Features of Alcove

These Dutch breakfast alcoves will delight those who have been seeking suggestions for such features. The breakfast alcove is fast becoming quite popular in this country, and well it may, for it possesses many agreeable points. It is equally adaptable to a small house or a large one, and, as it provides a cozy corner where the morning meal may be taken without disturbing the regular dining-room, it is especially appreciated by the housewife who does her own work. When arranged for in the original plan, it requires very little additional space, and the cost of adding it to the house already built, is very small. By the use of curtains it may be almost as satisfactorily shut off from the kitchen proper as if another room were built.

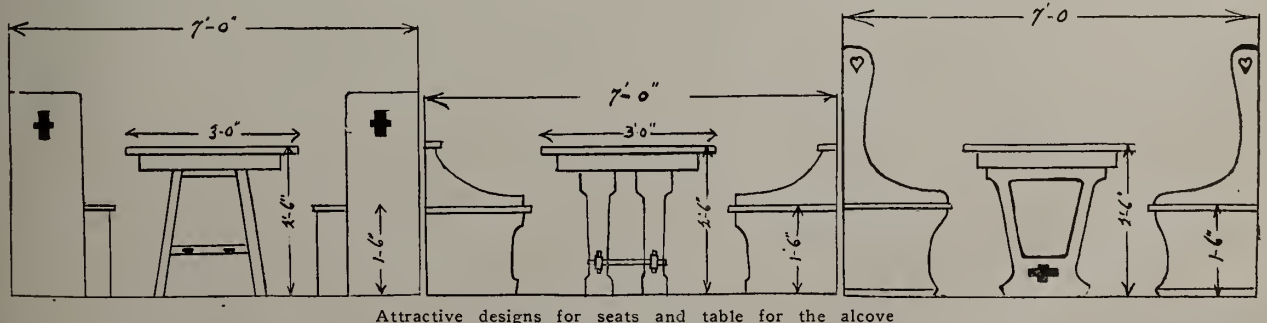
The corner utilized for an alcove of this kind should possess at least one window, to give it natural light as well as ventilation, especially if it is to be curtained off. It should also be provided with means for artificial lighting, if possible. The table and seats should correspond in line and finish with the remainder of the woodwork of the kitchen, and the table may be made either stationary or moveable. It is, perhaps, more satisfactory to make it moveable, as it can then be used for other purposes in the kitchen. The seats are designed with comfortable backs and each is long enough to accommodate comfortably two or three persons. An extra person may be served by placing a chair at the outer end of the table. The table should be the same length as the seats but may vary in width according to the space at one's disposal.

Plain and Simple in Design

These seats and tables should be built as simple and plain as possible. The human race loves simplicity. The complexities of dress and surroundings which are about us are not ours from choice. They are forced upon us. Could we have our way, we would build plain walls, plain windows, casings, etc., omit frescoed ceilings and moulded panels, but when such a thing has been suggested in the past, people held up their hands in horror. Then along came the bungalow and told us to go ahead. Simple construction is the only thing worth fighting for. It is the easiest to keep clean, and provides an interior far more conducive to rest than a fussy treatment creates. When we come to think of it, it is the simple, unconventional use of built-in seats, beams, brackets, etc., and the suggestion of cosiness and comfort that the general public likes about the bungalow.

A piece of wood sawn so smoothly that it only needs sanding, saves the time of a man and a machine.

New brooms sweep clean, but even an old one is better than none at all in a mill.



Attractive designs for seats and table for the alcove

How One Firm Handles Stock

Installation of Overhead Carriers Prove Labor Saving Feature—Facilitate Movement of Work and Increase Production—Applicable to Any Plant

Formerly when labor was plentiful and comparatively cheap the handling of material in the process of manufacture did not receive the attention it deserved. Nothing was though of taking a couple of men away from their work to help push a truck load of stock from one machine to another. The present

Carrying finished stock away from moulder.

scarcity of labor. and its high cost, has forced the factory owner to use every means at hand to conserve it. In this effort for greater efficiency the moving of the work about the plant is not being overlooked.

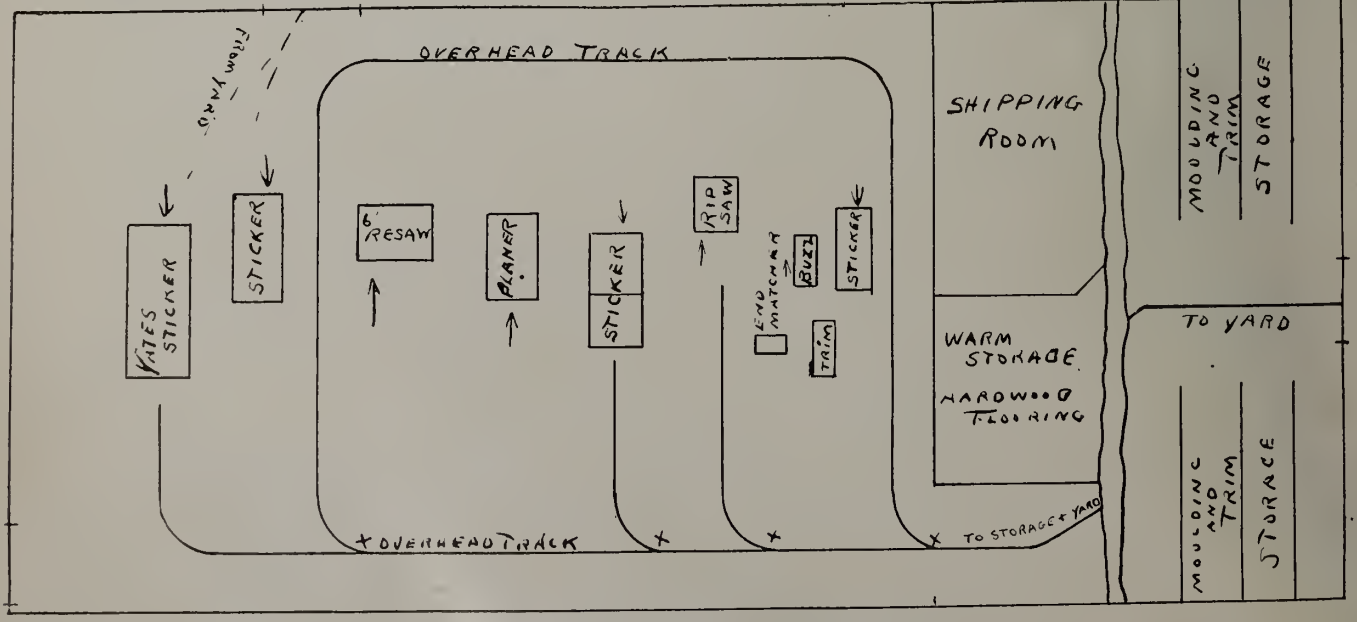
A firm who, in this respect, has kept abreast of the times is the Watt Milling & Feed Co., Limited, of Toronto, Ont. This concern recently installed an overhead carrier system to facilitate the handling of the material in their plant, and it has proven to be a labor saving, cost reducing feature.

Mr. Allan Watt, when asked his opinion, was very enthusiastic about the overhead system. He stated that they would not be without it for anything. It has replaced four men who were formerly employed behind the different machines and in moving stock about the plant, and where the stock used to be picked up and laid down a number of times before it was finished, it is now whisked from one operation to another with a minimum of labor and effort. Larger loads can be moved with fewer men and with greater ease and rapidity. Another feature is that a small pile of lumber, or another carrier load of material, on the floor does not prove a serious obstacle as the load is easily lifted clear of all obstructions.

The accompanying plan gives an idea of the system installed. The main overhead track forms a rectangle, enclosing most of the equipment. Where it goes between the second sticker and the band resaw it feeds both machines. The same at the far end, where it is used to carry stock to and from the last machine. This machine, a sticker, is used largely for thin oak. T & G flooring. The oak is resawed on the bandsaw, then picked up and carried to the sticker. After being matched it is raised and run out to the dry storage. The shorter lines, as indicated, take the finished material from two of the stickers and feed the ripsaw.

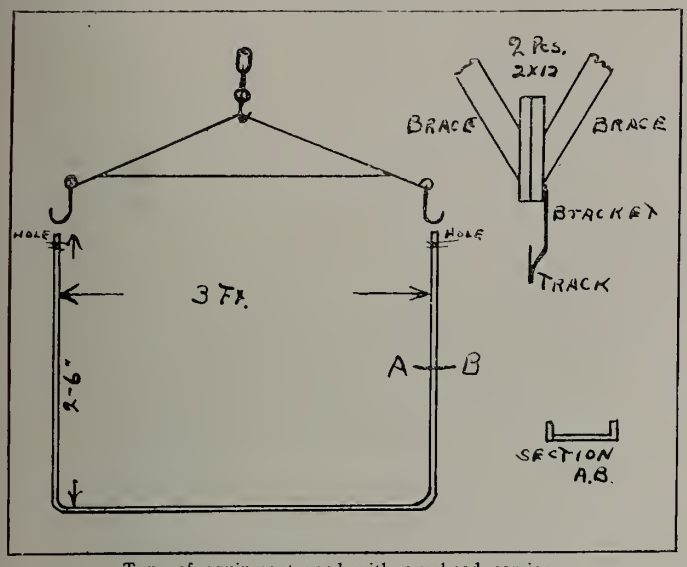
At each intersection marked X on the drawing a switch is provided, so that the trolleys may be run on the main track or switched off at will. At these points a small section of the curved track is hinged and is arranged so that it may be dropped down on top of the main line, thus making connection with the side line. It takes only a few seconds to make the change.

The second illustration gives an idea of the methods used to support the overhead track and the U beam used for carrying the stock. The former is self explanatory and need not be dwelt on in detail. As most of the material manufactured is in long length



Layout of overhead carrier in Watt milling plant.

the ordinary form of truck or truck frame is not suitable. Instead, steel in the form of a shallow U beam, has been taken and bent, as shown. Two holes were



Type of equipment used with overhead carrier.

drilled near the top for the hooks attached to the tackle. This tackle is shown in the drawing. Two of these bent U beams are taken and placed on the floor, separated to accommodate the length of material being handled, and the stock is piled in or drops in as it leaves the machine. When full it is picked up and placed where desired.

The carrier, which runs on a track, is a short trolley on two wheels with an efficient type of quick-acting chain block attached. Using the bent beams on long stock necessitates two trolleys and blocks being used, one for each end. It is a simple matter to run the blocks into position and attach the hooks, then a few pulls on the chains and the work is off the floor and away. If the passage is obstructed the load can be raised sufficiently to clear. A few edgings on the floor or even a small pile of lumber or other material does not interfere with the moving of the work as it would were trucks employed.

The overhead carrier system is capable of wide development and may be used in any woodworking and furniture factory. It can be installed on a small scale and gradually extended to touch every machine in the factory.

With such a system a good idea might be to have a central parking area where all loaded trucks could be placed until required for the next operation. This is possible, as a loaded truck from the centre of the parking area could be readily picked up and placed where desired. If this were done the space around the machines would be kept clear and production aided.

Cutting Costs on the Sticker

Running Simple Mouldings in Multiple Increases Production and Reduces Manufacturing Costs—Applicable to Many Designs

By D. L. W.

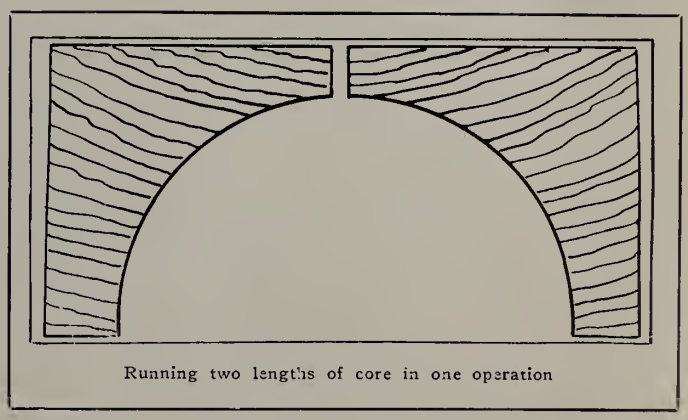
The subject of running mouldings in multiple was brought to my attention recently while strolling through a planing mill. One of the stickers, which was running cove, had been set to cut two lengths from one piece of stock.

The practice of running mouldings in multiples of two, three or more is one that is followed by many large operators and is one that can be profitably adopted by the small planing mill, in a more limited way. It offers a fay of producing mouldings at less cost than by the single piece and materially increases the output of the machine. In addition it saves the labor involved in ripping and preparing the single strips for the sticker.

Items to Consider

This method cannot be worked advantageously in every case so that before the runing of mouldings in multiple is attempted, there are a few points that must be considered. The first item is, perhaps, the quantity to be run. It would hardly be worth while to set up to run a few hundred feet in multiple. This method works to best advantage when there is a large amount to be put through. Then there is the question of stock. It might not pay to run a moulding in multiple from a wide and higher-priced grade of stock if there was a quantity of edgings and narrow stock on hand. If that were done it might be found that taking the value of the raw material into consideration, the moulding run in multiple from wide material might cost more than if it had been made from the cheaper lumber and run singly. There are many cases where this method can be followed and a considerable saving effected.

The cove referred to was 1¼ in. each way and was being run from 6/4 stock. The lumber was ripped to about 2¾ in. wide and run through the machine. The top head was set to surface the top side and two ripping or grooving knives were attached. these knives were set to cut sufficiently deep that when the cove was cut on the lower head, the piece fell in two. The side heads were set to dress the sides, the



Running two lengths of core in one operation

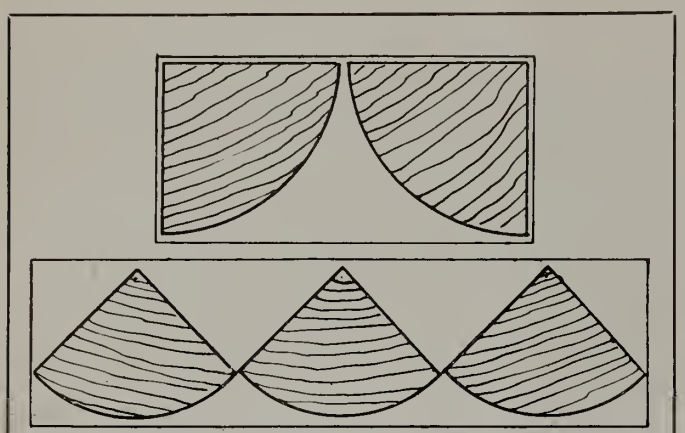
knives being set at an angle to give a slight undercut to the finished cove.

Bearing on Back Bed

The bottom head had a pair of flat and a pair of round knives, to cut the cove, attached. The widest

edge of the cove was run on the bottom. This gave sufficient bearing surface on the outside bed to prevent the pieces twisting and allowing the last end of the length to drop on the knives and be dubbed or chewed up. In some instances it will be found necessary to attach a block on the back bed to prevent this. The accompanying sketch shows clearly how this stock was run.

Quarter round is another item that can be worked out advantageously in multiple. I well remember when I started working in a factory, one of the first



Two methods of running quarter round in multiple

jobs given me was running quarter round. The stock was cut from edgings and waste material and was in various lengths from 4 ft. up. It was sawed to run singly. The way we did it was to place a form with a V in it, on the bed of the moulder and feed the stock in corner-ways, the cutting being done entirely with the top head. The material never feed readily as there was not enough bearing surface on the rolls, and if additional weight were added, they would cut deep and mark the faces of the round. It simply meant shoving this through by main strength, much to the detriment of hands and morals.

Excessive Breakage on Small Stock

The half-inch quarter round was the worst of all, as the stock was small and occasionally cross-grained. The result was that breakage was excessive both under the cutter and in front of the feed rolls, due to the strain of pushing the stock through.

There are a number of ways of running this item multiple and two are illustrated herewith. The sketch showing three pieces being made is a method that is extensively followed on the Pacific Coast. Instead of three they run as high as five and six. Lumber is plentiful out there and they do not attach much extra value to wide stock. In addition most of their machines are heavy and not adapted to small work. If three were run at a time the saving thus affected would be considerable.

Setting up For Quarter Round

A description of the method followed is hardly necessary. The V's are cut on the top head. The inside head is not used at all while the outside one is merely employed to size the material so that the back guage can be set nice and snug. The bottom head is used to finish off the rounds.

The other method illustrated is followed in many plants and effects a slight saving in material over the system described above. The top head is employed to surface the stock and both side heads are used. The knife on the bottom head is ground to a point and cuts through, dividing the piece in two. Here is an instance of where a block must be attached to the outside bed. If this is not done, as the last end passed through, the pieces would twist and drop on the knives with the result that a couple of inches would have to be trimmed off that end.

Two points that might be mentioned are that none but flat shoes are required, and if the stock should happen to be scant in places, it would not show on the face of the mouldings.

How to Accomplish Rapid Kiln Drying

Every wood using industry is interested in finding a quick method of seasoning wood, and expects that some day a new type of kiln will be devised which will accomplish more rapid drying. The U. S. Forest Products Laboratory has observed, however, that few kiln operators attain the fastest safe rate of drying possible with present-known equipment, and that **quick satisfactory drying depends more on the kiln operator than on the kiln itself.**

These are things that when they apply make for slow drying in any kiln:

1. Some one part of the kiln load is drying slowly because of sluggish and uneven circulation, and is holding up the entire kiln run.

2. The kiln operator does not know when the lumber reaches the desired moisture content, and therefore leaves it in the kiln longer than necessary.

3. The lumber may be casehardened and therefore unable to stand fast drying.

4. Lumber air seasoned six months is given exactly the same treatment as that air seasoned only four months.

5. The kiln operator does not know the moisture content of the lumber when it is put in the kiln, and therefore can not apply the initial drying conditions which are conductive to most rapid drying.

6. The drying schedule is regulated by the number of days the lumber has been in the kiln, rather than by the actual moisture content of the stock and its ability to withstand more severe drying conditions.

7. Steam is not supplied to the heating coils at night.

8. The kiln operator looks at his kiln only once a day, and then does not look at the lumber itself.

It is within the limit of commercial possibility for one-inch lumber to be perfectly kiln dried from 18 per cent. moisture content (reached, perhaps, in 3 months yard seasoning) to 5 per cent. moisture content, and conditioned for use, according to the following schedules:

Red gum	6- 8 days
Hard maple and birch	5- 7 days
Plain-sawed oak	8-10 days
Walnut and mahogany	6- 8 days

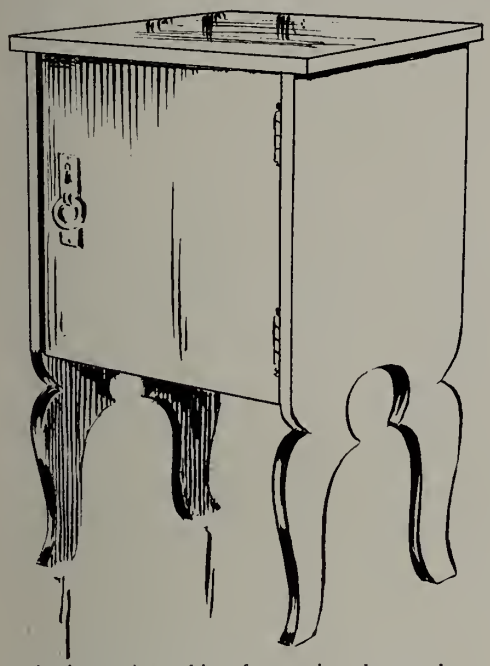
When you are tempering cutters use a film of oil on the top of the water. It will save the cutter from cracking.

Solving The Skilled Labor Problem

Evening Classes in Owen Sound, Ontario, Given Instruction in Drawing, Rod-Making and Stock Billing as Followed in Up-to-date Furniture Factories

By H. B. Beattie

The shortage of skilled workmen is a matter well worth the consideration of the furniture manufacturer. Many reasons have been advanced for this condition of affairs; insufficient wages, unsatisfactory hours, the general topsy-turviness in the scheme of things felt by so many men on their return to civil life, etc. All this may be, but I venture to say that a certain proportion of men who might be available



An interesting subject for evening class work

hesitate on the threshold of the furniture factory because they see no immediate prospect of getting in on the finer points of the game.

Men who do enter the factory with the view of becoming machine-hands, cabinet-makers, etc., and who have had little or no previous mechanical training, are soon alive to the fact that they have a lot to learn before they can expect to hold any position of responsibility, with its consequent raise in wages. A man may soon learn to operate an upright or horizontal boring machine, for instance, but when it comes to reading a rod or drawing he has to dash after the foreman for instructions and very often the foreman has to set up the machine for every job himself. The same thing applies to the cabinet-room. Many of the older cabinet-makers are unable to use a rod or drawing to advantage in spite of their long experience. The various pieces belonging to a job are, as a rule, trucked to the bench-room to be assembled and fitted, but the foreman is relied upon for the necessary instructions, not the rod or drawing, as the case may be.

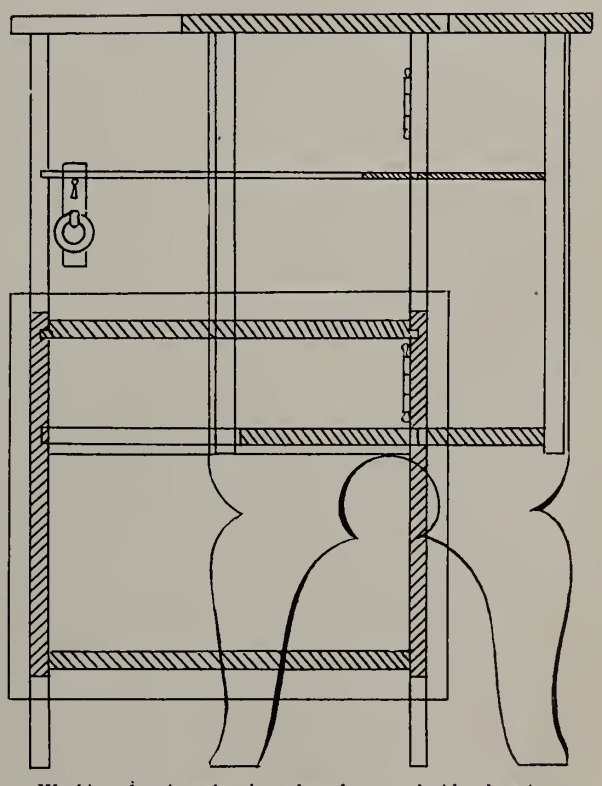
This would work out very nicely providing the various foremen had but one man to look after, but sach is not the case, and it is very much to the advantage of the man himself as well as to his employer, that he be able to readily understand rods, drawings and stock bills.

Now comes the Evening Industrial Classes where these men, as well as the older mechanics, are able to secure the little instruction necessary, not only in reading rods and drawings, but actually making these for themselves, following the methods used in our up-to-date factories. Stock-bills are made as well and the amount of material required is figured up.

Owen Sound is successfully conducting classes which are giving instruction in the iron and wood-working trades, with Mr. J. W. Dowkes as supervisor. An up-to-date class room in Victoria School has been provided. This is excellently lighted and is fitted up with regular drafting tables, with tops measuring 84 in. by 38 in., which permits the drawing of all the average pieces of furniture. The T squares, set-squares and all equipment is second to none in quality and from the point of utility.

The classes were opened last October, when a junior and senior class was formed. The junior class is composed of boys who had just started work in the factories, while the senior class comprised men who had worked at furniture making for some time.

At the start simple elevation and projection drawings, also lettering, were taken up and gradually small cupboards, shaving cabinets, etc., became the subjects. The students were asked to visualize these, or to simply make working drawings from given measurements and instructions while following the work set down on the blackboard.



Working drawing showing plan, front and side elevation

Some little difficulty was met with in the showing of sections, etc. Now the various pieces of small fur-

niture used as subjects, are taken in the white right from the factory to the school, where they can be taken apart to a certain extent and the various joints and other details of construction fully explained.

As the making of good rods depends largely upon one's ability to produce a good working drawing, these will not be attempted in class work till a little later on. The rod stock can be had from one of the local factories, given a couple of coats of shellac, sanded lightly and delivered to the school. The accompanying sketches illustrate the class of work being done at these Evening Industrial Classes.

Securing Uniform Tension in Band Saws

Saw Expert Gives Practical Suggestions on the Working of Resaw Blades

THAT uniformity of tension in band saws is very essential is apparent to all filers, and it is the universal aim of all to excel in that part of "saw doctoring."

I have seen some filers so painstaking in this effort, says a writer in "Yates Quality," that they would mark off four or five lengths and work just that spot, from mark to mark, until the tension gauge fitted that spot practically perfect, and then mark off another equal length and proceed again on the same lines. But if we stop to think a while, or if we examine a saw so treated, we will find that after all the saw is not uniform in tension. And, why not? For the reason that the saw blade bordering the mark on one side is in sympathy, so to speak, with the condition of the blade on the other side. Suppose you are tensioning a blade requiring 7 rolls to bring it normal, and you stop rolling right at the mark; then you are apt to find that about 6 inches on each side of the mark will still show tight. Now if you proceed to roll, or hammer, this apparently tight spot to conform to the rest of the marked space, you are very apt to find that on tensioning the next four foot space this 6 inch spot is too loose, and this looseness may affect the tightness on the other side of the mark to such an extent that it will be deceptive under a drop test.

I believe the better way, and one which I use constantly in my daily work, is to follow up each tight spot complete, whether it be four inches, or the length of the saw.

I place the saw first on top of the bench, place a block, or bridge, under it to test for tension, and if it shows a general run-down condition, such as the back getting too straight, I proceed to roll it a number of times, and in the spot mostly needed, all the way around the saw. Then I level for lumps and ridges, both crossways and lengthways of the blade. This finishes the job on the inside of the saw.

Now I put the saw beneath the bench, level down the most prominent lumps, etc., if there are any, and again put the block, or bridge, under the saw on top of the bench, test for tension, both drop and raised test, and follow out each tight spot its full length and width.

I believe that it is much safer to use only moderate pressure on the rolls and roll a greater number of times, especially when working a new saw, the temper of which may be softer than anticipated, or where different makes of saws are used. For I find that while each individual saw may be even in temper its entire length, not all saws, even of the same make, are alike, and as each saw maker uses a different formula for steel, the temper is of necessity varied in hardness and toughness. So it may be well to go easy at first until familiar with the pressure required for each saw. Another thing enters into this phase of the work, and that is the condition of the rolls. Of course, rolls that are not in line with each other, or the bench, or of different circle of convexity, will dish a saw. And there are saws so hard in temper that it requires a sharp roll to make an impression. But as a whole, rolls of medium crown will prove most satisfactory.

One predominating cause for saws leading in or out of the cut, or "bull nosing," as it is commonly called, is the teeth being sprung at the base. I believe the only place to straighten them is on the leveling block, as springing with the tooth gauge will not bend the tooth back at the exact spot, and it will act in sawing the same as driving a crooked nail into hard wood.

Even, uniform tension, level blade, both lengthways and crossways, a well-balanced swage with just enough clearance for the work required, and plenty dust room in the gullet, are the fundamental requirements for a good running saw. To this, add proper alignment of the mill, or feed rolls, and an accurate adjustment of guides.

The Safety Speed of Circular Saws

The National Safety Council recommends the speed of circular saws corresponding to rim velocity of 9425 feet per minute:

Diam. of Circular Saw.	R. P. M.
12 inch	3,000
14 inch	2,570
16 inch	2,245
18 inch	2,000
20 inch	1,800
22 inch	1,635
24 inch	1,500
26 inch	1,385
28 inch	1,285
30 inch	1,200
32 inch	1,120
34 inch	1,055
36 inch	1,000
60 inch	600
72 inch	500

Some manufacturers recommend somewhat higher speeds than here given; however, more than a 20 per cent. increase is inadvisable.

Band saws are operated at speeds of from 3,500 to 8,000 feet per minute, the heavier saws running at the higher speeds.

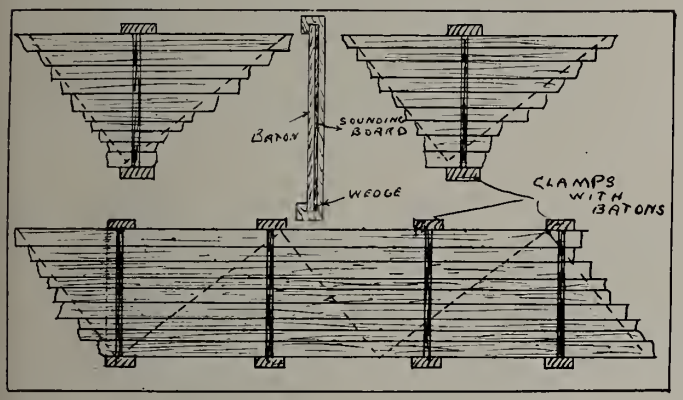
Chips alone do not make a good fire. Add about 50 per cent. of sawdust and you will then have no difficulty in keeping a good head of steam.

An Opportunity for Canadian Enterprise

The Manufacture of Sounding Boards for Pianos Offers Scope for New Business —Large Number Used Annually —Attitude of Piano Men Favorable to Establishment of Local Industry

By H. A. Ralphe

There are many fields of endeavor open to the progressive woodworker who will but keep his eyes open. Some of these opportunities, for such they are, might require a considerable amount of working up, while others might, for the want of a better term, be called ready-made. One of the latter



How boards may be glued in single or multiple sections

kind was brought to the attention of the writer a short while ago. It is the manufacture of sounding boards for the Canadian piano industry.

In Canada there are a number of thriving piano factories the combined output of which is roundly 25,000 cases annually. As a sounding board is required for every piano produced that means that there are in the neighborhood of 25,000 sounding boards used in Canada each year. Value these at $4.00 each, a very reasonable figure, and it means an annual turnover of $100,000 for the firm producing them.

Not being Manufactured in Canada

These boards have not, as far as can be learned, been made in Canada, so that the piano men have been forced to look to the U. S. factories for their requirements, The attitude of the piano manufacturers is favorable for the establishment of a Canadian sounding board industry. They have more than once expressed a preference for a Canadian made board, stating that they would gladly purchase their requirements from a local producer provided they could secure a satisfactory article. This subject was discussed by a number of piano makers who met recently and the consensus of opinion was that a good business awaits the firm that will produce a first-class, made in Canada, article. So much for the ready-made opportunity.

Perhaps a brief description of a sounding board and a discussion of the various methods of making it would not be amiss. The following sizes are not exact, in fact the specifications differ for the various makes and sizes of pianos, but the boards would average about 48 in. x 60 in. x 3/8 in. The material required is clear, white, edge grain spruce, thoroughly dried and seasoned. The finished boards are graded for color and quality of the wood, the clear white bringing the highest prices. Streaked and off color pieces condemn the board to a lower grade.

The material is worked up in strips varying in width from 1½ in. to 6 in.—wider would have a tendency to warp—with an average width of from 3 in. to 4 in. The strips are glued so that the grain will run diagonally to the finished board. In sanding the boards are made about 1/16 in. thinner on one edge than on the other.

The Necessary Machinery

The equipment required would depend largely on the methods employed in their manufacture. By purchasing the stock a full half inch think a resaw would not be required. If that were not practical a resaw would be needed and the stock cut from 5/4 or heavier material. The balance of the equipment should include a straight edging and jointing saw, swing cut-off saw, automatic jointing machine, planer, three-drum sander, suitable clamps and a large saw, preferably double cut-off for sizing and trimming the glued up pieces.

If the complete board were glued up, full size, in one operation it would require a 54 in. or 60 in.

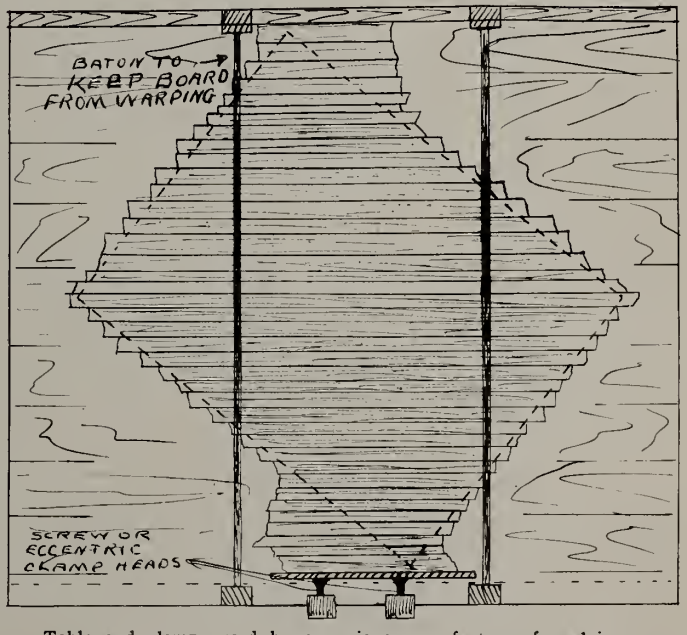


Table and clamps used by one piano manufacturer for gluing up sounding boards

planer to dress it. The work could probably be handled to better advantage by gluing up half sections, planing them and running them through the sander after the centre joint had been made. By scraping the glue off clean the sander could clean off the centre joint and finish the board in one operation.

The method of glueing and the most suitable form of clamp to use is a problem that would have to be worked out. By doing the work in half sections some form of revolving clamp such as manufactured by the Jackson-Cochrane Co., Kitchener, Ont., or the James

L. Taylor Mfg. Co., Poughkeepsie, N. Y. (A. R. Williams Machinery Co., Toronto, Canadian representatives), would probably be found to answer admirably. Individual retaining clamps might be made, somesomething similar to the one suggested in the drawing, that would prove convenient.

Glued Up in Half Sections

The gluing of the whole piece in one operation does not appear to be the best method. As intimated the surfacing of such a large piece requires a large expensive planer. The better way would be to glue up half sections either as individual pieces or in suitable lengths as indicated in the accompanying sketch. If the pieces were glued individually all the short pieces could be worked to advantage. A certain amount of waste would be eliminated by jointing the longer pieces provided the stock could be purchased in the necessary length.

The half sections could be dressed on the planer —a 40 in. machine would be ample—and the centre joint made before sanding. In the case of the long lengths the half sections would be cut up before the centre joint was glued. Practically all the boards have a slight taper, running from 3/8 in. or 5/16 in. on one edge to 1/4 in. on the other. This could be put on by dropping the sander drums a trifle lower on one side than on the other. Few if any of the piano manufacturers buy an accurately sized board so the sanding would be the final operation. They would then be ready for boxing and shipping.

Spruce is the only wood employed. Experiments have been made with other varieties but none of them seem to have the same sound producing qualities that spruce possesses.

The supplying of sounding boards to a growing industry like the piano industry, should be a very attractive proposition, as the business should grow from year to year. In addition there are other items such as sounding board ribs that might be supplied. The market is here, the raw material is here and a nice business awaits the man who grasps this opportunity.

Can You Adopt These Suggestions?

Room for Improvement in Methods Employed by Many Turners—Condition of Centres and Centering is Big Factor—Working for Results

By Observer

Every close observer of wood turners, their methods and habits, sees many different ways of arriving at the same results; and some of the methods employed seem so far from profitable that the beholder can only wonder why they are tolerated, much less constantly employed. The piece turners are usually pretty wide awake regarding centers and centering, though some of them are not so; but the time-workers seem to have a cinch upon slow methods and poor centers!

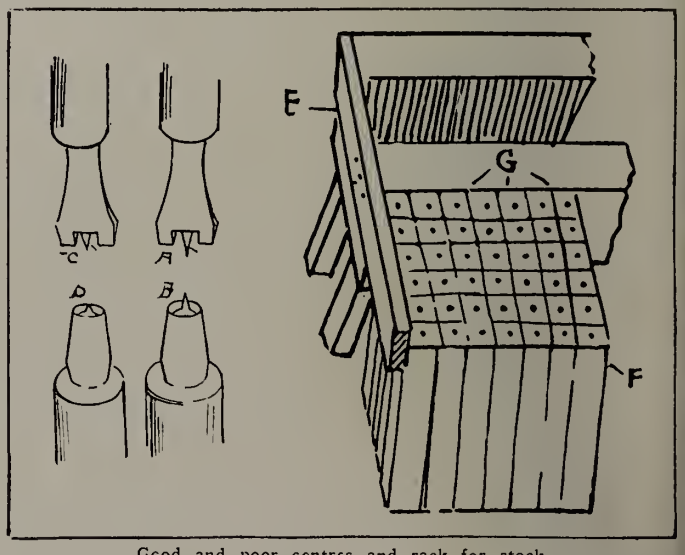
It was with pleasure that the writer recently watched a lively, brainy piece-worker after he (the writer) just passed through a "time shop" where no man seems ever to compare the amount accomplished with the time of day! In the piece work shop, a turner had a pair of centers—both live and dead—which had been sharpened to briarlike points, something as shown by Fig. 1, at A and B.

Work Quickly Centered

Close to the lathe of this turner, stood two trucks, one bearing blanks, the other holding finished turnings. This man never stopped his lathe all the time the writer was looking at him. The pieces on the truck of blanks were not centered and neither end of any blank bore traces of oil. The turner removed a finished piece from the lathe, laid it upon the truck and with the same movement, he picked up from the other truck a blank which was placed between centers and had most of the corners roughed off before the writer had half a chance to see how it was done so quickly.

Next time, the writer was looking! The turner steadied his left hand against the tool rest and placed the blank against the live center and as nearly in the middle of the blank as the turner's eye could determine. Then the same operation was repeated at the tail center end of the blank, which was whirled around by hand as soon as it had been caught between the very sharp centers A and B.

The tail spindle was screwed in far enough to hold the blank between the two sharp centers, then the blank was spun by hand and the turner noted the corner which was out of true and deftly slipped the blank slightly between the centers so that it would run more true. The change was made so quickly that one had to look twice to see it once. Probably two seconds of time were consumed in changing the blank between centers. Then the tail spindle screw was



Good and poor centres and rack for stock

given a turn, the dogs forced to bite the wood, and the roughing cut was half made before the onlooker had decided that the blank had been truly centered.

Condition of Centers Important

This turner did no centering of the blanks, therefore he spent no time in marking them or in handling

over the stock one or more times during the marking operations. But to do things in this speedy manner the turner had to look out for several things and to spend a little time in keeeping things just right. The head and tail center points had at all times to be kept in perfect condition.

It is not enough to occasionally sharpen the points of the centers or dog. The body of the center must be kept worked back or the point will speedily grow shorter and eventually take the shape and conditions shown by Fig. 1 at C and D, and the writer will defy any turner, no matter how good he may be, to center with these dogs in the manner described above for use with centers A and B. It is a whole lot of work to tool back the end of a cup center so as to keep its point projecting just far enough, and some turners have abandoned the sharp point business because of this fact. But some turners have solved the problem by drilling and tapping a hole in place of the center. Then a long steel pin, threaded to fit, is screwed into the hole and the end of the pin dressed to a point.

With this arrangement, whenever the point has worn back so far that it is not easy to spin a blank thereupon without touching the driving dogs or the ring of the cup, the pins are removed and a small steel ball (steel shot) dropped into the hole and the pin again screwed home. The shot will cause the point to protrude a bit farther, enough to be sharpened several times until worn down again, when the shot business is repeated.

Decreased Output Results

When the points of a center get into the condition shown at C and D, there is little use in having any points at all and it surely takes a lot of time to center work upon such centers and dogs. Certainly, no turner who respects himself or his employer will ever be found using such centers! There is another thing which should be closely looked after and prevented, and that is the breaking off or wearing off of driving dog corners. Usually such corners are found badly rounded, and throwing dogs into a box is usually responsible for most of this wear. A dog with clean, sharp corners will hold and drive nearly twice as well as those with corners missing.

When it comes to centering, there are so many methods employed by different turners that it seems too bad that centering turning blanks cannot be simplified and standardized. See what the Car Builders' Association accomplished in standardizing railroad car construction all over the United States? To be sure, centering turning stock is not as weighty a subject as standardizing passenger and freight cars, but it is important enough that a lot of money can be saved thereby for turning shops and for turners.

Methods that Might Be Improved

Just look at the various and time-killing methods employed in centering turning blanks. The example given above, eliminates centering entirely, root and branch. In contrast with this method, is that of the man who centers with a pair of dividers. He will place a blank flat upon a board or bench, open the dividers approximately one-half the thickness of the blank and with one leg of the dividers resting upon the board, he will describe a line across the end of each blank. Then the blank is revolved a quarter of a turn and another line is described and so on, until four lines have been described on each end of each and every blank!

Time? To be sure this method takes time—plenty of it—but that does not worry the time-working turner any. But I have never seen a piece worker use this method of centering.

Another time-killing centering device is the trough with a knife-edge fixed vertically and rigidly across one end, from the corner out and true with the two trough sides. A blank is placed in this trough which is stood almost on end but inclined at such a slight angle that a blank placed in the trough will fall into the corner thereof. Then, the blank is struck on its end with a hammer and driven against the knife-edge which makes a mark across the lower end of the blank.

The blank is then revolved a quarter turn and struck another hammer-blow which marks the center at the intersection of two diagonal lines from the corners of the blank, which is then turned "end-for-end," and the operation repeated, two more marks being made upon that end of the blank also. Both the above described methods are bad enough and both are time-killers! If it be considered that the shop cannot get along without centering turning blanks, then by all means procure a centering machine which will do the work automatically, once the blanks are fed into it. I have seen such a machine advertised "somewhere—sometime" but do not recollect where or when. But, if you can't buy such a machine, then make one of your own—it's not so much of a task!

Have Stock Convenient

One way of getting rid of centers, also of working with a single truck for stock, instead of having two trucks underfoot and in the way, is shown by Fig. 2. When a truck of blanks was received—this man was turning legs for kitchen tables from whitewood at a cent and a quarter per leg, and making about $4.50 per day—the blanks were stood on end against the lathe bed and a piece of board E, which was nailed to the ends of the lathe timbers, the latter projecting a couple of feet past the lathe head stock in this instance.

The blanks were all stood on end, as shown at F, leaned a very little in two directions so as not to fall down too easily. Then a drop of oil from a squirt can was placed upon the end of each blank, as near the center as possible, as shown at G. This was all the centering the blanks received from this turner, who used the sharp points on dog and tail, but who used a trifle different method of centering the blank upon each point.

This man would place a blank against the dog point, holding the blank there with his right hand. Then he would give the blank a quarter turn movement back and forward, watching to see that the center was as near the middle as the eye could determine. Then the turner would revolve the blank a quarter turn, holding it against the dog all the time, then he would shift hands, place his left close to the tail-center end of the blank and hold it against the dog with that hand. Then, the centering and to and fro movements would be repeated at the tail-center end of the blank, and, when the center was screwed in, the turner knew the blank was accurately centered. The several movements were all made in less than four seconds—less time than it would require to center-mark the blank. And it does seem that the best way to center is not to center at all.—"Wood Turning."

Convertible Tables for Small Homes

Ingenious Construction of Living or Dining Room Table With Disappearing Leaves

The "Libry-dine" is the name of a line of tables, with disappearing leaves, the Canadian rights of which are held by the Kilgour Davenport Co., Limited, Toronto. These tables were recently added to the davenports and divanettes that this firm has been

Libry-dine in period design

turning out for a number of years, the whole making a line of high grade living room and apartment furniture.

At the present moment apartment furniture is in very great demand and Mr. Kilgour stated that they were simply swamped with orders. They found it utterly impossible to keep up with the amount of business offering. In the face of this the demand for the Libry-dines is rapidly increasing.

This table was designed specially to meet the requirements of the small apartments but will be found convenient in any home. It can be converted from a living or dining room table to a dining table or vice versa in a very few seconds. When used as a library table there is nothing to indicate that it is other than a regular solid library table, the leaves being entirely invisable.

The construction is very clever. The top is attached to a pair of iron brackets which are raised and lowered by a slight movement of a lever. When

Showing table with leaves extended

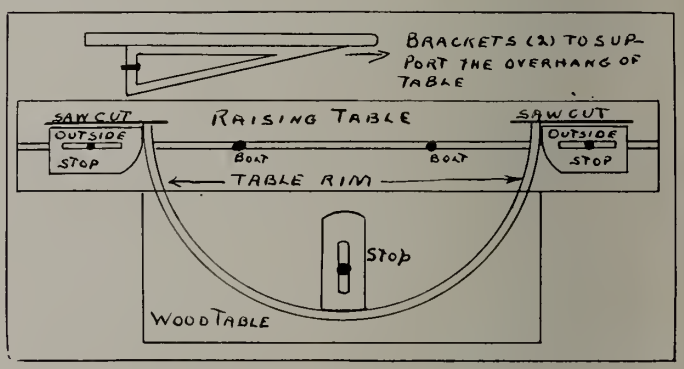
the top is raised the leaves come into view and may easily be extended by a slight pull. The leaves are so connected that when one is pulled they both extend to the full width. The leaves are attached to tapered slides so that they raise as extended thus bringing them to the height of the top. The top is lowered in place by releasing the lever and drops down flush with the extended leaves making a solid substantial dining table. A heavy moulding is run around the under edge of the top so that when the leaves are withdrawn and the top lowered in place the moulding completely hides the leaves. The size of the top ordinarily is 25 in. by 45 in. and when extended is 45 in. by 45 in. The table is made in various designs and in such woods as oak, walnut and mahogany.

Trimming Table Rims on Mitre Saw

W.D.

It has usually fallen to my lot to trim the ends of the bent rims for round tables. All along we have been doing this cutting on a single trim saw. When the last lot came through I decided to make a form so that by swinging the saws around parallel I could trim both ends in one operation on the automatic mitre saw that we have.

The accompanying sketch shows the form constructed. The wood table was first attached, by brackets, to the raising table of the machine, then the two outside stops and the one inside stop were attached. These stops are slotted so that they may be adjusted for accurate cutting and set for various sizes of rims. When the stops have been set for a certain sized rim I scribe a circle with the rim in



Form used on double mitre saw

place. This simplifies the set up the next time we have to cut the same size rim. All that will be necessary is to put a rim in place on the line and set the stops to it.

Using the machine as described we were able to cut the time formerly required to trim the rims, in less than half and in addition the operation was easier and more pleasant to perform.

When Jointing Sticker Knives

Faulty lubrication and tight belts ruin more heads on woodworking machines than everything else combined, therefore be sure to look after oiling and belts before you joint; it will save you work and worry. Jointing is only a process of trueing the knives to a circle. It is not a job calling for a lot of ability, but there are many things connected with it that will keep it from producing the deisred results, and will puzzle an old head, much less a beginner.

The cabinet trade is much indebted to the automatic lathe for turning out very intricate patterns very cheaply.

What becomes of the tire when the front of a bandsaw is badly heated?

Possibilities in the Shook Export Trade

Statistics Showing Extent of this Business—Principal Shook Exporting and Importing Countries—Comparative Tables Showing American and Canadian Exports

A somewhat exhaustive report of the world's export shook trade has been compiled by J. C. Nellis, assistant secretary of the National Association of Box Manufacturers, Baltimore, Md. The following information taken from his report, give a faint idea of the enormous extent of the export shook trade as well as indicating the principal shook importing and exporting countries. The Canadian box manufacturer should be able to successfully compete in many of these markets and should have a far greater share of this business than he is securing.

The extent of and the possibilities in the Canadian export shook trade may be judged by comparing the table of American exports with the following figures pertaining to the Canadian shook exports for the years 1914 to 1918:

Export Shook Figures for Canada

Exported to	1914	1915	1916	1917	1918
United Kingdom	$121,781	$ 85,618	$355,114	$454,917	$586,527
Bermuda	11,082	23,328	46,197	32,085	18,745
British South Africa	70	.....	.....	.....	10,025
British East Indies—Straits Settlement	.....	.....	.....	.....	21,600
British Oceania—	5	3,895	19,003	21,067	9,605
Australia	29,343	18,425	21,434	6,911	2,675
Fiji	.....	2,215	158	754	1 764
New Zealand	4,320	2,475	2,913	13,120	6,414
British West Indies	268	711	2,048	3,288	2,828
Newfoundland	.....	.....	4,260	6,300	.....
Argentine Republic	.....	50	.....	.....	124
China	.....	.....	.....	.....	2,410
France	.....	130	.....	.....	.....
St. Pierre and Miquelon	.....	.....	540	1,920	8,050
Peru	22,908	21,550	9,014	4,832	24,677
United States					
Total	$189,777	$158,397	$460,681	$545,194	$691,144
			Recapitulation		
British Empire	$166,869	$136,667	$446,867	$532,142	$658,183
Foreign countries	22,908	21,730	13,814	13,052	33,261

The report shows that export shook trade of the world is in round figures 500,000,000 feet a year. The principal exporting countries are Sweden 200,000,000 ft., Japan 85,000,000 ft., Norway 65,000,000 ft., and the United States 50,000,000 ft. While the shook importing countries are Great Britain, India, Straits Settlement, Canary Islands, Cuba, East Indies, Mexico and China with several others ranking close to the last named.

The approximate total annual imports of the chief shook importing countries are as follows:

	M. Feet
Great Britain	232,822
India	41,737
Straits Settlement	36,542
Canary Islands	19,865
Hawaii	17,982
China	13,609
Cuba	12,554
East Indies	12,189
Mexico	7,737
Holland	7,304
South Africa	6,947
Porto Rico	6,133
Australia	5,931
Germany	5,435
Argentine	4,675
Belgium	4,634
Ireland	4,634
Egypt	4,297
Persia	4,190
France	3,536
Italy	3,379
Canada	1,932
West Indies (except Cuba)	1,832
Spain	1,760
Siam	1,328
Peru	1,046
Central American	1,040
Morocco	972
Phillippines	896
Japan	826
Uruguay	776
Asia Minor	561
Greece	482
East Africa	477
Iceland	259
Portugal	224
West Africa	220
Chili	205
Brazil	201
Venezuela	148
French Oceania	90
Bermuda	73
Newfoundland and Labrador	73
Bolivia	13

The United States has worked up a good export business in this line. The figures for the fiscal year

ending June 30, 1918, show that shooks to the value of $2,511,223 were shipped to various countries. The following table indicates how this business was divided:

Country shipped to	Amount	Total
Europe—		
France	$ 1,779	
Spain	542	
England	24,580	
		$ 26,901
North America—		
Bermuda	$ 3,671	
British Honduras	103	
Canada	96,599	
Central American States—		
Costa Rica	3,676	
Guatemala	1,701	
Honduras	3,324	
Panama	20,033	
Salvador	25	
Mexico	386,834	
Newfoundland and Labrador	3,668	
West Indies—		
British—		
Jamaica	34,569	
Trinidad and Tobago	6,056	
Other British	17,747	
Cuba	627,817	
Danish	238	
Dominican Republic	8,798	
French	21,084	
Haiti	1 086	
		1,247,029
South America—		
Argentina	$ 55,249	
Bolivia	632	
Brazil	8,383	
Chile	, 63	
Colombia	253	
Ecuador	202	
Guiana—		
British	269	
Dutch	129	
Peru	52,325	
Uruguay	1,883	
Venezuela	7,415	
		126,803
Asia—		
China	$ 16,674	
German China	1,550	
Japanese China	21,250	
East Indies—		
British—		
British India	158	
Straits Settlements	481,287	
Dutch	5,202	
Hongkong	146,277	
Japan	41,297	
		861,965
Oceania—		
British—		
Australia	$ 278	
New Zealand	231	
French	4,490	
German	921	
Philippine Islands	41,655	
		47,575
Africa—		
British Africa—		
West	$ 2,558	
South	31,604	
Egypt	166,788	
		200,950
Grand Total		$2,511,223

These figures give an idea of the broad field that is open to any Canadian shook manufacturer who is desirous of engaging in export. If the American firms can ship shooks to the value of $400,000 to Mexico, $600,000 to Cuba, $500,000 to Straits Settlement, $150,000 to Hong Kong, and $150,000 to Egypt surely there is an opening in these fields for the Canadian product. This would appear to be especially true today when the demands are so great and conditions in the lumber markets so uncertain. The present appears to be the logical time to attempt to secure a foothold in these countries.

Conductivity, Odor and Taste of Wood

Heavy woods conduct heat more rapidly than light woods, oak conducting about twice as much heat as spruce under the same conditions, according to an expert at the Forest Products laboratory. Therefore for lining refrigerators and fireless cookers as light wood as practicable should be used. One of the principal properties that makes wood desirable for the household is its comparatively low heat conductivity and its use for handles, furniture, refrigerators, floors and walls is governed largely by the fact that heat passes through it slowly. In the case of handles, the difference to the touch between wood and metal is a matter of common experience. Wood conducts from two to three times as much heat with the grain as across it, other conditions being equal, and broadly speaking, conductivity of heat through stone and concrete is from 10 to 30 times as great through wood across the grain.

As a conductor of sound, wood along the grain is a fairly good medium, ranking with brick and stone, but across the fibre sound will travel only about one-third as well as with the fiber.

Most of our native woods are without pronounced odor or taste, but woods of the laurel family, of which sassafras and California laurel or myrtle are representatives, have adistinct spicy odor and taste. Port Orford cedar of the Pacific coast has a very spicy, resinous odor; other cedars have a more aromatic odor, especially the pencil cedar or juniper. Hemlock has a slightly sour odor while cypress is somwhat rancid. Except in cedars and junipers these odors are scarcely strong enough to taint the food unless it is brought into direct contact with the wood as in butter boxes. For wooden pie plates, butter dishes, bowls, buckets, candy pails, kegs and barrels, only woods are used which are without taste.

Increasing Output of Beloit Plant

The P. B. Yates Machine Company, of Beloit, Wis., are constructing a half-million dollar iron foundry. The new building, which must be completed by next fall, will be 206 ft. x 264 ft. This large addition to the foundry is expected to double the output of the whole plant. In the past the capacity of the foundry was not large enough to keep the machine shop going at full speed. The rapid growth of the business due to the heavy demand for woodworking machinery both at home and abroad is the reason why this increase in output was found necessary.

Machinery & Equipment

Light Combination Saw Table

The D. McKenzie Machinery Co., Guelph, Ont., are manufacturing a combination cross-cut, mitre and rip saw that is finding favor in many shops. The accompanying cut will give a good idea of the machine. The saw arbor, which runs in self-oiling bearings, is turned to take saws with a 1 in. hole. The table, iron, is 23½ in. x 30 in. and is hinged at the

Combination Cross-Cut Mitre and Ripsaw

back. Special cutters and dado heads may be used as desired. The ripping capacity is 13 in. wide. The counter shaft is adjustable so that belt may be tightened without having to cut and lace it. Speed of counter 900 r.p.m. Floor space required 30 in. x 36 in. Full particulars may be had from the manufacturers.

Elevating Factory Truck

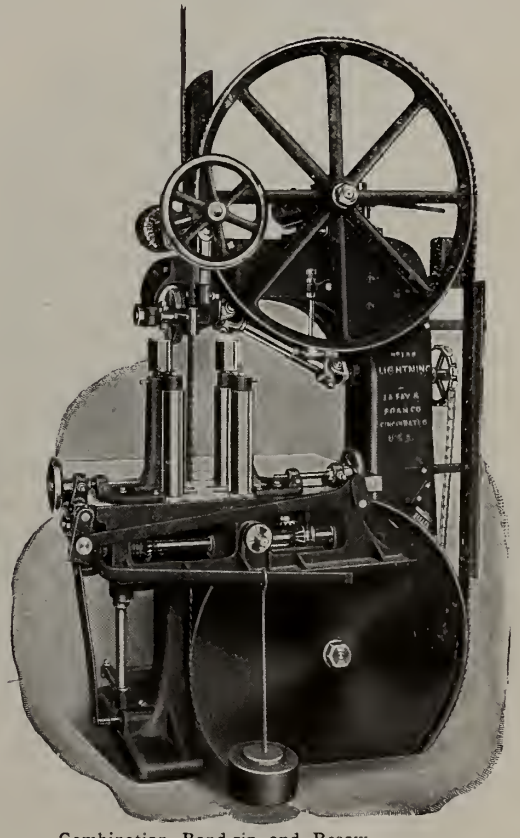
The accompanying illustration shows an efficient elevating factory truck that is being manufactured by the Chapman Double Ball Bearing Co. of Canada

Chapman Elevator Truck

Limited, Toronto. This is an all Canadian-made truck, all the parts being manufactured in Toronto. The wheels are equipped with ball bearings, which tend for ease of locomotion; in fact with this truck one man can readily move a load that with the ordinary trucking equipment would require four or five men. The platform is lifted and lowered by means of a chain-lifting mechanism, which can be operated with the handle in any position. A hydraulic safety check eases the load when being lowered and preventts any undue jarring. The yoke is mounted on ball bearings which makes for easy steering under heavy load and is so designed that the truck can be operated in very close quarters. The various ball bearings are practically dust-proof and require very little attention. The wheels need oiling once every four or six months, while the head or yoke should be oiled every month. The carrying capacity is governed largely by the size of the platform and varies from 1000 to 5000 lbs. This type of factory truck has been adopted by many manufacturers and is very convenient and efficient for furniture manufacturers and others who move a large number of truck loads of material in short lengths.

Band Rip and Resaw

For the smaller manufacturer who feels that his output does not warrant the installation of a band resaw and a band ripsaw, the "Lightning" combination band rip and resaw, manufactured by the J. A. Fay & Egan Co., Cincinnati, Ohio, should prove very attractive. As shown in the accompanying illustration, this machine is fitted with both resaw and ripping rolls. The change from one to the other is easily and quickly made. By simply reversing the table



Combination Band-rip and Resaw

and raising or lowering the ripping rolls, the machine can be converted from rip to resaw or vice versa. As a rip saw, it will cut material as wide as 24 in. between gauge and saw and at feeds varying

from 30 to 140 feet a minute. Used as a resaw, it will cut to the centre of stock 8 inches thick and split material 18 inches wide, at a speed ranging from 10 to 50 feet a minute. This machine may also be utilized as a scroll saw if so ordered. The top is 43 x 35, wheels 42 x 3½, blade carried 4 in. wide. The straining device is the Fay-Egan patented knife-edge balance. Full particulars of this saw may be secured from the above-mentioned company.

Open Back Nailing Machine

The Morgan No. 12-30 in. Open Back Nailing machine, shown herewith, illustrates the latest type of standard Morgan machines for nailing up crates and boxes.

The Morgan No. 12 Nailer is a heavy type, triple geared machine, fitted for direct gear connected motor drive. It drives from one to twelve 5d. to 10d. nails at a stroke. It can be adjusted to drive automatically some of these nails at one stroke and the balance at alternate strokes or any other combination that may be desired. The nails are driven in a single, straight row or a zig-zag row. This type of machine is provided with an improved and instantly adjustable clinching device which smoothly clinches the nails at the same time they are driven and enables the machine to do all kinds of cleating work.

While the Morgan Nailers are used regularly for nailing up boxes and crates, they have adapted their

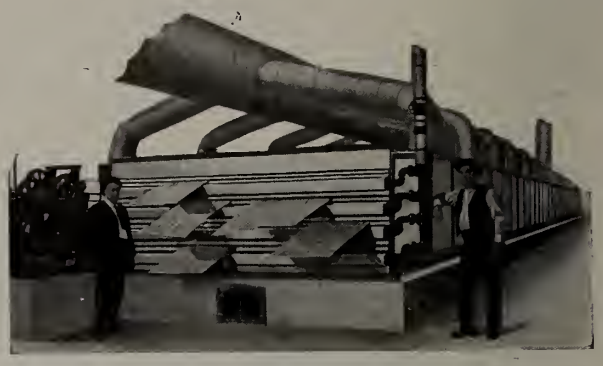
The Morgan No. 12-30 Open back Nailing Machine

standard nailers to do many kinds of special nailing. Their nailing machines are in use among furniture, automobile, trunk, toy and refrigerator manufacturers throughout the United States and Canada.

Full particulars may be had from the makers, the Morgan Machine Company, Rochester, N. Y.

Improved Automatic Dryers for Veneers

The Coe Automatic Roller Dryer for veneers is shown in the accompanying illustration. A number of improvements have been added to this dryer so that it embodies the latest ideas in the scientific drying of thin stock. The dryer is of the progressive type, consisting of a long steel flue or rectangular box, equipped with horizontal steel rollers between which the stock to be dried passes. An auxiliary blower system maintains a uniform circulation of warm air. The air travels from the dry end toward the end where the



The Coe Automatic Roller Dryer

green stock enters. As it moves through the dryer it absorbs the moisture from the stock so that the air contains a relatively high percentage of humidity when it reaches the stock at the green end of the dryer. This feature, which is the secret of successful drying, permits the outside of the stock to remain moist and insures that the stock is dried uniformly from the centre outward thus eliminating as far as possible checks, splits and other defects. Specially designed flues and baffle plates are used to secure an even circulation throughout all parts of the machine. The rollers which are in pairs, run in roller bearings. The lower one has a sprocket attached to one end and is driven by a chain belt. The upper one is driven from the lower roller through gears. The stock is fed in at the green end and emerges flat and dry at the far end. The speed at which it travels is under full control and depends entirely upon the thickness of stock being dried. The machine is of all steel construction and is designed so that all parts are readily accessible. In addition to the circulation of heated air, coils of steam pipe run from end to end of the drier.

It is built in three standard widths, five, eight and twelve feet and two, three, four or five pair of rolls high. The length and height depend on the quantity and kind of material to be dried. The Coe Manufacturing Company, Painesville, Ohio, are the manufacturers of this dryer.

An advertisement appearing in a British furniture journal carries the heading "Canada to the Front Again" and goes on to say that the firm in question is in a position to make immediate delivery of Canadian chairs (made by the North American Bent Chair Co., Limited, Owen Sound, Ont.) Is Canada to the front again or are the possibilities of the British market being almost entirely ignored by the Canadian furniture manufacturer? The business is there and should be well worth the trouble and effort necessary to secure and hold a portion of it.

Upholstering and Trimming

Can Upholstery Design be Improved?

Many Pieces Not Well Designed—Idea of Comfort Should be First Consideration

By W. L. D.

Present-day upholstering has probably reached its highest state of perfection in the production of the luxurious Chesterfield suites and the various forms of upholstered period furniture that are so popular with milady, but in the design of many of these pieces there is room for a great improvement. This does not apply so much to the work on the different period designs where the upholstering is confined to making a comfortable, dependable seat, as to the different lines of stuff-over furniture.

Many manufacturers who have tried to get away from the beaten track, have produced some very wierd effects, not only in color combinations, which to a certain degree are a matter of taste, but in the lines and designs of their product. Thus we find many pieces with flat arms, flat tops on the backs and built on almost square lines. Pieces that while costly, do not convey the impression of comfort.

Conveys Idea of Comfort

The idea conveyed by the word "upholstery" is one of luxury and comfort. Comfort expressed in graceful curves and well-rounded forms. If that is the case, should not this idea be carried out in all upholstery design? If it were, we would find the flat arms, the square effects and many of the straight lines replaced by well-stuffed, gracefully-rounded arms, seats and backs and lines that are suggestive of ease and comfort.

This impression of ease and comfort can readily be conveyed. We all know how when we see a Chesterfield chair with a low, deep seat and with well-proportioned and nicely rounded back and arms, that we feel a strong desire to lounge in that chair, and if we were to be given our choice of a number of designs, that that is the style we would naturally choose. Why? Is it on account of that impression which it conveys? There is room for a wide range of designs and styles without getting away from this idea.

Wings Add to Cosiness

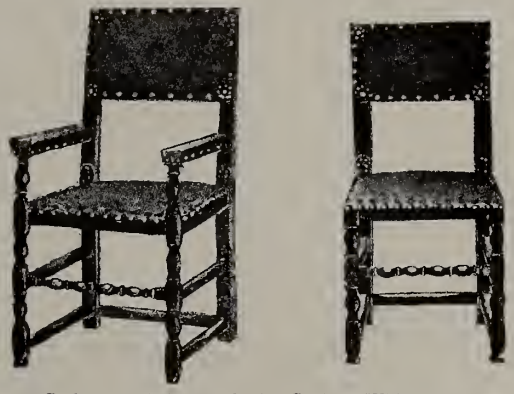
Then again, take the wings that are found on the backs of many chairs. Are they placed there simply for effect or appearance or have they a purpose to perform? Perhaps someone will suggest that they are attached to keep a draught away from the occupant. Is it not more probable that the main reason for their use is to add to the comfort of the chair, to give greater comfort? After one is tired of sitting upright in a chair, what is more conducive to ease than to recline cornerways with the head resting in the angle formed by the wing and the back? If they serve no other purpose, they will justify their use. However, if well-designed and proportioned they can be made to fit in and add attractiveness to the general contour of the chair.

A well-proportioned stuff-over piece with good lines cannot be satisfactorily built on a poor frame. The picture of the finished article should be in the mind of the man who works out the frame. This is a phase of the work, the importance of which is not fully realized and which in consequence is often overlooked. It is a subject that is well worthy the consideration of the manufacturer.

In addition to the design, the quality of the work must be maintained under all conditions. The best of materials and the best of workmanship should go in to every piece produced. When this is adhered to, and the rules of good design followed, upholstered furniture will then take the place it deserves—as a work of art.

From Aircraft to Furniture

A British organization that had a remarkable growth during the late war was the Grahame-White Co., Limited, manufacturers of aeroplanes. This firm, which turned out thousands of planes, upon the cessation of hostilities found themselves with a large, well organized and well equipped plant on their hands. Woodworking is a big feature in the manufacture of



Pad seat chairs made in Graham-White plant

aeroplanes so that with a suitable plant installed the attention of the company was naturally drawn to furniture. If the whole plant had been converted to this purpose the Grahame-White Co. would have possessed the largest furniture factory in the United Kingdom.

The accompanying illustrations show two chairs that are being produced by this firm. In addition a wide range, embracing all forms of furniture, is being manufactured. Orders are also accepted for furniture to be made to the customer's drawings and specifications.

The whole line is worked out along simple lines. This is due to several reasons the least of which are not the high price and scarcity of lumber and scarcity of labor. However there is an immense demand for this type of furniture for the middle and working-class homes.

Leather and the Coming Market

The following comments on the leather and material market are from a statement by J. L. Schnadig, of the Pullman Couch Co., in their shop paper "Pullman Service":

"Difficulty in buying is being met with by the manufacturer as well as the dealer. It is hard to tell who is having the most trouble.

"I have just returned from a trip East, during which I investigated the fabric situation. One big jobber, after a pleasant welcome, greeted me with, 'I hope you don't want to buy.' And before he got through he was offering to buy of me anything of which I had surplus. He said: 'During the past month I have bought as much back from manufacturers as we have been able to get from the mills'. He claimed that it was practically impossible to place orders with mills.

"Velour mills report that at their present rate of production they are sold up for the entire year of 1920. One firm advises that they are sold well into June and July 1921.

"One mill makes the announcement that they will cancel all orders that remain unfilled on January 1st, and will then pro-rate their product for sixty days. After the sixty-day output is delivered they will sell another sixty-days'-worth on the same basis—and so on.

"Another mill reports that they will cancel all orders and will sell goods only after they are made—price to be based on cost of each item.

Damasks are off the market, and you might as well say the same thing about velours.

"Leather is at a point where we cannot see where we (or any other furniture manufacturer) can continue to buy it. It's a gay life."

Consistent or Inconsistent

By M. Wulpi

A large subscriber writes us as follows:—"Knowing your interest in eradicating the discount evil which is practiced by so many merchants throughout the country we take the liberty of bringing it to your attention as we feel it is an opportune time for manufacturers and distributors to eradicate it.

There is practically no competition in the sale of goods, merchants are all crying for goods and are willing to pay most any price for them, and terms are a great factor in the price; therefore it behooves the manufacturers and distributors to educate those merchants who pay no attention to terms, and impress upon them that the terms stipulated on the invoices mean exactly what they say.

A number of houses show their terms in the abbreviated way of "as usual." This means nothing and we believe that some manufacturers really mean by these terms that the customer may pay as he chooses, as we find in our experience that a number of manufacturers are willing to grant cash discount any time the check may be received.

There is also a great evil on the part of dealers in basing their settlements upon date of arrival of the goods, when the terms as made are from date of shipment. When making terms of 2 per cent. 10 or 2 per cent. 30 days the manufacturer or distributor has already allowed a certain length of time in which the customer may receive the goods, and if there should be further delay than that time the dealer should be willing to discount his bill and finance it for the remainder of the period himself, for the length of time it may take.

If all manufacturers and distributors will watch the discount and insist that terms of sale be complied with, some of the houses that make it a habit to take discount any old time will be obliged to change their method of paying. But if all of us do not co-operate, then the distributor or manufacturer who is trying to make the dealer live up to terms has a very hard position, and those manufacturers who permit the dealer to discount when he chooses makes it just that much harder for those who are trying to have the merchant live up to correct business principles.

We have also noted recently a number of dealers stipulate on their orders as follows: "This order is placed with the distinct understanding that the cash discount period will be determined by date of arrival of the goods regardless of date of the invoice." We feel that orders sent in with such stipulations should not be accepted, and if we will all take this stand the dealer will not expect it, but if some of us go ahead and accept orders on such conditions we might as well do away with terms entirely and let the dealer discount and pay his bills when he chooses, and we all realize what this would mean to business as a whole.

Unique Form of Upholstering

In Portugal they employ a unique method of upholstering that is economical at the same time, for it enables small pieces of morocco and other expensive material to be utilized. One Portuguese firm is making a fine line of reading chairs, tub shaped and full stuffed in English morocco. There is a half-diamond buttoning all round the back, with a high roll stuffing above. Instead of the usual pleats between the buttoms and over the roll top, always a worry to the upholsterer, the leather is cut in half-diamond sections, with scarcely any fullness; instead of pleats there are welts between the buttons, downward and over the top, a sensible, neat, economical, utilitarian form of upholstering, particularly well adapted to concave stuffing.

Training Departments Pay Dividends

Two hundred manufacturers who have established training departments in their factories have voluntarily testified that their labor turnover was cut in half. One of these manufacturers reports to an official of the United States Training Service that the turnover among the operatives to whom he gave training was but 1 per cent. a month, while among the remainder —those without such instruction—it was 15 per cent. a month. The saving in the cost of hiring is manifestly very considerable in a case like this. But that is not the only gain. The amount and value of the product delivered by the trained worker is much higher than the yield of the untrained worker. It is quite apparent that the employee who has a complete understanding and control of his machine, a large and satisfactory production, and consequent sense of security in the tenure of his employment of good wages is not likely to become an item in turnover.

The edges of the joints in the refuse pipes should be towards the outlet, else the refuse may catch in them and eventually stop up the pipe.

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Write for Samples and Prices

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Here's a Suggestion

Did you ever try keeping a file of your back copies of the "Canadian Woodworker"? Try it. Start with this issue. There are many articles that are worth keeping, as they offer valuable suggestions that will help you in your business.

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Its anchorage to fabric is second to none on the market today.

GOOD furniture should always be covered with FIBRO-HYD.

We also manufacture FIBRO-KANE Open Webbing for furniture, etc.

Samples submitted upon request.

Fibro Manufacturing Company

Dept. A Beverly, N. J.

Mills: Philadelphia, Pa. Unionville, Conn. Beverly, N. J.

"ENAMELS"

Our business in both White and Old Ivory Enamels and Primers has trebled during the past year.

WHY?

They are the best on the market. If you are not using them, write for samples and prices.

The **Ault & Wiborg Co. of Canada, Ltd.**

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PAINTS AD-EL-ITE VARNISHES

WATER-PROOF

AD-EL-ITE Shellac will not turn white with moisture. It is an improvement, not a substitute on Shellac.

AD-EL-ITE Shellac will not crack or check with the expansion and contraction of the wood.

AD-EL-ITE Shellac will not string or feather. The goods may be sprayed, dipped or brushed. Sands in three or four hours. Big time and money saver.

AD-EL-ITE WHITE SHELLAC No. 131
AD-EL-ITE ORANGE SHELLAC No. 132

Adams & Elting Co.
17 Adelaide St. East - Toronto

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No duty **Made in Canada** *No exchange*

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¶ Because they do not have to experiment with our Fillers and Stains. We have done that for them. Standard Stains and Fillers are made by experts who are practical finishing foremen, and know their business.

SATIN FINISH IVORY AND WHITE ENAMELS

Our Experts Are At Your Service—Consult Us

Standard Paint & Varnish Co., Limited

"Shac" *Shellac Substitute*

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Varnish

Enamelling High Grade Furniture

Preparation of Surface and Undercoats Determines Results—Only Thin Coats of Enamel Required on Suitable Foundation

By Dixy Wells

The securing of a satisfactory enamel finish on high grade furniture requires the employment of skilled workmen and reliable finishing material. Quality in ground work and material must enter into the production of this class of furniture if a fine finish is to be secured. First-class enamel work is expensive but the manufacturer has the satisfaction of having turned out an A 1 piece of goods, one that he need not be adverse to placing his name on.

The preparation process on new work consists of thoroughly sandpapering all quirks and turned parts with coarse sandpaper and the plain surfaces with a finer grade. This is quite a simple matter until the work has been coated, but after that much skill of hand is required to rub down such parts without injury to the sharp edges. The glass paper for this work should be extra tough so that it will bend readily into any shape desired without tearing into shreds. It should be cut into suitable strips for use on the various parts.

Preparing the Foundation

When the new wood has been thoroughly cleaned, the best priming coat, if you are not using a standard ready-mixed undercoater, is composed of a hard copal varnish, a little turps and white lead. This should be applied thinly so as to penetrate the wood thoroughly, and after it has been allowed to become hard should be rubbed down. Then putty up any holes or imperfections with dry white lead, whiting and japan gold size. This putty is mainly intended for use in the open joints and when it hardens another coat, consisting of a little japan gold size, one-third varnish and two-thirds turps, combined with white lead or other pigment, as required, should ge given. After the first coat, No. 1 and No. 0 sandpaper only should be employed, the latter being reserved for rubbing down the final coats.

After this two or three coats of filling should be applied with a good broad chisel or scraper on the flat surface and with a brush on the curved parts. For laying with the brush the filling up paste should not be much thicker than good stout paint so that it may be laid easily without leaving streaky ridges difficult to remove later. Between such coats of filling, sanding should take place, and if necessary, rubbing down with pumice stone. If after this the surface is not thoroughly smooth other coats of filling should be given until it is.

Contrast Coat Shows Inequalities

Make sure that the surface is quite level. It is sometimes advisable, especially, when working away from the light to give the filling a guide coat, that is, simply a thin contrasting coat of sharp paint almost flat, which when properly rubbed down shows by its difference in color any defects in the surface.

The surface now being level, two coats of the second coating should be given to prepare for the proper finishing coats. These latter consist of white lead ground in turps, and up until the last coat thin down with equal quantities of white oil varnish and turpentine, the last coat being slightly different and having a little more varnish. All these coats should be merely thin washes of color and should be allowed to harden for two days between each application, and if possible, even longer.

The rub-down between each coat should be done with the finest sandpaper until the last two coats, when ground pumice stone and felt should be substituted. The number of these final coatings vary under different circumstances.

Applying the Enamel

As furniture is intricate it has many small, sharp-edge surfaces. Much care must be expended in avoiding "fat" edges of enamel and "runs." The bottom bars and legs of chairs, for instance, should be coated first, then the back and finally the fronts and bottoms of the seats.

If possible, each article should be placed on clean blocks of wood about two inches high and kept in this position during the work and until thoroughly dry. If possible the work should be done without moving the furniture, and in consequence raising the dust.

The tops of chests, of drawers, tables, dressers, and seats of chairs, should be done with a different brush from that used on the other parts, as the application of enamel to those portions is liable to dirty the brush, owing to the minute dust particles in the atmosphere, which, despite every precaution to the contrary, fall constantly on horizontal surfaces. Although in general practice heavy coats of enamel are necessary to obtain a smooth flow, in this particular class of work such is not needed for two reasons. First: The surface is already as smooth as possible and a light coat laid on without working it much is quite as satisfactory in appearance as a heavy one. Second: A heavy application on work to be handled and sat upon sometimes leads to tackiness—a grave defect in furniture finishing of any kind.

Cold Water to Harden Surface

When the first enamelling has been allowed to harden thoroughly it may be sponged with cold water to still further harden the film, and then felted with pumice stone powder of the finest quality and finished with another coat of polish.

Where much furniture painting or enamelling is done a special room should be set apart for the purpose. It should be well lighted, have a radiator at each end and strips of felt should be tacked around the door, bottom and sides, to prevent draughts, necessary change of air being brought about by ventilation at the top of the walls. When in use in win-

ter the apartment should be kept heated continually at about 70° Fahrenheit. This amount of heat must not simply be tested by feeling, but by having a thermometer hung in the middle of the room.

Refinishing Old Work

In the case of refinishing old furniture, a condition which is sometimes necessary in factories, the piece being old and perhaps badly chipped and cracked, a more tedious process than a preliminary sandpapering must be gone through. In this case the preliminary preparation consists in removing the old defective paint, polish or whatever it may be, with any one of the standard non-injurious paint and varnish removers, and finally washing the whole down with turpentine. A scraper may be used here to assist in the removal of the soft paint, varnish or enamel film, but if possible only rags dipped in turps should be used for this purpose. At any rate on all receded parts this method is always the only proper one. Scraping with a knife is liable to scratch the wood in such parts.

This initial process having been finished the work should now be sandpapered before first coating. It is advisable sometimes to rub carefully with lump pumice, curved and round portions such as chair legs being well sandpapered when dry. Owing to difficulty, however, in getting pumice stone to fit these parts it is advisable to use glass paper on them, for pumice which does not lay properly against the surface is as a rule sure to scratch the work.

French polished furniture may be painted after a preliminary wash and rub with glass paper. If the polish is not adhering very firmly it should be removed to give a less brittle foundation.

Working With Gold Leaf

Gilding is one of the easiest things in the trade to do well, if done with proper material and with due regard to cleanliness in working; but painters who have little experience in gilding nearly always show up badly by reason of the poorness of their gold size and their carelessness in working.

For church work it is desirable to use the best oil gold size whenever possible, especially for large patches of gilding—such as the groundwork of medallions or panels. For gilding the parts of a pattern that is stencilled, or for pencil work, japanner's size is sometimes necessary and often useful as a saver of time, especially when the work is not easy to reach. A mixture of the two, making a size that will dry in about four hours, often secures the main advantages of both, and if the worker arranges to do all sizing in the forepart of the day, and gilds in the afternoon, he will be under no necessity of staying after time to finish any of the gilding.

Oil gold size is a far better base for gilding on than japanner's or quick gilding size, and it allows a very wide margin of time for the application of gold leaf. When very large letters and other gilding requires doing and can be done indoors, the same should be done with oil size, which, in addition to allowing a longer margin of time for gilding, makes an excellent finish, both in solid appearance and burnish, that is far superior to japan gilding. The work also lasts three or four times as long when on an oil base.

For all work that is required in haste, and for small work, lettering, lining, etc., japan size is better than oil, even for indoor work. For such work as gilding in a restaurant, where one might expect greasy steam to get on the size, it would do no harm to japan size, but a film would be formed on the oil size; and although the latter might gild all right, yet on washing it would all come away—as would be the case with ammonia fumes from a stable.

Japanner's size is useful for articles which have to stand great heat, and for work out of doors in dust and wind.

Protect Hardwood Flooring from Dampness

Hardwood for flooring is a wonderful gift of nature in the first place; it is also a fine product of the manufacturers' art as it is prepared for the use which it is to withstand.

Nevertheless, a little carelessness on the part of any of the people through whose hands it must pass may undo all this careful work. It cannot be too strongly impressed upon every one concerned that the greatest care must be given to hardwood flooring both before and while it is in the process of laying. Knowing what great care has been given in kiln-drying, in shipping and storing, only an ignorant workman would fail to realize that it must not be unloaded in rainy weather. If the air is damp it should be covered with a tarpaulin in the wagon. It should never be piled in open sheds, even though protected by a roof, as the wood absorbs moisture at the exposed ends, making it swell, so that it will shrink later, undoing all the careful work of manufacturer, producing a condition from which it is impossible to make a beautiful floor.

Hardwood finish of any kind should never be laid in a new building until all dampness is out of the walls and the plaster is in proper condition to receive it. The finished floors should be the last work done in the building. To secure the best results the painting, papering and decorating should all be done and be thoroughly dry before the finished floors are laid.

When they have been properly laid and treated, beautiful floors are the crowning achievement in the building of the home.

A New Unjammable Door

Many lives are lost annually in railway and shipwrecks through doors becomming jammed in their frames, thus imprisoning passengers in staterooms, lavatories, etc. To prevent this a door known as the Henderson Unjammable Door (patented) has recently been designed and the Canadian rights offered for sale. The door is very simple in construction, the special feature being that the top, bottom and lock side are bevelled to an angle of about 30 degrees. The door frame instead of being rabbeted is bevelled to suit, thus any twisting or distorting of the frame merely tends to force the door open. A special lock has been designed so that even though the door is closed and locked, should an accident occur and the door frame be forced out of square, the catch is released and the door opens. The C. P. R. have adopted this type of door for the new passenger boats that they are at present building in Great Britain.

This form of door should prove desirable in cold climates. The bevel on the door and on the frame eliminates all friction and rubbing as the door closes. Thus the edge of the door and, if necessary, the bevel on the door frame could be covered with a thick felt, making an absolute wind and draught-proof door.

Is This a Good Method of Fuming?

Fuming on the Natural Wood Does Not Raise the Grain if Live Steam is Done Away With—An Interesting Description of the Method Followed by one Large Manufacturer.

By A. D. Ralphe

Having read many interesting articles, in the "Canadian Woodworker." on the fuming of oak, where acid fuming stain or toning washes were applied to the wood before the stock was placed in the fuming box, I thought that a description of the method we employ might prove of interest. Our line, pianos, is one calling for a high-grade finish and an even color in all parts, so that the finish that satisfies our trade should prove satisfactory on any other line of oak woodwork.

Before outlining the method employed in finishing our cases it might be well to describe the result that we strive to secure. Our aim is to produce a rich brown fume, not a dark brown, but one that has plenty of depth and color, and to secure a perfectly smooth surface with a dull finish.

We carried out various experiments with the different fume washes and acid tone stains. but in practically all cases, while a very attractive color was obtained, there was a tendency to raise the grain, and thus increase the amount of sanding required to produce the finish that our trade demanded. The same was found to hold good when live steam was admitted to the fuming box. It did not seem to make any difference what the previous treatment had been, the moisture of the steam raised the grain fibres of the wood, producing a rough surface.

When the oak cases reach the finishing room they are as smooth as fine sandpaper and skilled workmen can make them. Instead of treating the wood in any manner that might tend to raise the grain we place the work directly in the fuming box and turn on the ammonia. Full strength liquid is used and the stock is usually left in for about twelve hours. The fuming is generally commenced at night and the pieces removed sometime during the next morning. A small pane of glass has been fitted in the fall of the box so that the progress of the work may be watched. The electric light inside is controlled by a switch conveniently located on the outside of the fumer so that a close tab may be kept on the rate at which the stock is fuming. In filling the box it is advisable to make a point of placing a piece near the opening so that the depth of color may be judged as the fuming progresses.

When the stock is fumed in this manner it is as smooth when taken out as it was when placed in the fuming box. If the work has been well timed and a good, even color secured the finishing coats consist of two thin coats of white shellac that has previously been darkened slightly by the addition of a little bismark brown.

As anyone knows, who has tried fuming, all the stock does not take an even color and many expedients need be resorted to before an even shade is secured. If the shade is darker than required we finish it with two coats of shellac that has not been darkened by the addition of any coloring. This tends to give a lighter finsh. When the fume did not take deeply enough we have found that a coat of boiled oil both darkened and improved the shade. This is applied before the shellac and allowed to stand several hours without further treatment. The oil is not used for touching up light streaks or spots, but only where large surfaces need toning up.

After the work has received the first coat of shellac we sand it and touch up all the light places. This is work calling for a fair amount of judgment, for if too much color is applied the result will be a dark spot or streak. It is wonderful how closely one can judge the different shades and know just how much coloring to apply to secure an even tone.

The touching-up process requires a good light, so is is usually done near a window, preferably a north one. The material employed consists of a mixture of white shellac, bismarck brown, and. if required, a touch of nigrosine. A number of mixtures are made consisting of varying strengths or shades and arranged in order in tins on the bench. If the streak is a very light one the darkest mixture is used, while if the contract is not so marked a lighter shade is applied. Sometimes the brush is dipped in several cans in order to secure just the exact shade. We have found that working this way it does not take long to run over a case.

After the color has been evened up another thin coat of shellac is applied, and the work is ready to be shipped out. We have tried orange shellac on several occasions, but prefer the results achieved through the use of the white article.

If any who read this would like to ask a few questions about fuming or would like to criticize or discuss any part of the article, just write in to the publishers of this journal, and I will do my best to reply.

B. C. Concern to Manufacture Furniture

The December "Canadian Woodworker" contained an item referring to the incorporation of the Canadian Western Woodworkers, Limited, Victoria, B.C. This company was organized to take over the plant and business formerly conducted by Cousins Bros. This new company, which has a capital of $50,000, has been granted a loan of $10,000 by the B. C. Provincial Department of Industries.

The plant, which has been idle for about a year, is a modern, electrically equipped woodworking plant. Additional machines will be added and everything is in first-class running order. The lines to be manufactured include furniture, show-cases, interior fittings, sash and doors, etc. Between twenty and thirty men will be employed, most of them returned soldiers. It is the intention of the concern to take on as many Soldiers Civil Re-establishment students as possible. The policy outlined by Len Cousins. president and managing director, is to employ no Asiatics, to cut to a minimum the overhead expenses, to employ returned men wherever possible and to work on the principle that quality rather than quantity is of major importance.

Lieut. A. Dean will have charge of the offices. M. Macgilivary, who served overseas, is the vice-president.

Marietta Co. Appoint New Salesman

John E. Johnson, veteran finisher, who for the past five years has been with the Luger Furniture Co., of Minneapolis, has taken a position in the sales service department of the Marietta Paint & Color Co., of Marietta, Ohio. His last position with the Luger Furniture Co. was that of foreman finisher in their North St. Paul factory. Mr. Johnson's first assignment in his new position will be through the Northwestern District, which is managed by Charles E. Wilson, of Grand Rapids. His part of the district will me Minnesota and Wisconsin.

This is in line with the regular policy of The Marietta Paint & Color Co. to recruit its sales force entirely from the ranks of thoroughly experienced and practical finishers. It enables them to give valuable service to their customers and they regard service as the keynote of good salesmanship.

Finishing Small Handles

If the handles are small, make a tray of screen wire, tacked on to a wooden frame. Place the handles on this tray and immerse in dipping varnish. Raise and allow them to drip, agitating the tray so as to move the handles slightly.

Some work may be re-dipped within fifteen minutes after its first immersion. The advantage of the double dip is that the varnish may be used very thin and hence will run off cleaner.

Black handles should be dipped in a filler liquid, dried, "tumbled" and then enameled.

Striving for Minimum Costs

By Progressive Foreman

Lumber and veneers, in fact materials of all kinds, are today very expensive and in practically all instances the prices are beyond our control. What we can do, however, is to use a fair amount of skill and headwork in working the different stocks and thus in some measure help to keep our manufacturing cost from climbing out of sight.

One reads a lot today about system. System is a prime necessity in the successful operation of any plant and all factories either large or small should be run along systematic, but too much system is almost as bad as too little. Another point that is every bit as important as the employment of an efficient system is a thorough knowledge of the plant and the limitations and capacity of each department.

Many small manufacturers are trying to maintain a large output in a small factory, with inadequate equipment, while others are making too many lines. Take as an example the small furniture factory that is producing diningroom, bedroom, parlor and den furniture in addition to other lines. As expected there will be found endless confusion and shortages in most lines and an unnecessarily high manufacturing cast. It is far better to attempt the manufacture of large quantities of one or two lines that suit the equipment of the plant than to be about half equipped to take care of a larger number of lines.

When introducing methods and equipment, in an attempt to lower the cost of production, one should consider the large amount of unskilled labor that is being employed in our woodworking establishment. To overcome this the very latest and most modern machines—machines that are largely automatic or at least require little attention—should be installed.Even when none but skilled workmen are employed the latest equipment is a good investment as it tends to increase production and decrease the operating or production cost.

Close co-operation between the purchasing and manufacturing departments is a very desirable feature. The buyer should keep in close touch with the foremen of the different departments and make a point of consulting with them on all purchases for their department. In this way the material most suited to the work in hand will be secured and many needless and expensive operations eliminated. The jointing of narrow veneers, the building up of heavy stock and many other similar operations, which only increase the cost, could be avoided by figuring on requirements and securing material of a suitable size. Such stock should work out advantageously even though it were to cost more money. In addition the machines would be clear for other work and the fewer operations the fewer the chances for mistakes occurring.

Retail Furniture Dealers Form an Association

A retail furniture dealers' association was formed at a convention of dealers from Western Ontario which met in Stratford, Ont., recently. There were about 50 dealers in attendance and organization proceeded as far as electing a president, Mr. Guy Luke, of Hamilton, and an executive council of five members with power to select the other officers and call a further meeting. The members of the council are N. K. Keene, London, who acted as secretary; Fred Burroughes, Toronto; C. N. Greenwood, Stratford; Frank Goodwin, St. Thomas, and W. J. Parsons, of Sarnia.

The dealers felt that they had a grievance against the mail order houses, which they claim have special consideration shown them in having prices guaranteed them for several months ahead.

The furniture manufacturers of Stratford gave the delegates a banquet in the evening, at which some further views were aired.

High Labor Costs Close Factory

One of the leading British piano-making firms has taken action which is regarded as an object lesson in the economic fallacy of pushing the demand for improved labor conditions to the extreme. John Brinsmead & Sons have announced their decision to retire from business and close their factory, in which over 300 people are employed, some of whom have been in the firm's employ for forty years.

Brinsmeads point out that for each piano turned out per week there are now 24 employees against 12 in 1918, and six before the war. Factory wages alone per piano exceed the selling price. The cost of polishing alone is approximately equal to the pre-war prime cost of the completed piano, including the materials.

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Staining and Finishing Various Mahoganies

Coarse Grain of Genuine Mahogany Requires Paste Filler—Use Shellac to Lay any Fuzz or Raised Grain—Formulae for Different Stains

By A. A. K.

Mahogany may be classed as the finest wood in general use for finishing; that is to say, the finished effect is the finest, for it is not without its drawbacks as regards the process of finishing, and the cabinetmaker also may have his testimony to offer against it. All decorative woods, as we may term them, have their difficulties of finishing, but if the effect or finish is perfectly satisfactory we may well forget all the trouble the wood has caused us.

For some time we have been reading of the ever-growing scarcity of mahogany, but there seems always to be enough for the demand, and now we learn that a wood is being imported from the Philippines which is said to be as good as the genuine mahogany, yet not more costly than quartered oak. Like nearly all Oriental woods, this Philippine mahogany is full of pinholes—very tiny ones, in this case—but these may easily be filled. The wood is in two colors, white or pale, and reddish. Of course, each color should be used by itself, though if mixed the finisher well knows what to do to equalize the two in tone and make a fine, solid-appearing finish.

Genuine mahogany is a wood of rather coarse grain, and hence requires a paste filler. One may be somewhat careless when finishing ordinary oak or ash, but with mahogany it is different; we must be extremely careful to fill the wood right, or the finish will be far from satisfactory. The proper way is to fill the wood level full with filler, making a quite solid surface that will be impervious to subsequent coatings of any kind. This is the secret of success in finishing this fine wood. With this finish follow with a coat of shellac, which is rubbed down smooth when dry, using fine sandpaper; then another coat of the shellac, rubbing as before, and finally finishing with two or three coats of varnish.

Another trouble with mahogany is its fuzz, arising from the spongy or soft parts, the fuzz coming up after the smoothing done by the cabinetmaker, and enhanced after the liquids go on it. In some cases this fuzz runs in two or opposite directions, adding greatly to the difficulty in finishing it or in planing it. Stain or filler will be caught by this fuzz, causing a cloudy effect. The remedy consists in applying a very thin coat of shellac to the parts after the stain has been applied, not before, using water stain. Then the filler may be applied. The object of the shellac coating is to glaze the spot over and prevent the filler from lodging in the fibres of the fuzz. After filling the job let it stand for twenty-four hours, though forty-eight hours would be better still. After rubbing it down with fine sandpaper it will be ready for the finishing.

It is advisable to apply a very thin coating of shellac to all parts of mahogany, in order to get a solid and unclouded finish. Color your filler to match the color the finished wood is to be.

I have spoken about the Philippine wood, which comes in very light and reddish colors, and would say, too, that genuine mahogany is of rather light color, something like Spanish cedar or cigar box wood, and a little staining always improves the color, not only making a more uniform coloring, but making a richer color, too. But it is advised never to stain the wood very dark, unless the wood is of an inferior grade.

When mahogany becomes time-stained we call it antique; it presents an appearance very much dissimilar to the fresh finish, which is of course to be expected, and it is then very much admired, so much so that some clients demand the imitation, at least. This may be accomplished by fuming the wood, or by means of alkalies, like bichromate of potash, or lime, in water. Weak fresh lime water gives the wood a rather reddish tone. We may also use a mixture of turpentine, two parts, and raw linseed oil, one part; rub this well into the wood, then wipe off dry. Let this become quite dry, then apply a solution of bichromate of potash (in water), and when this has become dry apply the paste filler and shellac and varnish for the finish.

Woods other than mahogany, those suited to the purpose, may be mahoganized by coating with dilute nitric acid, rubbing it into the wood. Then a stain of dragon's blood, 1½-oz., dissolved in 1-pt. of alcohol, filtering it, then adding one-third its weight of carbonate of soda. This liquid is to be applied with a brush, and several applcations are to be given, when the wood should have the appearance of polished mahogany. Should the luster fail, then restore by rubbing with a little raw linseed oil.

If you desire an old mahogany shade, use a water solution of bichromate of potash. For a richer tone employ an aniline soluble in both water and alcohol. This may be applied to the new raw wood, but most finishers prefer staining after the wood has been filled. Rub smooth and apply a coat of shellac. This will bleed the stain and thus hide the sandpaper marks, also preventing the oil in the varnish from entering the wood. Oil will cause the wood to darken slightly. Piano finishers are very careful to see that oil never gets at the raw wood, and yet I am reminded of the fact that some finishers use as much as 40 per cent. of oil with turpentine and japan driers. They claim that the turps carries the oil so far down into the wood that it does no harm to the color. Thus it is simply a question of individual preference, based on experience. Personally, I do not like to let the oil into the raw wood, and even shellac I would want to bar out. Water stain is best, finishing with three or four coats of varnish.

An old and very good paste filler for mahogany may be made upon this formula: Take equal parts by weight of finest whiting, plaster-of-paris, powdered pumicestone and litharge, with a little soapstone powder and Vandyke brown, burnt sienna and French ochre, using your judgment as to the amounts of each, according to tone desired. Mix to a paste with one part of japan, 2 parts of boiled oil and 3 parts of turpentine; grind the mass in a hand paint mill. This filler answers also for rosewood.—Veneers, Indianapolis.

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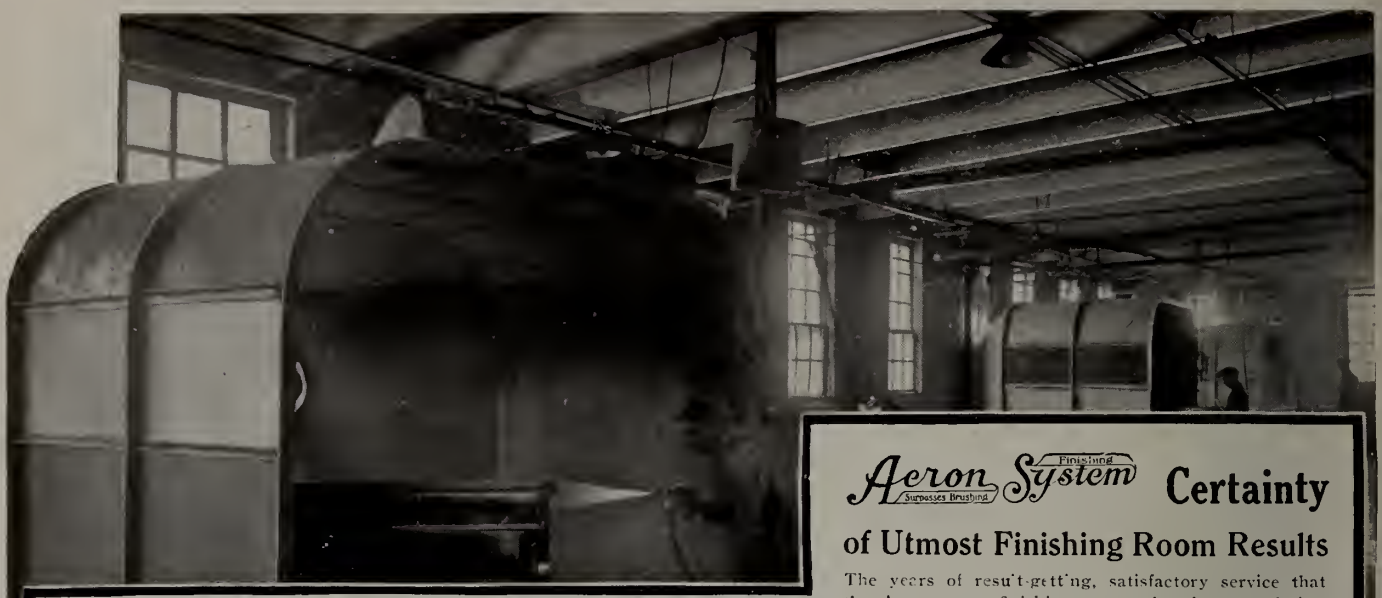

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Veneers and Panels

Making The Veneer Department Pay

Demand For Panels Emphasizes Importance of Glue Room—Simple Factors That Tend for High Veneering Costs

By R. A. N.

The time is not very far distant when the manufacturer, who used a limited number of veneered panels, found it more convenient, and often cheaper, to purchase his requirements from some concern who made a specialty of this line. Apparently, however, this time is passing. The great inroads, or demands, that have been made on panel plants by the unprecedented demand for phonograph material, phonographs are practically an all-veneered product, has in many cases loaded these plants with more orders than they can readily fill. That being the case, the small panel user often experiences difficulty in having his wants supplied.

The only course open to those so placed is to glue up their requirements. It stands to reason that the large producer of built-up stock can turn his product at a lower cost, but that is not a valid excuse for any manufacturer to allow his veneer equipment to lie idle. If a manufacturer can purchase panels for less money on the outside market than it takes to produce them in his plant, the proper procedure would be to analyze his methods and costs and see where the fault lies. From this it is an easy step to remedy the trouble.

Looking for Weak Points

If the work is followed step by step and every operation criticized, undoubtedly many instances will be found where operations can be simplified and even eliminated, with a material lessening in the amount of handling required. In addition, there is a strong likelihood that it will be found that the addition of a few pieces of modern labor-saving equipment will decrease the cost of building panels, so that what is now a glue-room loss will be turned into a profit.

Many so-called glue-rooms are in reality glue-rooms in name only. In the first place they were never intended or planned for large or profitable production. Consequently the equipment required for the efficient operation of this department is often conspicuous by its absence. Many factory owners, who spend more freely on other departments of their plants, hesitate before adding veneering equipment.

In some plants where the veneer room is fully equipped with the most modern labor-saving machinery, it is found that production costs are high or that production is so low that it pays to purchase, as far as possible, the requirements on the outside. This merely tends to show that modern equipment and an inefficient crew is not any more capable of producing results than a carefully-trained crew in a glue-room with poor equipment.

An analysis of the glue-room problems will show that there are many little items which, to a great extent, have a marked influence on the efficiency of and procuction from that department. Many veneer rooms could easily turn out twice the quantity of work if they would only use common sense and realize the definite results that could be brought about by certain simple changes.

Glue Not Handled Carefully

One of the most prolific sources of loss in this department is the misuse of glue and veneers. While visiting a plant recently, I spent some time in their glueing department. This was a very up-to-date part of the plant, being equipped with modern machines, but while there, I observed the man in charge of the glue spreader mixing a batch of glue. Instead of mixing this in a tub with cold water and allowing it to soak, he took the dry glue and put it directly into the still warm glue kettle and poured warm water over it. This was undoubtedly to hasten the soaking. It had never occurred to this individual or to the man in charge that by mixing glue in this manner fully 10 per cent. of the value was lost. If the full length of the glue is to be realized, it must be soaked in cold water, not hot or even luke-warm, preferably over night. This given it plenty of time to dissolve and much better results will be secured.

Experiments have shown that to secure satisfactory results and a uniform mixture of glue, a known quantity of water must be mixed with a known amount of glue. How does your glue-room man mix his glue? "Oh, well," you may say, "he uses that pail over there for measuring both glue and water, mixing as a rule one pail of glue with two pails of water." That is not accurate enough. A common pailful of glue will often vary from 2 to 8 lbs. in weight, depending upon the thickness and the size of the flakes of the glue being mixed.

How Losses May Occur

This uncertainty is present in many veneer rooms. Suppose six batches of glue are mixed each week and if in mixing each batch there is a variation of from 2 to 8 lbs. in the amount of glue mixed, or, in other words, if there are from 2 to 8 lbs. more glue used than the amount of water used calls for, what becomes of this additional glue? It is simply lost, thrown away or wasted. When such a haphazard method is followed, how can the spread of the glue per pound be determined, or seeing that no two batches are mixed in exactly the same proportions, how can the values of the various lots be compared? Suppose that in two weeks this wastage would run to 30 lbs.; at present glue prices this would mean a considerable loss, and when figured by the year, the figure would be large enough to make any thoughtful glue-room foreman or factory manager stop and think.

When glue is bought, it is weighed and bought at so much a pound, and if a person were going to sell

it, a scale would be purchased and the material weighed, so that justice would be done the purchaser. Is it not just as logical that a scale be provided for the glue-room and then insist that the water and glue entering into each batch be carefully weighed? One would hardly buy a barrel of glue by guessing at its weight, and why should guess-work be employed in utilizing it? The most efficient glue-room operator could not guess the exact quantity of glue taken from a barrel and the proper weight of water to use with it and, therefore, should not be held responsible for accuracy in work and product unless provided with proper equipment.

Efficient Redrying of Veneers

What about the veneers? No doubt these are re-dried before laying, but what method is employed? Has a veneer re-dryer been installed or are the sheets merely hung up in a hot room and their moisture content guessed at? Some manufacturers buy what they consider to be dry veneers and believe that further re-drying is unnecessary. If this method is followed, the chances are about five to one that there will be trouble from the veneers checking and the joints opening up. This is due entirely to the moisture the stock has absorbed while in transit and while lying in storage.

How much is this costing per year in repairs and loss of customers? On the other hand if the veneers are handled carefully and thoroughly re-dried before laying, what is the cost of this re-drying? If only a small quantity of veneers and crossbanding is used each day, it might be thought that the installation of the veneer re-dryer would not prove profitable. This is not so. Veneer re-dryers of the platen type are now manufactured in any size and can be obtained to suit the requirements of the manufacturer who uses a very small quantity of veneers, and in addition can be made a paying proposition. These machines are now being constructed so that various sections may be added at the demand increases. In the majority of cases the saving of labor alone when a re-dryer is employed will show a considerable return on the amount invested in tthe drying equipment, not taking into consideration the better results obtained through the elimination of checking and blistering of the face veneers.

A glue-room should be a profit producer, and, if this is not the case, a close study of that department should be made. All obsolete methods and equipment should be scrapped and replaced with modern machines and the work carried out along up-to-date lines. If that is done, this department should earn its just share of the dividends.

Drying Thin Veneers

Owing to its thinness the drying of veneers is apparently a simple matter as the necessity of regulating the humidity and temperature so as to prevent the outer surface drying more rapidly than the centre is practically absent. The veneer being thin the heat readily penetrates through and through, making for simple work. Yet the successful drying of this material offers problems of considerable magnitude.

When a kiln is used and the veneers piled with cross strips, on suitable trucks it is usually found that the sheets at the bottom of the pile are badly cracked and checked. The explanation is that the pressure of the upper layers clamps the lower sheets securely between the sticks so that they cannot shrink as the moisture leaves. This may be overcome by building suitable racks in which the sheets of veneer, while separated, will lie loosely, thus allowing for free movement as shrinkage takes place.

This method results in a certain amount of wrinkled stock, and is the only logical method to follow. The same holds true if the stock is piled for air drying. Veneers should never be piled like lumber for checking and cracking will surely follow.

It naturally follows that when the stock is free to shrink it is also free to wrinkle and more or less wrinkling will ensue. Any method that gives freedom to the sheets, whether it is hanging by a corner or standing on edge in facks, will result in curled and warped stock. This may be overcome by piling the stock in tight piles, after drying, to flatten out.

Moisture Content of Wood Independent of Density

Even after long exposure to the same atmospheric conditions, different pieces of wood do not have exactly the same moisture content. Variations of 2 per cent. were recently found in red oak blocks stored under carefully fixed humidity conditions at the Forest Products Laboratory.

These moisture differences, unlike variations in strength, are apparently independent of the density of the pieces. In the laboratory experiments, the variation proved to be as great in blocks of the same density as it was throughout the lot of specimens. Moreover, the range in moisture content was the same in wood of low density as in wood of medium density or high density.

Data on a few representative specimens is given in the accompanying table:

Stage of kiln run in hours	Temperature Degrees F.	Humidity per cent.
1	120	100
6	120	100
12	125	85
24	125	80
36	130	70
48	130	60
60	135	60
72	135	60
84	140	60
96	140	50
108	140	50
120	140	40
144	140	40
156	145	35
168	145	35
180	145	30
192	145	25
Until dry	145	25

What alone can bring to the labor of the world shorter hours? Improved machinery. What alone can bring to labor a greater return for work done? Improved machinery. What, except "hard times," can put commodities within easier reach of the consumer by lessening their cost Improved machinery. What can make up, industrially, for four years of time and 5,000,000 men gone from production forever? Improved machinery. Politics cannot help; wise legislation may help, but the makers of improved machinery, by increasing production, must perform the cure

OAK MAHOGANY CIRCASSIAN MAPLE

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Long Wood and Butts

QUARTERED WHITE OAK VENEER

Sawed and Sliced

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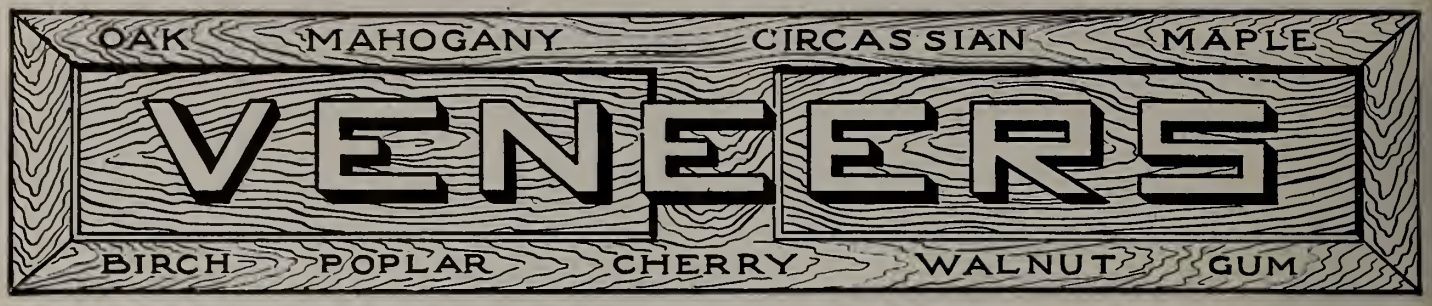

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Main Office: New Albany, Indiana

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Plain and Quarter Sawed White Oak Poplar, Black Walnut Lumber, Etc.

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Both Sliced and Sawed Quartered White Oak Veneer, Sliced Walnut Veneer, and Rotary Cut Poplar Cross Banding

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VENEERS

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Birch and Maple

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PICKREL VENEER COMPANY, Inc.

MANUFACTURERS OF

American Walnut
Exclusively

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QUALITY A MATTER OF FAMILY PRIDE FOR —

fifty-two years. In the more than half century during which the business has been run by succeeding generations of the same family, each generation has succeeded to an augmented tradition of quality product and has in turn made every effort to add something to the surety of that quality so that the heritage of family pride which it hands down might be strengthened—not merely stationary. Obviously this has called for more than a never-failing personal supervision of all phases of the business and the adoption of all available improvements in equipment. To fully succeed in living up to the family principle of a constantly improving product it has been necessary to **create** improvements in equipment, in methods and in personnel. The result has been that many of the most striking improvements in the machinery and methods employed in the cutting of high grade hardwood lumber and veneers have come from this plant where fifty years ago the founders of the business invented and installed the first band mill ever used. With the quality of the logs available today every whit as good as those cut fifty years ago, is it any wonder our books have for years carried the majority of the most careful buyers in the country?

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FORT WAYNE INDIANA

Northern Grown Oak American Beauty Walnut

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Est. 1867
Inc. 1904

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BIRCH POPLAR CHERRY WALNUT GUM

The Smile of Satisfaction—

—is won by our prompt, pleasing service. Your needs can be readily met from our large, perfect stock, which includes Sawed and Rotary Veneers, Poplar Crossbanding and Sheet Stock, Walnut Butts and Longwood, Quartered Oak, etc. Let us send you prices, etc. Write today.

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We have just unloaded into our Warehouse a very fine Carload of about

200,000 ft. of 1/28" Quartered Figured Gum

Good Widths, ranging from 7″ to 17″ by 6′ to 12½′ long, mostly 10′ and 12′ long

This is an exceptional lot of wood, of excellent manufacture, practically free from sap and defects.

Samples on Request.

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We also carry a good assortment of other
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The Northwestern Cooperage & Lumber Co., Gladstone, Mich.

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"PEERLESS" ROTARY CUT VENEERS

in Birch, Elm, Basswood, Maple, Ash and Beech for all purposes

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"Peerless" products are standard everywhere and you are always exercising Safety First in using them. Try us next time.
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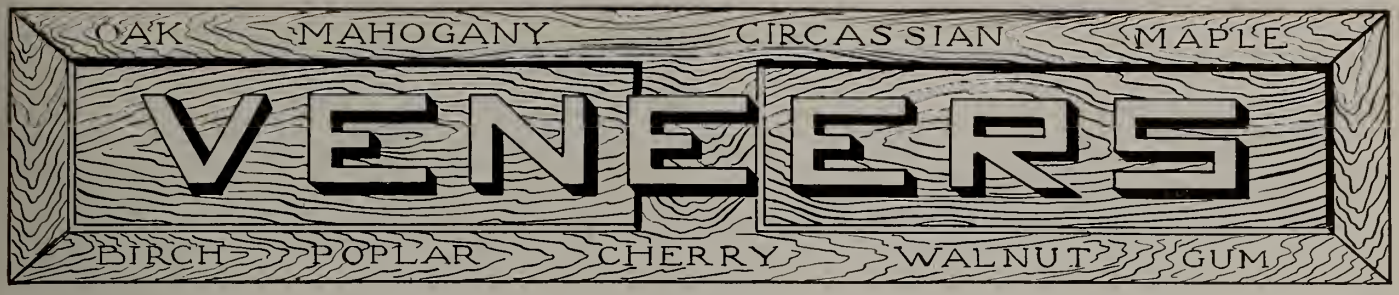

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We specialize in large size poplar veneers as we have extra fine poplar logs. We can cut veneer up to 10 feet square.

Our walnut veneer cannot be beat, both in plain and figured wood.

Write us for prices.

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Importers and Manufacturers of all kinds of Sawed, Sliced and Rotary-cut

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a large stock of selected Mahogany, Figured and Plain Walnut, Walnut Butts, Sawed and Sliced Quartered Oak and Sycamore and all other native woods.

1,000,000 Feet
QUARTERED RED GUM
to select from

WE Respectfully solicit your inquiries

In the Rush of Increasing Demand for Veneers

The natural tendency is for manufacturers to strive toward a greater output often at the expense of quality.

This is a mistake which the Lawrenceburg mills are carefully guarding against and buyers may be sure that in ordering "BATESVILLE QUALITY" Veneer they are getting goods manufactured in strict accordance with that standard of quality maintained for so many years.

Batesville Lumber and Veneer Co.
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GET OUR PRICES ON THE FOLLOWING:

SAWED QUARTERED White Oak Veneer

225,300 ft. 1/20 in., 6 in. to 9 in. wide
250,000 ft. 1/20 in., 10 in. & 11 in. "
175,000 ft. 1/20 in., 12 in .to 14 in. "
50,000 ft. 1/16 in., 6 in. to 9 in. "
75,000 ft. 1/16 in., 10 in. & 11 in. "
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All available for immediate shipment

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Stock Sizes for Immediate Shipment. All Woods. All Thicknesses. 3 and 5 Ply or made to your specifications

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Any Kind of Wood Any Thickness

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Buyers of Veneers and Panels

will find it to their advantage to purchase from the manufacturers and dealers whose advertisements appear in this publication. They are progressive firms—the leaders in the business, which is a guarantee of good service and prompt attention to orders.

Give your business to the man who will spend his time and money to get in touch with you. He deserves it—if his stock and prices are right.

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

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P-J SERVICE

One trial means a permanent connection. Give us an opportunity to show you.

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Three rotary lathes with a daily production of more than a carload of correctly manufactured veneer, that is dried by mechanical means to any percentage of moisture desired.

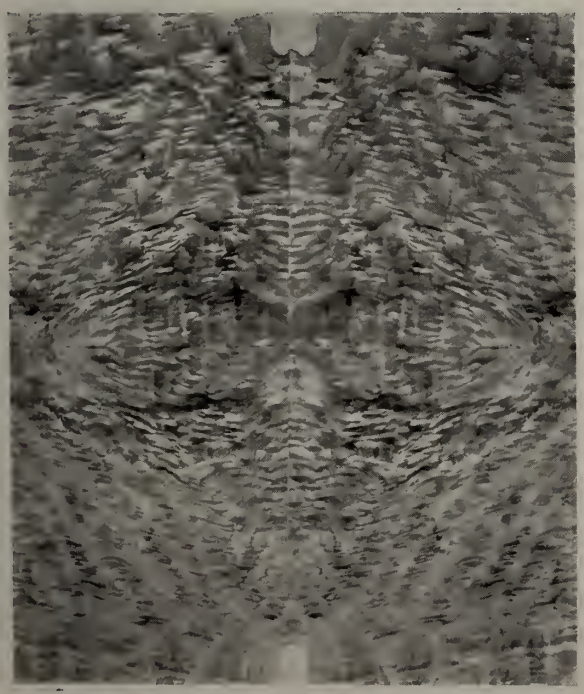
LUMBER

Modern band mills at Helena and Penjur, Ark., with a capacity of 75,000 ft. daily of well manufactured lumber that is properly edged and trimmed.

Over 100,000,000 Feet of Choice Standing Timber
DIRECT FROM OUR MILLS TO CONSUMER

PENROD-JURDEN COMPANY

General Offices: Memphis, Tenn.



PENROD WALNUT

Walnut Lumber For Sale

	FAS 6" to 9¾"	FAS 10" & up	Selects	No. 1 Com.	No. 2 Com.
1/2"	20,000	8,000	.....	30,000	5,000
5/8"	25,000	20,000	.....	8,000	3,000
3/4"	30,000	4,200	.....	13,000	3,500
4/4"	40,000	7,000	5,000	35,000	23,500
5/4"	35,000	2,300	2,500	10,000	25,000
6/4"	28,000	4,800	7,500	14,500	22,500
8/4"	21,500	1,500	16,600	23,200	42,500

WRITE US FOR PRICES

We also have everything in Walnut Veneers. Write us for samples and prices.

Penrod Walnut and Veneer Co.

Kansas City, Missouri, U.S.A.

Casein Waterproof Glues

By P. M. Stewart, Supt. the Napco Corporation, Indianapolis, Ind.

The wood-working industry owes to the war the general commercializing of waterproof glues. These were known of and used in certain trades for many years before their adaptability to wood-working requirements was emphasized by their extensive use in building airplanes, etc., for the government. These adhesives were tested exhaustedly in the Forest Products Laboratory, and the great demand has justified manufacturers in experimenting and making many improvements since the armstice was signed. Waterproof glues are better to-day than ever before and seem destined to play an important part in the work of all kinds of wood-working plants.

These glues are of two general types, the blood albumin and the casein. The expensive hot-plate presses required for the former make its use prohibitive except in a few special cases and it is of little interest to the general wood-worker. Previous to the war, when the blood albumin glues were considered more or less secret propositions, many manufacturers of built-up work possessed expensively acquired formulas—of which they made no practical use. At that time it was known as the Russian Process. Casein glues, on the contrary, are of a nature which adapts them especially for use in both large and small wood-working plants, and are being employed in larger quantities as their various advantages become more generally known.

No heat is required in their mixing or application; the glue, the wood and the glue room may be maintained at a temperature most comfortable for the workmen; there is no danger from the drafts that insure good ventilation, but were fatal to good gluing with animal adhesives, and they are entirely free from obnoxious odors.

Often, in installing casein glue, no change in equipment is necessary, at other times the old mixers and spreaders can be changed to meet requirements at little expense, and sometimes it is advisable to purchase new mixers and spreaders, but even this is easily justified by the gains made and is not an expensive proposition.

Casein glues should be mixed rapidly and thoroughly. Water, at about 85 deg. F., should be placed in the mixer in proportion of about two to one of the glue powder, and the mixer started. Then the glue is added slowly and the mixture is ready for use in about half an hour. The directions of the glue manufacturer should be adhered to in all cases. A chemical reaction which occurs during mixing may lead to the temptation to add more water, but this is not necessary, as the mixture will be of exactly the proper consistency if directions are followed closely.

It is much better to use more glue than is necessary than to make too thin a spread. As experience is acquired in its use it may be possible to cut down the quantity considerably, but this should only be done after ample tests have been made, which show just the proper spread which best fits individual needs. The glue is inexpensive and an ample margin of safety should be preserved if the best results are to be attained.

In earlier experiences with casein glues some manufacturers found that saws were dulled in trimming up the panels, but this trouble may be obviated by trimming soon after the glue has had time to set properly. Setting requires about three hours, after which lapse of time the panels may be safely removed from the retaining clamps. In three or four days after application, the glue becomes so entirely water-resistant that no amount of soaking or even boiling will separate the joint, which is so strong that in tearing apart, the wood fibres will give instead of the glue. The average tensile strength of the glue is 2500 pounds—greater than that of ordinary woods.

It is only a question of time until the wings of airplanes will be made of veneers, the layers attached with casein glue. Rents in the fabrics used on airplane wings have frequently developed into great tears, being responsible for wrecks and the fabrics were highly inflammable, thus adding to the danger. Veneered wing coverings are not only immune from tearing because of the crossing of the grains, but can easily be fireproofed.

However, airplanes represent a very small percentage of the commercial uses of casein glues. They are now being used extensively in the construction of doors, furniture, interior trim, wheels, dashes, tops, etc., and in the construction of automobile bodies of veneers instead of metal. This last is one of the new fields which is being opened and promises to grow to large proportions, the veneer body being much stronger than metal and so much lighter as to make a very appreciable difference in the life of tires.

Casein glues should be used very carefully when handling thin face veneers of some woods, such as oak or mahogany. If the veneers are to be stained, no particular care is necessary, but the glue, if it penetrates to the face, will cause slight discoloration which will show if natural finish is to be used. If the stains are slight they may be removed with a solution of oxalic acid.

A feature of casein glues that will appeal to both large and small consumers is the ease with which they may be kept, ready for use on short notice. They should be kept in closed retainers in a dry cool place, where the powdered glue will remain in good condition for a long period.

It is not good policy to mix too much of the glue at one time, as it begins to thicken about five hours after being mixed. The glue left over may be mixed with a new batch the next day, but it is better to mix only the amount required for immediate use. Should the amount required be underestimated, it is only a matter of a few minutes and little trouble to mix a new batch.

Owing to the fact that it can be kept on hand, ready for use at any time and in any quantity, and that it may be applied with either the mechanical spreader or brushed on by hand, casein glue is destined to become a practical necessity in every wood-working shop, and new fields will be constantly opened for its use. There are thousands of articles with glue joints that will be better for being waterproof and it is only a question of time until the public will demand this quality in much that it purchases, so, even where other adhesives are generally employed, it will pay to have some of the casein glue on hand and know how to use it to the best advantage.

Piano makers are using casein glue on their ham-

You'll be Interested -

You'll be interested in our stock of quality veneers. Write, wire or 'phone your order or we would be pleased to have you call and make your own selections directly from stock. We can fill your immediate needs for veneers in Mahogany, American Black Walnut, Quartered Oak, Figured Quartered Gum. Let us know your requirements.

Toronto Veneer Company, Ltd.

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WALNUT and QUARTERED WHITE OAK VENEERS and LUMBER

Prompt Delivery

Long-Knight Lumber Company

INDIANAPOLIS - - IND.

mer felts and player actions. In much of the South American trade, which is almost sure to develop to large proportions in the near future, waterproofing will be necessary in order to endure humid climates. The same requirements will be necessary for furniture made for our extensive seaboard and for many interior locations, especially in the south.

It has been the endeavor here to make an honest statement of both the bad and good qualities of casein glues, based on some experience, but the good qualities so overbalance the bad and the latter are so easily remedied, that it is a safe prophesy that in the next decade casein glues will be in very general use in the wood-working industry and that they will be an absolute necessity in any shop conducting a general line of manufacture.

Shrinkage of Veneer from Boiled and Steamed Logs

According to present practice, logs which are to be cut into veneer are either steamed or soaked in hot or boiling water for several hours to soften the wood. The claim is sometimes made that the veneer from boiled logs is likely to shrink and swell less with changing moisture content than the veneer from steamed logs. This point was made the subject of investigation by the Forest Products Laboratory at a plant using both methods of preparing the logs.

Thirty sheets of ½-inch rotary-cut birch veneer, 60 inches square, were selected from about six logs prepared in each way. The sheets were carefully measured, passed through a textile drier, and measured again.

The average moisture content of the boiled veneer and that of the steamed before drying were practically the same, being 64.8 and 65.5 per cent., respectively. The average moisture content for both kinds after passing through the drier was 10 per cent., and the moisture contents of all dried sheets were between 7 and 13 per cent.

The shrinkage caused by drying was found to be the same for both kinds of veneer. When the dried sheets were resoaked, they expanded to their original dimensions, and when subjected to a second drying shrank as uniformly as before.

Although these tests were very crude, the indicate that the shrinkage of veneer from boiled and steamed logs is practically the same. The variation is no greater than is found between pieces from different logs which have undergone the same treatment.

A Tip on Matching Veneers

Successfully matching veneers is a good deal like some other things; there is as much in getting properly ready for it as there is in the operation itself—perhaps more.

It isn't such a very difficult task to match the grain on two pieces of veneers that have laid side by side in the flitch and take them, if they are perfectly flat, but if they have wrinkled in drying, that is another story.

Therefore, the first step is to make the veneers lay flat. With just a little preparation this can be easily done, even if the pieces are badly wrinkled. Of course, if there is much of the work being done, the best thing is to install a plate redrier.

First heat some softwood cauls pretty warm. If the veneers are moist they can be placed between the boards at once, which will straighten them out. The softwood will absorb the moisture while the heat irons the veneers straight and holds them that way until they are set. Some pressure is necessary.

When the veneers are thoroughly dry and straight, they may be jointed, the edges held firmly together and taped. Where hand-taping is practiced, the veneers are generally matched on a flat table or bench and the pieces held in place by tacking lightly to the bench until the tape is applied.

Coating That Prevents End Checking

Wood, whether in the form of logs, lumber, timber, shaped blanks, or veneer, will split and check at the ends during seasoning, if drying is allowed to go on at a natural rate through the end grain. To retard the rate of drying from the ends, it is necessary to cover them with some protective coating.

The law of end coatings, in simple terms, is that the harder and greener the wood, the more effective must be the coating. In its experiments to determine the practicability of various coatings and end dips, the Forest Products Laboratory found the following to be true:

Paint is convenient to handle, but is of low effectiveness.

White lead is convenient to handle, and is of medium effectiveness.

Lorac, a commercial compound, is convenient to handle, and is of considerable effectiveness.

Rosin-lampblack is inconvenient to handle, but of high effectiveness.

Rosin-lampblack is made according to the following formula:

Clear grade rosin	60 parts by weight
Lampblack	1 part by weight

The rosin should be melted but not allowed to boil or froth. The lampblack should then be thoroughly stirred in. The ends of the sticks should be dipped in this molten mixture to a distance of about ½ in. When hard, the coating should be smooth, free from bubbles, shiny, and an eighth of an inch thick over the end.

If the stock is to be subjected to rough handling which might cause the coating to chip when cool, linseed oil may be added, in the proportion of 1 to 15 by weight, but this will have a tendency to make the coating excessively soft in the kiln at temperatures above 103 deg F.

Convenient Wall-Pad Calendar

The Picknel Walnut Co., St. Louis, Mo., have issued a very useful wall calander. It is of the pad form, with numerals three inches high. The picture shows a portion of their log storage pond and gives an idea of the immense quantity of raw material that this firm carries.

Efficiency and greater production, thrift and economy are the characteristics, both national and individual, which will re-establish Canadian industry on a sound peace footing.

Don't fall over a lot of waste pieces; have a boy to clear up the mill. The cost will be recovered by the increased production.

N. B. Quality Quartered Oak
is the result of
superior workmanship
and
careful selection of timber

NICKEY BROTHERS, INC.
MEMPHIS, TENN.

The Why of N. B. Quality—

Write for Samples and Prices

When N. B. Quality is specified on an order for Quartered Oak Veneer it means that the buyer will be satisfied only with that quality of veneer which he knows is always to be found under the N. B. Trade Mark.

The reputation we enjoy for this exceptional quality of our Quartered Oak Veneer is due to skilled selection of timber, expert log inspection, excellence of workmanship, mechanical drying and careful grading.

Concentrate Your Purchases and Save Money

Through Buying

Sliced Figured Red Gum and Rotary Cut Gum
Sawed and Sliced Ash, Poplar and Gum Grand Piano Rims
Sawed and Sliced Quartered Oak

In Cars with Band Sawed Hardwood Lumber

Carload buyers get closer prices, save freight on local shipments, and eliminate damaged goods.

NICKEY BROTHERS, INC.

MEMPHIS, TENNESSEE

Certus Glue Manufacturing Co.

Manufacturers of Waterproof Glue in Powdered Form

Successors to

CERTUS COLD GLUE COMPANY

Detroit, Michigan

We Wish to Announce to the Trade

that we have purchased the assets of the Certus Cold Glue Company (Bankrupt), and have organized the CERTUS GLUE MANUFACTURING COMPANY for the purpose of continuing the manufacture and sale of CERTUS Glue.

We are now the largest manufacturers of Casein Waterproof Glues in the World, and our plant at 88 Isabella Avenue, Detroit, Michigan, has a daily capacity of 80,000 lbs.

The following varieties of HIGHEST GRADE WATERPROOF GLUES IN POWDER FORM are manufactured by us:—

CERTUS VENEER

Specially suitable for Veneer purposes.

CERTUS JOINT

Specially suitable for Pattern, Joint, and Cabinet Work and all Automobile Work.

We are in a position to offer the above varieties in large or small quantities for immediate delivery. We guarantee our products to give full satisfaction; all our sales are made upon that understanding.

We invite inquiries from the trade, and will furnish price lists; also quotations on yearly requirements. Our prices are the lowest and our quality is the highest.

We are prepared to demonstrate the superiority of our product, and are glad to send samples with literature and any information desired.

We shall at all times specially feature LOW PRICE; HIGH QUALITY AND SERVICE. All communications should be addressed to:—

Certus Glue Manufacturing Company

88 Isabella Avenue - DETROIT, MICHIGAN

Information and Inquiries

You are cordially invited to make use of this department

Designs for Head Casings

Apple Hill, Ont., Feb. 2, 1920

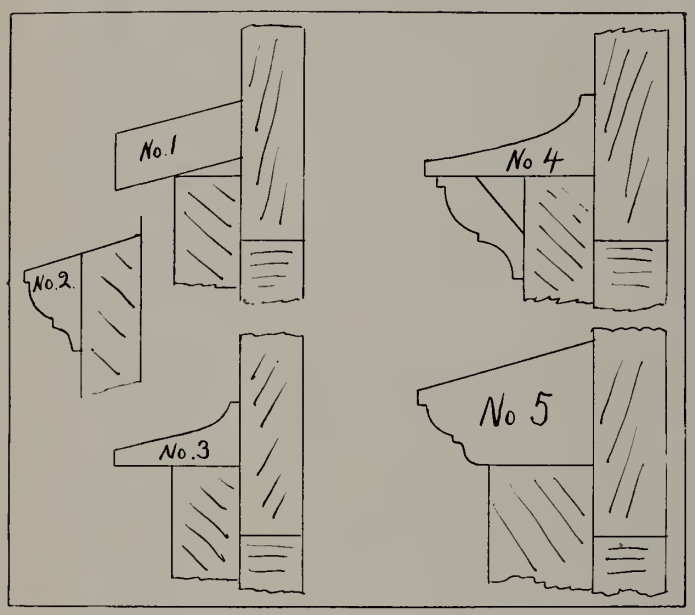
Editor "Canadian Woodworker:"

Will you kindly give me a few designs for outside head casings for door and window frames, where shingles or clap-boards are used.

Yours truly,

A. D. Clingen.

The accompanying sketches outline a few designs. These can be changed or adapted to the moldings you have in stock, as required. Better results will be secured in every case if a metal flashing is used. The first illustration shows a very plain form of drip cap. Sometimes when this is employed the top edge of



A number of simple head casing designs

the outside casing is bevelled to suit. The next sketch, No. 2, shows a plain moulding planted on the top edge of the casing. In this case it is necessary that the top be bevelled also that flashing be used. The third drawing is of a plain moulded drip cap. A small moulding such as cove or quarter round could be placed under this if desired. No. 4 is the same idea only on a larger scale. This may be worked out in a variety of forms depending entirely on the different designs of mouldings used. The last sketch shows a form of one piece drip cap that is often used with 1⅜ in. casing. It is run from 1½ x 1¾ in. stock and may be moulded to suit the knives on hand.

Parts Wanted for Deck Chairs

A large manufacturing firm in London, England, is in the market for a quantity of parts for deck chairs, cut to specifications, and is desirous of getting in touch with some Canadian firm who are in a position to handle this business. The name of this firm may be secured from the publishers of this paper.

Clothes Pin and Handle Machinery

Nelson, B. C., Jan. 31, 1920

Editor "Canadian Woodworker:"

Would you kindly inform us where we can obtain the equipment used in the manufacture of clothes pins. Perhaps you could refer us to the manufacturers of suitable machines. In addition we would like to know where we can secure a lathe for turning out broom handles.

Yours truly,

T. H. Waters Co.

Would suggest that you get in touch with some of the machine and supply houses whose advertisements will be found in this issue, and if they do not have any suitable equipment in stock they could get the necessary machines for you. We believe that the H. W. Petrie, Limited, Toronto, have a number of second hand automatic clothes pin lathes and slotters in stock. The Humphrey Mfg. Co., Keene, N. H., and Goodspeed Machinery Co., Winchendon, Mass., are manufacturers of clothes pin machinery. Broom handle lathes are made by the Defiance Machine Works, Defiance, Ohio, and the Trevor Mfg. Co., Lockport, N. Y. J. M. Nash, Milwaukee, Wis., makes a line of broom handle sanding machines.

Plates for Graining Machine

St. Rose, P.Q., Feb. 5, 1920

Editor "Canadian Woodworker:"

Can you inform me where I can purchase, in Canada, a rubber plate for graining coffins, the same as used by other coffin manufacturers.

Yours truly.

H. Cyr.

This work is done on a graining machine and the machine and plates can be secured from Hugh Silver & Son, Prescott, Ontario, and Ogdensburg, N. Y. The Grand Rapids Panel Co., Grand Rapids, Mich., also make a line of graining machines. No doubt either one of these firms could supply your needs.

Value of Aluminium Cauls

Montreal, P.Q., Feb. 4, 1920

Editor "Canadian Woodworker:"

Was wondering if you could give me any information pertaining to the use of aluminium cauls. We do a lot of veneer work and at present are using heavy wood cauls.

Yours truly,

A. E. Dupias.

Aluminium cauls are being used in many up-to-date plants and are giving good satisfaction. Owing to the difference in thickness the use of a metal caul, such as aluminium, increases the capacity of the press and retainers as a greater number of pieces may be put in. Aluminium is a good heat conductor and seems to retain its heat longer than other metals. The smooth surface ensures a good face on the panels produced and in addition glue does not stick readily so that an aluminium caul is easy to keep clean. Other kinds of metal are often used but owing to its extreme lightness and heat retaining qualities aluminium seems to be the favorite.

The automatic screwdriver saves a great deal of tedious and laborious work.

We Are Doing Everything Possible To Meet Demand
Supply and demand for hardwoods are equally beyond human control. The causes are obvious to the experienced. May we state though that while even our vast organization has fallen short of complete success in meeting the issue, we are doing everything humanly possible to speed up; we are even enlarging our facilities in order to more fully live up to our reputation as
Exponents of the Golden Rule in Business.
Anderson-Tully Co.
MEMPHIS,
TENN.

News of the Trade

Poirer & Morin were recently registered in Montreal, P.Q., as upholsterers.

Alp. Baril, Shawinigan Falls, P.Q., is erecting a new sash and door factory.

The plant of the Quebec Heel Co., Quebec, Que., was recently destroyed by fire. Loss $10,000.

The Ontario Spring Bed Co., London, Ont., are building an addition to their plant. Cost $10,000.

The furniture factory of Dombrowski Bros., Limited, Quebec, P.Q., was recently damaged by fire. Loss $2,000.

A defective motor caused a small blaze in the plant of the Toronto Bedding Co., Toronto, Ont. Damage $500.

The P .D. Ivey Co., London, Ont., manufacturers of storage batteries, have taken over the P. W. Ellis munition plant.

The Sidney Mills Ltd., Sidney, B.C., manufacturers of boxes, lumber, etc., are installing a 200 h.p. engine in their planing mill.

The Kelsey Wheel Co , Ltd., Windsor, Ont., are making two additions to their factory, one 63 x 60 and the other 67 x 60; cost $18,000.

A. H. Gould, St. Marys, Ont., has installed his planing mill equipment in the Chalmers warehouse building which he recently purchased.

The Laidlaw Bale-Tie Co., Limited, Hamilton, Ont., manufacturers of tying wires, nails, etc., are building an addition to their factory.

Robin Freres, 135 Carrier Road, Montreal, are erecting a two-storey factory, 55 x 74. This will be fitted up for the manufacture of shoe lasts.

G. F. Payne, who recently built a sawmill on Saturna Island, B.C., plans on equipping a planing mill, to be operated in conjunction with this mill.

The furniture factory of A. Abrahamson, 605 Dufferin Ave., Winnipeg, was destroyed by fire. The loss of $1,800 was partially covered by insurance.

Stuart Bros., Hyde Park Ave., Hamilton, Ont., are building an addition to their planing mill and are in the market for a horizontal boring machine for doors.

Roxton Mill & Chair Mfg. Co., Ltd., Waterloo, P.Q., who were contemplating building an addition to their plant, have decided to hold this project over until 1921.

The Stratford Manufacturing Co., Limited, Stratford, Ont., are doing quite an export business. Shipments were made recently to England, Ireland and South Africa.

The Canadian Western Woodworkers, Limited, Victoria, B. C., recently added a finishing room to their plant and also installed a C. M. C. two-drum sander and a C. M. C. dovetail machine.

A company known as the Coast Box Company has purchased the site at Marpole, B.C., formerly occupied by an evaporating plant, and will shortly commence the erection of a box factory.

A recent announcement by Yarrow's Ltd., Esquimalt, B. C., states that they are prepared to proceed with the manufacture of aeroplanes as soon as the demand is sufficient to warrant this move.

S. C. Johnson & Son, of Rachine, Wis., have purchased a plant in Brantford, Ont., where they will manufacture their line of prepared waxes and wood stains. A new factory is contemplated for next spring.

An extra provincial license has been granted the Canadian Fabrikoid Ltd., Toronto, with a federal charter, to carry on business in the Province of Ontario and expend the sum of $1,500,000 for that purpose.

Rhodes & Mavor, Thessalon, Ont., have taken over the building known as the old woollen mill, and are equipping it with modern woodworking machinery for the production of shingles, boxes and other wood products.

Ives Bedding Co., Ltd., Cornwall, Ont., have been incorporated to manufacture and deal in beds, bedding and furniture and to take over as a going concern the Ives Modern Bedstead Co., Ltd., of Cornwall. Capital $750,000.

Bouvier Limitee, Montreal, P.Q., has been incorporated to manufacture and deal in pianos, phonographs and all forms of musical instruments. Capital $49,900. V. P. Bouvier and G. Vezina, of Montreal, are two of the incorporators.

B. & B. Furniture Co., Ltd., Kitchener, Ont., have been incorporated to manufacture and deal in furniture and other wood products. P. Bogdonovitz and P. L. Kroetsch, both of Kitchener, are two of the incorporators. Capital $50,000.

The Morris Pianos, Limited, Listowel, Ont., have been incorporated to manufacture and deal in pianos, phonographs and all kinds of musical instruments. Capital $150,000. This firm recently acquired the Listowel plant of the Karn-Morris Piano Co.

The Lloyd Manufacturing Co., Menominee, Mich., manufacturers of machine woven fibre baby carriages and furniture, are looking for a suitable location for a Canadian factory. It is understood that several plants are under consideration.

David & Michaud, Limited, Montreal, P.Q., have been incorporated to manufacture and deal in pianos, phonographs and other musical instruments and to take over the business, in Montreal, known as David, Michaud & Cie. Capital $49,000.

The Disappearing Propeller Boat Co., Limited, Toronto, have recently completed an addition to their Port Carling plant and have added the following equipment: planer, shaper and sander. The production for 1920 is estimated at 1,000 boats.

Dominion Shipbuilding & Repair Co., Ltd., Toronto, Ont., have been granted a Dominion charter to build or repair boats and vessels of all kinds. Capital $3,000,000. N. S. Robertson and H. L. Steele, barristers-at-law, Toronto, are among the incorporators.

McCall & Co., St. Williams, Ont., are erecting an addition to their furniture factory. The following equipment is being installed: Jackson-Cochrane automatic glue jointer, Cowan band saw, Cowan cut-off saw, four-spindle vertical borer, rip-saw, jointer and resaw.

Globe Shipping Corporation, Limited, Montreal, P.Q., have been incorporated to build or repair steamships, tugs, sailing vessels, barges and boats of all kinds. Capital $1,000,000. L. MacFarlane, K.C., and W. B. Scott, advocates, of Montreal, are among the incorporators.

L. N. Godfrey, Ltd., with a capital stock of $100,000, and headquarters in Montreal, has been granted a federal charter to manufacture and deal in furniture, doors, sashes, blinds, etc. L. Joron, U. Joron and G. H. Seguin, advocates, of Montreal, are among the incorporators.

The De Luxe Upholstering Co., Limited, Kitchener, Ont., were recently incorporated to manufacture and deal in furniture and upholstered goods and to take over the business known as the De Luxe Uuholstering Co. Capital $20,000. The incorporators are A. G. Schreiter, A. A. Schreiter, and H. C. Schreiter.

The Pannill Door Co., which was recently registered in Toronto, Ont., has been organized to deal in doors exclusively. They have a stock of several thousand doors of all sizes, including doors in plain and quarter cut white oak, red oak, birch and white pine. Capt. Hunter Pannill and Major E. I. Harrington are the prime movers.

The North American Bent Chair Co., Limited, Owen Sound, Ont., recently shipped the following large orders, 400 dozen chairs to Calcutta, India, and 200 dozen to Buenos Aires, South America. Before the war this progressive firm enjoyed practically a world-wide trade and the prospects for renewing this business are very bright.

The Forster Motor Car & Mfg. Co., Ltd., Montreal, P. Q., have been incorporated to manufacture and deal in motor cars, aeroplanes and vehicles of all kinds and also to carry on business as manufacturers of motor and truck bodies. Capital $1,000,000. T. R. Sloan and S. H. Slater, solicitors, both of Hamilton, Ont., are among the incorporators.

The Restmore Mfg. Co., Ltd., Vancouver, B.C., manufacturers of furniture, mattresses, etc., have installed a sawmill and in future all lumber used in the manufacture of their line will be cut on the premises. The logs will be brought to the plant by rail, and it is anticipated that a considerable saving will be effected both in time and money.

A rather serious fire destroyed the plant of the Blain Carriage Works, Montreal, P.Q. The blaze started in the finishing room and made such rapid headway that three of

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the workmen were cut off and burned to death, while a number of others were seriously injured. The amount of the loss and the cause of the fire have not as yet been ascertained.

The Thomas Organ & Piano Co., Ltd., Woodstock, Ont., have sent an attractive card to the trade announcing their recent incorporation. The personnel of the new company is the same as that of the old, the following being the officers:—James Dunlop, president; John G. Dunlop, vice-president; Wm. H. Dunlop, director; Harry Sykes, secretary-treasurer.

The plant of the Hope Manufacturing Co., Limited, Toronto, Ont., was completely destroyed by fire recently. The damage, which amounts to $45,000, was only partially covered by insurance. This company have been manufacturing sash, doors, etc., since 1912. Some twenty-five men are thrown out of employment by this fire. The company intends rebuilding.

Hamilton Wood Products Co., Ltd., with a capital stock of $30,000 and headquarters in Hamilton, has been incorporated. Wide authority is conferred upon the company, which is empowered to manufacture, buy, sell and deal in wares and merchandise of all kinds. Among the incorporators are Edgar Brimmer, Wm. B. Ireland, Milton Ireland, Arthur Wilson and others, of Hamilton.

The Kent Lumber Co., Granby, P.Q., are erecting a sash and door factory and planing mill, 38 x 80. The equipment, which is electrically driven, includes a full line of sash and door machinery in addition to planers, moulders and a matcher. A shavings exhaust system is also being installed. About 20 men will be given employment, and the plant is expected to be in operation February 1st.

Gordon G. Scott, who operates woodworking plants at Upper Cross Creek and Westfield, N.B., has applied to the City Council of Fredericton for a twenty-one years' lease of the Estey Mill site. Mr. Scott promised an expenditure of not less than $25,000 for machinery and equipment and estimated that his payroll would be not less than $15,000 a year. The council have the proposition under consideration.

McFarlane Mfg. Co., Ltd., 160 River St., Toronto, manufacturers of woodenware, ladders, etc., have purchased the property of the York Lumber Co., Toronto. This property includes a large planing mill, and it is the intention of the McFarlane Co. to move their plant from River St. and install it in the new planing mill building. It is anticipated that the plant will be in operation at the new location not later than March 1st.

Wm. Robertson, Toronto, B. C. Lumber Commissioner for Eastern Canada, is moving his offices from the Kent Building to No. 1 Adelaide St. East, where he has secured larger and more commodious quarters on the ground floor. The interior of the offices is being finished with specimens of the different B. C. woods, and when finished will be very attractive. A permanent display of B. C. forest products will be made and should prove of interest to all users of wood.

J. E. Asam, who formerly operated a basket factory at Rydal Bank, Ont., is moving his plant to Thessalon, where he is constructing a two-storey factory 40 x 60. Among the equipment to be installed is a 90-in. veneer lathe. Mr. Asam will continue to manufacture his line of patent blueberry baskets, in addition to supplying material for board bottom or Climax baskets. When his sawmill is in operation he will be able to cater to the demand for broom and brush handle blanks.

Mobbs & Lewis, who are establishing a last factory at Mavis Mills, N.B., P. O. address Cross Creek, N.B., have made good progress with their operations. A site of twelve acres has been cleared and the sawmill and last factory, with all necessary camp building, has been erected. Logging operations have yielded sufficient timber for 1,000,000 lasts and 750,000 feet of hardwood, and next season they expect to cut 2,000,000 lasts and 2,000,000 feet of birch lumber. R. W. Baird is the manager.

W. N. Manning, of the Sherlock-Manning Co., London, Ont., has formally taken over the business and plant of the Doherty Pianos Ltd., Clinton, Ont., which has been acquired by this firm. The business will be conducted under the old name of Doherty Pianos Ltd., and will be run independently of the London factory. In a short talk to the employees of the new plant, Mr. Manning stated that he hoped to add to the staff from time to time and to increase the output to 2400 pianos a year. B. J. Gibbings will continue as superintendent.

At the annual convention of the Western Retail Lumbermen's Association, which was recently held in Winnipeg, Walter Thorn, the retiring president, in his address stated that based on the requirements of the United States, he believed that Canada will need 100,000 homes, 30,000 factories, 1,000 schools, 3,700 apartment blocks, 1,400 churches, 1,000 freight sheds, 30,000 barns, besides many small buildings. The enormous quantity of millwork for this large amount of building augurs well for the immediate future of the woodworking industry. The furniture manufacturers will be called on to do their part by turning out sufficient furniture for this possible program.

The Harris Wood Products Ltd., Toronto, Ont., who were recently incorporated with a capital of $100,000, have secured the Graydon Mill plant at Streetsville, Ont., and are fitting it up to manufacture a line of sectional houses for domestic and export trade. The site consists of 6½ acres, and when the improvements to the plant are completed, they will have about 9,000 feet of floor space. The following equipment is being added:—Cowan 12-in. moulder, Cowan power feed rip saw, Jackson-Cochrane buzz planer, Cowan swing cut-off, Cowan drum sander, two Morgan nailing machines, sash relisher, tenoning machine. Orders for houses already secured include a $50,000 export order and one order amounting to $25,000 for domestic trade.

Simmons, Limited, Montreal, P.Q., who were recently incorporated with a capital of $10,000,000, have taken over the J. H. Sherrard Mfg. Co., Limited, Montreal, P.Q., and allied companies. In future in addition to the company named the following affiliated firms will operate as Simmons, Limited: The Ideal Bedding Co., Limited, Toronto; the Alaska Bedding Co., Limited, Winnipeg; the Alaska Western Bedding Co., Limited, Calgary, and the Alaska B. C. Bedding Co., Limited, Vancouver. The management will remain as at present with J. H. Sherrard, Montreal, president; Mr. Bradshaw, vice-president. The managers are: Mr. Browne, Toronto; Mr. Abbott, Montreal; Mr. Bromley, Calgary; Mr. Baker, Winnipeg, and Mr. McLaren, Vancouver, B.C.

Personal

Mr. Givens, of the Export Association of Canada, whose headquarters are in Montreal, was in Toronto recently on a business trip.

V. J. McLellan, of the Sellers Kitchen Cabinet Co., Limited, Southampton, Ont., returned recently from a business trip through Michigan.

James L. Fralick recently passed away in Vancouver, B.C. Mr. Fralick operated a carriage factory in Picton, Ont., for a great many years.

E. B. Palmer, Toronto, Ont., the energetic representative of the Standard Paint & Varnish Co., Windsor, Ont., has been laid up with a slight attack of flu.

Wm. Cawkell, Toronto, secretary of the Furniture Manufacturers' Association, is at his desk again after having been confined to his home with a slight attack of flu.

H. Bruce Beattie has resigned his position with the National Table Co., Limited, Owen Sound, Ont., to take charge of the Kitchener factory of the Canada Furniture Manufacturers, Limited, Woodstock, Ont. Mr. Beattie will carry with him the best wishes of his many friends.

John C. Barr, Granby, P.Q., recently passed away. Mr. Barr was an active partner in the Granby Carriage Co., in fact, in 1902, he helped organize this company. He took a great interest in civic affairs, having served on the Council for the past twenty years. His demise will be regretted by a wide circle of friends.

W. T. Gibbard, founder of the Gibbard Furniture Co., Ltd., Napanee, Ont., died recently in that town. With the passing of Mr. Gibbard, who was 75 years of age, the furniture industry of Canada loses one of its oldest members. In 1862 Mr. Gibbard was taken into partnership with his father, who previously had been making a line of furniture, and the business was changed to J. Gibbard & Son. In 1891 the present firm of The Gibbard Furniture Co., Limited, was formed, and W. T. Gibbard was appointed manager. He held this position until 1909, when he retired and was succeeded by his son, G. W. Gibbard. Mr. Gibbard was of a kindly and genial nature and will be greatly missed by numerous friends in the furniture industry.

HARDWOOD LUMBER

General Offices
GREENWOOD, MISSISSIPPI,
U.S.A.

We are short on quantity, but long on QUALITY and SERVICE.

This brand is your GUARANTEE and our mutual PROTECTION.

Manufacturers Exclusively

BAND MILLS:

GREENWOOD, MISS. MOORHEAD, MISS.

The Lumber Market

Domestic Woods

At the present writing there is an unprecedented demand for all kinds of Canadian woods. In many lines there is an acute shortage, in fact some lines like pine, hemlock and birch are almost off the market, and in all woods and grades the stocks are short and broken. At the same time the demand continues strong without showing any signs of letting up. There is not any relief in sight at present.

In another month or two the new stock will be on the market but such is the demand that as near as one can judge it will afford very little relief. Pine and hemlock are being sought after assiduously with the result that they are scarce and hard to secure. The same applies to spruce. Not only are the box manufacturers buying large quantities but other trades are buying it as well. Prices are very high and still advancing. The future is difficult to predict but there is a limit over which prices cannot advance and many think that it will be reached very shortly. Many lumbermen are of the opinion that the softwood cut this season will be about the same as last year. If that is true the present shortage will probably continue during 1920 unless the demand eases off.

The hardwood market is in about the same condition. American buyers, chiefly for automobile concerns, are in the field and are taking practically all the lumber offered. This tends to force up local prices with the result that quotations are increasing all along the line. Not only is there a strong demand from the south of the border but local woodworkers are buying what they can. The high exchange rate places the Canadian buyer at a disadvantage for at present rates of exchange lumber stocks will realize about 15 per cent. more than if sold in Canada. That works to the detriment of the local buyer as he must virtually pay the exchange on his local purchases. Stocks in all kinds of hardwoods such as birch, maple, beech and elm are very low. The snow enabled a small amount to be brought out from inland mills but these stocks were picked up very quickly. There does not seem to be any relief in sight until the winter cut is placed on the market in Many and June. This cut is likely to be greater than for the last few years but as the demand is abnormal it is hard to judge just what effect it will have on the market. Prices are extremely high and give indications of going high, as an instance an order was recently placed for 200 M. ft. 8/4 birch at $140 shipped green. A heavy cut in the Southern hardwood districts would have its effect on the local market as it would tend to take care of the American demands. Lately conditions in this field have been unfavorable to increased production. To sum up all local woods are scarce and hard to secure, the demand continues extremely strong, prices are very high and may go higher with little or no relief in sight.

Imported Woods

The consumers and manufacturers of the various American hardwoods are facing a very difficult situation. Stocks of all kinds are low, lower than is usual for this time of year, while the demand continues very strong. Prices have advanced rapidly during the last few months, one large wholesaler stating that, on a general average he thinks that hardwoods have increased about $1 per day for the last ninety days. Has the limit been reached? Certainly there is a marked tendency to substitute and utilize cheaper hardwoods with the result that these have advanced in price until to-day birch and other common woods have reached the figure that quartered white oak stood at a short while ago. Whether this increased demand for the cheaper stocks will tend to stabilize present prices on the cabinet woods remains to be seen. Production in Southern hardwood districts is being hampered by wet weather and floods. This all curtails production. It is this small production or lack of production that is responsible to a large degree for present prices and conditions. Demand is to a certain extent relative and if the amount produced were greater the present demand would not be considered so high. Then again there is the possibility that frantic enquiries being sent to a number of manufacturers at the same time and an effort by many to cover for a considerable period ahead have created a fictitious demand. While the stocks of many manufacturers are low and perhaps broken, the lumber consumer who buys from several firms can usually have his wants attended to by some one firm, if he will but pay the price. It is to a large extent a question of price. One large dealer stated recently that the stock held by his firm was as large and complete at the present time as at the corresponding period last year and that, offhand, he did not know of any items that could not be supplied but his prices were the same as others. It is a situation calling for cool, calm judgment on the part of the lumber buyer. Any attempts to buy large quantities and cover for a long period ahead, would tend to further decrease stocks and strengthen the present upward price tendencies. A level must soon be reached where prices and conditions will to a certain extent be stabilized and the attitude of the lumber buyer will go a long way toward determining when that condition will be reached.

Gayoso Lumber Company to Install Mill at Grenada, Miss.

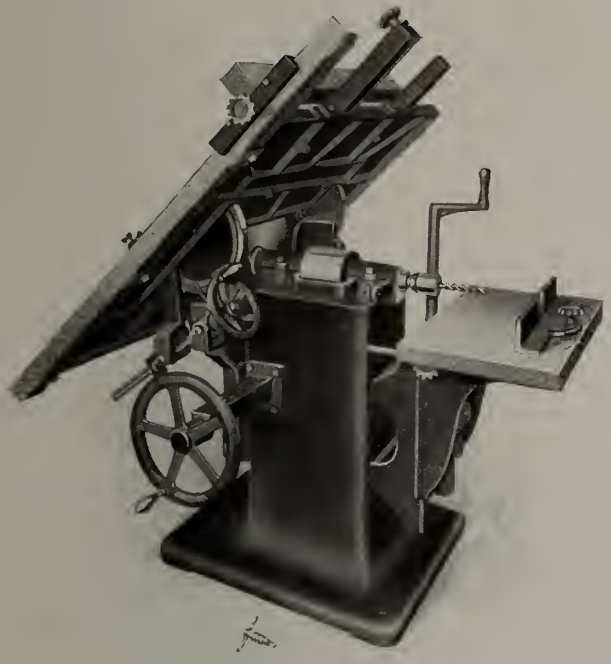
The Gayoso Lumber Company, of Memphis has just closed a deal with W. B. Hoffa of Grenada, Miss., for his timber holdings in Grenada County. This purchase, together with timber land already owned by the Gayoso Lumber Company, brings their holdings in Grenada County up to over eight thousand acres, and this tract is considered to be one of the most heavily timbered white oak properties in the state of Mississippi.

W. A. & C. R. Ransom of the Gayoso Lumber Company, state that their company have acquired a very desirable mill site in Grenada, and that they contemplate installing this fall the latest improved nine-foot band mill with resaw. The investment including timber holdings, trackage, log roads, timber camps and mill, etc., will be over three quarter million dollars.

With this mill in operation the Gayoso Co. will have three plants with a total combined output of 150,000 feet of hardwoods per day.

An emery wheel which gums the teeth and leaves them case hardened should be dressed so that it cuts cleanly and well.

An Excellent Machine for Furniture and Cabinet Work



The "Famous" No. 16 Variety Saw Bench with boring and mortising attachment will do much to increase your output in your furniture and cabinet shops. Accuracy is a main factor in its operation, while the roughest class of work is handled with the same degree of efficiency.

Write us for further information regarding the "Famous" No. 16 Variety Saw Bench and many other machines that you may need and are included in our complete line of woodworking machinery.

The Sidney Machine Tool Company

SIDNEY, OHIO U. S. A.

Ontario Agent--H. W. Petrie, Ltd., Toronto

"Quick Action"

is necessary to secure these

Dry Hardwoods

45 M' 4/4" No. 3 Com. Birch.

1 Car as follows:—

2 M' 6x6" No. 1 C. & B. Qtr. Cut Birch
2 M' 5x5" No. 1 C. & B. Qtr. Cut Birch
5 M' 8/4" No. 1 Com. and Btr. Birch
5 M' 12/4" No. 1 Com. and Btr. Birch
3 M' 16/4" No. 1 Com. and Btr. Birch

1 Car 4/4" No. 3 Com. and Btr. Beech
½ " 6/4" No. 2 Com. and Btr. Beech
½ " 8/4" No. 2 Com. and Btr. Beech

23 M' 4/4" No. 3 C. & B. Winter-cut Basswood
26 M' 6/4" No. 2 C. & B. Winter-cut Basswood
6/4" Largely No. 1 Com. and Btr.
All White Stock.

½ Car 5/4" No. 1 Com. and Btr. Maple
1½ " 6/4" No. 1 Com. and Btr. Maple

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Canadian General Lumber Company, Limited

712 Bank of Hamilton Bldg.
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MONTREAL OFFICE: 203 McGill Bldg.

Selling

Graves, Bigwood & Co.'s Lumber, Lath and Box Shooks

FOR SALE

Single Surfacer, 28 inch, Whitney pattern, in good condition. Will sell cheap. Box 67, Canadian Woodworker. t.f.

WANTED

OAK CABINET WORKER, experienced in oak caskets.

REID BROS.,
2 Bothwell, Ont.

WANTED

Machine Woodworking Foreman, capable of setting up any woodworking machines. State references and wages expected. Box 73, Canadian Woodworker. 1-2

Opportunity for Mechanic

Cabinet Maker or Trim Man wanted, for fine detail work, capable of taking charge of small shop. Permanent position under favorable conditions.

Mechanics' Tool Case Mfg. Co.,
2 196 Clinton St., Toronto, Ont.

Veneer Retaining Clamps

Made to Order—Quick Delivery.

Metal and Woodworking Machinery and Equipment for Sale.

MAXWELL,
2 253 Ashdale Ave., Toronto.

A Young Man Desires Position

Will be open for engagement after 31st March. Has had 10 years' experience (in Ontario and Alberta) in the planing mill and lumber business, including cost accounting, estimating and bookkeeping. Highest references.

Box 76, Canadian Woodworker, Toronto. 2

Equipment For Sale

54" Mershon Band Resaw.
No. 107 S. A. Woods Moulder.
30 x 12 C. M. C. Double Surfacer.
Cowan Sash Relisher and Mortiser.
10" C. M. C. Moulder.
1000 gal. Underwriters' Fire Pump.
Other machinery

Address, 1405 Lansdowne Ave.,
2 Toronto, Ont.

FOR SALE

1—Second Hand

Jackson Cochrane Double End Tenoner

Can be inspected in operation in Western Ontario furniture factory. Machine in good condition. Price and details on application.

Canada Machinery Corporation, Ltd.,
2 Galt, Ontario.

Woodworking Superintendent Wanted

for large concern manufacturing handles. Must understand Waymouth and Baxter D. Whitney machines. A1 salary to right man. Apply in first instance to Advertiser, Norris-Patterson Advertising Agency, 10 Adelaide Street East, Toronto. 2

Factories For Sale

Two desirable plants, one at Mount Forest, Ont., constructed of brick, floorage over 40,000 sq. ft., formerly operated by the Weir Wardrobe Co.; and the other at Guelph, Ont., stone, floorage over 50,000 sq. ft., formerly operated by the Dominion Casket Co. Apply to Canada Furniture Manufacturers Ltd., Woodstock, Ont. 2

FOR SALE

We are offering for sale the following woodworking machines in very good condition, most of them practically new.

1—No. 129 "Preston" Self Feeding Rip Saw.
1—No. 108 "Berlin" 12-in. Moulder.
1—"Tannewitz" Dowel Machine ¼ to 1-in.
1—"Bertrand" 18-in. Jointer.
1—"Whitney" 66-in. Back Gauge Lathe.
1—No. 4 "Waymouth" Lathe.
1—No. 213 "Yates" Glue Jointer with Extra Heads.
1—"Preston" Double Head Shaper.
1—"American" Jig Saw.
1—"Bertrand" 24-in. Planer.
1—No. 99 "Oliver" 24-in. Cabinet Planer.
1—No. 60 "Oilver" Universal Saw Bench.
1—"Rogers" 30-in. Knife Sharpener.
1—"Cowan" Blind Mortiser and Borer, M. 191.
1—"Cowan" Lock Corner Machine, M. 61.
1—"Cowan" 42-in. 3-drum Sander, M. 73.
1—"Cowan" Power Feed Box Board Matcher, M. 209.
1—"Cowan" Triple Drum and Disc Sander, No. 6165.
1—No. 620 "C. M. C." Rip Saw Table.
1—"C. M. C." Post Borer.
1—"Crescent" Swing Saw.
1—Preston Wood Turning Machine on Stand.
1—Band Saw Sharpener and Setter.
1—"Gardner" Chair Drill.
1—Chucking Machine.
1—3 K.W. 115 Volt Generator with Rheostat.
1—6 x 6 "Leonard" Horizontal Engine.
1—6 x 8 Upright Engine.
1—10 x 10 "Leonard" Automatic High Speed Engine.
1—12 x 24 "Leonard" Corliss Engine.
1—12 x 36 Goldie & McCulloch Wheelock Engine, No. 1233.
1—Right Hand Circular Saw Mill with Carriage.
2—52-in. Inserted Tooth Saws for above.

Canadian Veneering Co., Inc.,
2 Acton-Vale, Que.

FOR SALE

Embossing Machine.
Automatic Glue Jointer.
16" Buzz Planer.
Three Double Spindle McGregor-Gourlay Shapers.
All in first-class shape.

The Goderich Organ Company, Ltd.,
2 Goderich, Ont.

For Sale

1 Four side 12" Moulder, Canada Machinery Corporation.
1 Andrews five spindle Automatic Duplex Borer (in fine shape).
1 Trip Cut-off Saw.

Machines can be seen and prices given on application at

T. H. Hancock Lumber Yard,
2 1372 Bloor St. West, Toronto.

Want To Buy

Veneer Slicer

either 12, 14 or 16 ft. machine.

Prefer machine manufactured by Capital Machine Co.

Also can use an eight foot

Capital Rotary Machine

and eight foot clipper.

Advise as to lowest cash price and length of time machines have been operated and present location.

Address, H-200, c/o Canadian Woodworker, Toronto, Ont. 2-3

Manager Wanted for Canadian National Newspapers and Periodicals Association

To act also as Secretary-treasurer, and carry on the Association's general work, under the direction of the President and the Board of Directors, study the interests of the various classes of publications in the Association, and plan and carry on promotion work in their interests. Applicants should understand advertising and merchandising.

Apply in writing only, stating age, full details of experience, and salary expected. Applications will be treated as confidential.

Address Acton Burrows, President, Canadian National Newspapers & Periodicals Association, 70 Bond Street, Toronto.

No. 3 Self Contained Scroll Saw

Colladay Machine Works

Successors to

Jos. O. Colladay Co., Inc.

Manufacturers of a complete line of woodworking machinery

Since 1867 Philadelphia, Pa.

Greater Production with Less Experienced Help

The No. 370 Drum Sander is so simple and accident proof that any boy or girl can feed and take away with absolute safety.

Write for descriptive bulletin.

Patented May 6, 1919

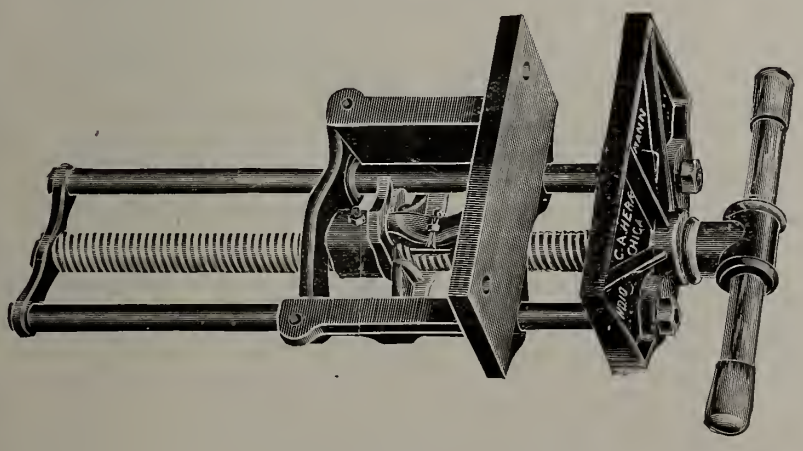
The patented RUBBER PADS used for the bed of this sander are decidedly an improvement and are used in large quantities on every make of Endless Bed Sander. Ask for sample.

Solem Machine Company

ROCKFORD, ILL., U. S. A.

A simple twist of the wrist locks or unlocks this master vise

The Herriman Master Vise



Unparallelled in the rapid action and grip. Unmatchable in the performance of its work.

Time and Labor Cut ½ or Better.

SAVE YOURS

One feature alone is worth more to you than its entire cost in the saving in operating time over any other vise made.

The fact that this vice need not be "screw set" or "screw loosened" is the reason of its adoption in all efficiently operated plants.

Exclusive Distributors for the Herriman Master Vises

The O. E. JOHNSON COMPANY

1223 W. Washington Boulevard, - CHICAGO, Illinois.

WESTERN CANADA

Furniture, Toys, Sashes, Doors, etc.

Party with complete outfit of machinery and good supply of suitable timber is looking for practical men to take charge or will lease with option to purchase. Splendid opportunity. Big local demand without competition. Box 75, Canadian Woodworker, Toronto, Ont. 2

For Sale

Cyclone Blower, 32" intake and 28" x 26" outlet. Apply to the Metal Shingle & Siding Company, Preston, Ont. 2

WANTED

Mill Superintendent, to take charge of Planing Mill.

Yard Foreman, to take charge of loading, unloading, scaling and grading of lumber.

Stickerman.

Box 74, Canadian Woodworker, Toronto. 2

What Costs Mean to You

The practical object of business is production—measured in profits. Production without profits avails nothing and sooner or later ends in disaster.

The intelligent production of anything must be gauged—as the production of steam and electricity is governed and controlled by the various meters used. The gauge of production is costs. Too much production without knowing your costs is liable to be as disastrous as issuing too many checks without knowing your bank balance.

For most effective and intelligent control of production—and therefore greatest profits, cost and production methods are inter-related and inseparable. There would be no need of costs without production while production without costs is like driving at night without lights. You may proceed without mishap, but the chances are against you.

Every progressive firm must have both cost control and production control methods and these methods should be operated with the greatest possible economy. To do so it is quite evident that the mechanism for gathering costs and controlling production should be thoroughly co-ordinated.

Reducing Maintenance Costs

How often do we find in timber and woodworking shops an accurate account kept of power maintenance costs? Yet a careful analysis of such a record would, it is thought, come as a revelation to many firms.

A regular system of maintenance possesses a twofold value. In the first place, it enables the plant to be maintained at its highest efficienty, and in the second place, it goes a long way towards avoiding a serious breakdown—and a serious breakdown generally occurs at the most inconvenient moment.

As an illustration of the value of regular maintenance, assume that a certain machine is belt-driven from a line shaft, and that the belt, being out of condition—glazed, hard, or slack—is slipping, and so reducing the revolutions of this machine 10 per cent. below normal. This, in effect, is equivalent to a reduction in output of 10 per cent. Assume further that the mill or the factory contains 100 machines, and that 20 of them have their driving belts in a similar condition. This means that the total output of the factory has been reduced by 20 per cent.

The remedy is simple. It is only a matter of organizing a maintenance system, or an official whose duty it would be to regularly inspect and maintain the whole of the power plant. Arm such an individual with authority, a speed indicator and a stop-watch, and he should have no difficulty in cutting down power transmission losses and in keeping the various machines up to their full duty. The result would be higher output and a considerable reduction of maintenance costs.

Profit-Sharing a Remedy for Present Inefficiency of Labor

Our high scale of wages, while it is, to some extent, a handicap in procuring export trade, is not the real obstacle to the development of Canadian industry. The difficulty which is preventing us from taking full advantage of the present unprecedented opportunity for placing Canadian products on the markets of the world, is labor inefficiency. Men whose earnings have increased approximately 100 per cent. are, in many cases, less than 75 per cent. as efficient as they were in the days of low wages before the war. But the wage scale is a secondary consideration. Even higher wages than are being paid at present would be quite practicable, if efficient service was given in return. Unfortunately, the rule seems to be: The higher the wage, the lower the efficiency.

How is this condition to be remedied? We believe that profit-sharing, or bonus payment on the basis of production, is the only way under present conditions, by which the situation can be improved. Hard times would tend towards labor efficiency, for the fear of unemployment is a great incentive to work. But it is not desirable that that incentive should exist and we must substitute it with another—the incentive for gain. If the worker's financial interests are directly affected by his efficiency, he is going to become more efficient. There is no industry to which some sort of profit-sharing, or bonus-payment, scheme is not applicable, and the supreme need of the country at the moment is a new motive force amongst the workers, such as the adoption of a new system of wage payment along these lines would create.

Reducing Breakage in Bending

If those among you who do bent work are having trouble with breakage, that is, if good stock is breaking and going to waste, try steaming it longer. One shortcoming in steaming, as in kiln drying, is that of trying to rush the work. Wood absorbs heat and moisture very slowly, and, while a little pressure may help some, it will not take the place of more time. Steaming it longer is the best answer. This will not make knots and cross grain stock bend without breaking, but it will reduce the breakage in good stock.

PETRIE'S
LIST
of NEW and USED
WOOD TOOLS
FOR IMMEDIATE DELIVERY

Wood Lathes
16" x 12' American, patternmakers.

Wood Planers
26" Double surfacer, divided rolls.
24" Champion planer and matcher.
24" MacGregor-Gourlay.
24" Pony planer.
24" Crescent, single surfacer.
12" Petrie buzz planers, with safety heads (4).

Band Saws
36" Famous, pedestal.
36" Jackson-Cochrane, pedestal.
32" Famous, pedestal.
30" Ideal, pedestal.
60" Fay & Egan, band re-saw.

Saw Tables
No. 16 Famous, variety.
MacGregor Gourlay railway cut-off.
No. 1 Greenlee automatic cross-cut.
Galt, iron frame, cut-off.
Iron frame, power feed, rip.
7' Williams, swing saw.

Mortisers
No 2 Osborne-Baker, foot power.

Moulders
13" Clark-Demill four-side.
12" Woods four-side, inside.
10" Goldie & McCulloch, three side.
10" Houston, four-side.
8" Dundas four-side.
6" McGregor-Gourlay, three side.
6" Dundas sash sticker.

Boring Machines
No. 7 Sidney, Famous, belt driven.
Gear driven, post borer.
Fay, single spindle, horizontal.

Sawmill Machinery
2 Block portable sawmill.
Boss, automatic, shingle machine.
Vaughan, gasoline driven, drag saw.
Champion, friction, drag saw.

Miscellaneous
No. 1 Ballantine power feed dowel machine.
Fay & Egan 12 spindle dovetailer.
MacGregor Gourlay 12 spindle dovetailer.
M 120 Cowan, panel raiser.
20" American, wood scraper.
6" British-American, hand floor scraper.
Dundas, wood frame tenon machine.
Fay, iron frame, double head, tenon machine
No. 3 Defiance, rim & felloe rounder.
No. 1 Defiance, axle shaper.
No. 1 Defiance, spoke driver.
No. 21 Covel bandsaw filing clamp.
3" x 7" universal wood trimmer.
4" x 8" bench, wood trimmer.
Cowan veneer press screw.

Ask to see our large stock of used supplies—belting, pulleys, machine shop equipment, mill supplies, pipe and fittings., etc. Most of this material is as good as new, and can be bought at greatly reduced prices.

H. W. PETRIE, LTD.
Front St. W., Toronto, Ont.

NAPCO WATERPROOF GLUE

No wastage

Applied cold—and mixed cold

Profitable in its saving

Consistent in all grades of work

Odorless in the glue room

NAPCO is absolutely uniform. It eliminates waste, is easily applied, is impervious to water, and never lets go.

NAPCO joints are as strong as the wood.

H. LEFEBER

Lewis Building, Montreal, Que.

SOLE AGENT FOR CANADA

Vegetable Glues

Do you know that VEGETABLE GLUES may be made in all the varying qualities found in ANIMAL GLUES, such as HIDE GLUE, BONE GLUE, GELATINE, etc., each class having its special and widely different qualities according to the purpose for which it is to be used?

If, therefore, you are interested in the question of the use of ANIMAL or VEGETABLE GLUES, of any kind in industrial work, we ask you to communicate with us, advise us of your exact wants, both in the matter of character of work and cost limits, and we will supply you with JUST WHAT YOU WANT.

Remember that there is NOT ONLY ONE quality of vegetable glue, but just as many grades as in animal glue, and that the selection and use of a vegetable glue requires the same care and knowledge as the use of an animal glue.

Only with a knowledge of this fact can you secure the ideal product for your line of work, or reduce its cost to a minimum.

Let us have your inquiry, if interested in the subject, and an opportunity to PROVE TO YOU that we can serve you to better advantage to yourselves both in the matter of cost and excellence of work turned out, than any one else now engaged in this field of research and application.

We only ask your inquiry and an opportunity, AT OUR EXPENSE AND COST, to demonstrate to you that we understand our business in every detail and can make it to your interest to deal with us.

We operate under our own patents and guarantee full protection to all users of our Glues.

Write today to

Victor G. Bloede Co.

P. O. Station "D"

Baltimore, Md.

PERKINS

183

TRADE MARK

GLUE

THE GLUE OF NO REGRETS

Every resource of an extensive organization and a specialized factory is focused upon preserving this reputation for quality and dependability.

That this policy has found its endorsement in an ever-increasing public regard is evidenced by the growth of the business that makes this company the largest producer of veneer glue in the world.

Process and Product Patents covering Perkins Glue were granted July 2nd and March 19th, 1923, and have been held valid and infringed by the United States Circuit Court of Appeals. Corresponding Letters Patent granted in Canada.

PERKINS GLUE COMPANY

Factory and General Offices,
Lansdale, Pennsylvania.

Sales Office,
South Bend, Indiana.

Its First Cost Is Its Last Cost

Eagle-Ottawa Leather Co.

TANNERS OF

FURNITURE LEATHER

OF EVERY DESCRIPTION

We are making a specialty of cutting

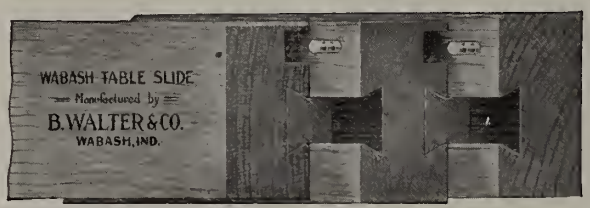
Spanish Split Leather for Chair Manufacturers

Quotations and samples furnished on application

We will be pleased to supply a very attractive sample book, of all our grades on application.

GRAND HAVEN - - - - - MICHIGAN

THE SLIDE IS THE HEART OF YOUR EXTENSION TABLE



If the Slide Does Not Work Properly Your Whole Table is Condemned

Wabash Slides insure Satisfied Customers

SLIDE MAKING is a SPECIALTY BUSINESS

We can Furnish Better Slides for Less Cost

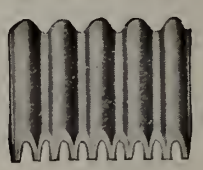
Eliminate Slide Troubles by using WABASH SLIDES

MADE BY

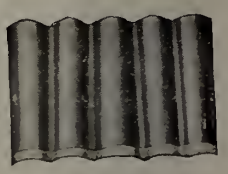
B. Walter & Company

Edsall St., Wabash, Ind.

Cary's SUPERIOR QUALITY Corrugated Fasteners



SAW EDGE



PLAIN EDGE

According to final decision, after long litigation, we have been granted the SOLE RIGHT to manufacture a Saw Tooth Corrugated Fastener with a continuous cutting edge. Our fastener is beveled evenly on both sides, which enables fasteners to be driven in straight, and much easier than any other fastener made. Our Corrugated Fastener is made in various widths and corrugations, also in coils wound right and left. Try our products and you will use no other.

Samples and prices on request.

CARY MFG. CO., Brooklyn, N.Y.

Subscribe for the
Canadian Woodworker
and
Furniture Manufacturer
Only $1.00 per year

Palmer & Parker Co.

103 Medford St., Charlestown District
BOSTON, MASS.

MANUFACTURERS OF

African, Mexican and Cuban

MAHOGANY

VENEERS and Built-up Panels

TEAK and other Foreign Woods

"MOVE THE FAULTLESS WAY"

FAULTLESS CASTERS

ARE ESSENTIAL TO THE FULL ENJOYMENT OF GOOD FURNITURE

MANUFACTURED BY

FAULTLESS CASTER CO.

EVANSVILLE, IND.

EASTERN SALES OFFICE
GEO. MITTLEMAN
487 BROADWAY
NEW YORK

DISTRICT DISTRIBUTORS
KEELER BRASS CO.
GRAND RAPIDS
MICHIGAN

"MOVE THE FAULTLESS WAY"

FAULTLESS

"MOVE THE FAULTLESS WAY"

FAULTLESS CASTERS

Achieving Caster Quality— and Maintaining It

It is one thing to make good casters. It is another thing to keep on making them good—maintaining the uniformity of quality which builds reputation.

Both of these factors are FAULTLESS achievements. They combine to assure you of absolute reliability—and to secure for us the repeat orders which mean satisfied customers.

Send for samples and prices from a Quality Line that will please you.

FAULTLESS CASTOR COMPANY

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District Distributors—
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Carrying a complete stock for YOUR convenience.

Eastern Sales Office—
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Manufacturers of

FAULTLESS Pivot Bearing and FAULTLESS Grip Neck Casters with any kind and size of wheel—made with any finish.

"Move the FAULTLESS Way"

FAULTLESS

An Efemco Product

Gives Furniture Greatest Utility

Equip your furniture with Efemco Acme Ball Bearing Casters for greatest utility. They add positive portability and good looks at the same time. Made to swivel readily and easily, and rugged enough for all demands.

Efemco Acme Ball Bearing Casters are made with the same conscientious attention to detail that Foster, Merriam & Co. observe in the making of all Efemco Casters.

The new flat top prevents balls binding or falling out.

Sizes three, four, five, six and seven. Write for complete catalogue and "special" folder of newest Efemco Casters.

Period trimming for all styles and grades of furniture.

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FOSTER, MERRIAM & CO.

Meriden, Conn. Hamilton, Ontario New York City

Efemco PRODUCTS

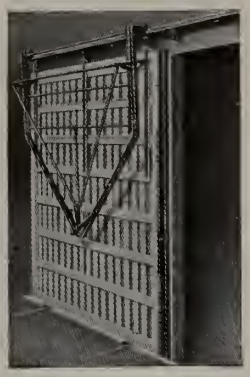
Grip Neck Casters
Ball Bearing Casters
Roller Bearing Casters

Truck Casters
Furniture Trimmings
Automobile Accessories

Piston Rings
Cast Aluminum Ware
Grey Iron Castings

Standardized by 85 years of service

The Door Carrier System

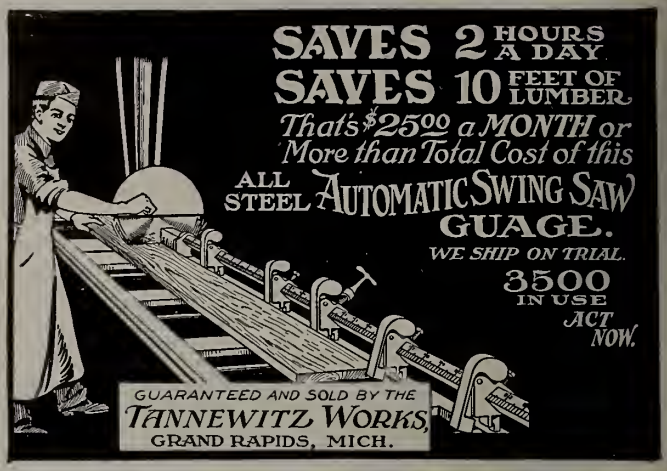


Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

Ask for catalogue.

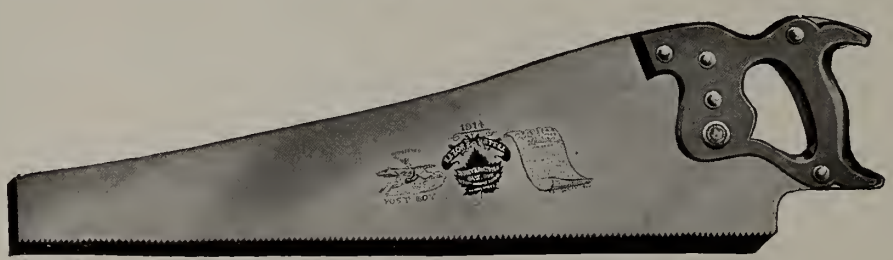
DRY KILN DOOR CARRIER CO.
1117 Cornell Ave.
INDIANAPOLIS, IND.


SAVES 2 HOURS A DAY
SAVES 10 FEET OF LUMBER
That's $25.00 a MONTH or More than Total Cost of this
ALL STEEL AUTOMATIC SWING SAW GUAGE.
WE SHIP ON TRIAL.
3500 IN USE
ACT NOW.
GUARANTEED AND SOLD BY THE
TANNEWITZ WORKS,
GRAND RAPIDS, MICH.

The Same Dependability

Another of the Famous

MAPLE LEAF SAWS



For almost half a century Maple Leaf Saws have been establishing a greater reputation for reliability in quality and service. From the heavy saws for heavy work to the light saws for the finest work Maple Leaf Saws are daily giving the utmost of satisfaction. The illustration shows the Maple Leaf Hand Saw, a sturdy, well built saw with the saw steel continuing through the handle as an assurance against the breakage of the handle. Made with the care and skill characteristic of all Maple Leaf saws—you'll appreciate the merits of this saw.

Write for a copy of our catalog today.

Shurly-Dietrich Co., Limited

Vancouver, B. C. GALT, ONTARIO Ottawa Ont.

The Peter Hay Knife Co., Ltd.

Manufacture the Best

PLANER KNIVES and CUTTERS

OF ALL DESCRIPTION

The Peter Hay Knife Co., Limited
GALT, ONTARIO

BOX NAILS and WIRE for Every Use

We manufacture a complete line of nails and wire in every style and size. Your special needs can be supplied. Write us today. We manufacture special styles to order.

Laidlaw Bale-Tie Co., Ltd.

A. T. Diggins, Toronto, Ont. H. E. O. Bull, Montreal, Que.
Harry F. Moulden & Sons, Winnipeg, Man.

Head Office and Works: HAMILTON, CANADA

The Largest Table Company
In The World

The Imperial Furniture Co.
Grand Rapids

are replacing their Dry Kilns
by a battery of up-to-date

GRAND RAPIDS VAPOR KILNS

Grand Rapids Veneer Works
Grand Rapids, Mich. Seattle, Wash.

Automatic Control
SAVES LABOR STEAM FUEL MONEY

National Dry Kilns
ARE
AUTOMATIC
Write us for information
THE NATIONAL DRY KILN CO.
1117 East Maryland St., INDIANAPOLIS, Indiana

To the Dry Kiln Users of Canada
Investigate our Claims

¶ We can increase the capacity of any make of kiln by 25% to 125% by remodelling, providing the buildings are in fair condition.

¶ All material used in or for the manufacture of our kilns is of Canadian production which practically eliminates shipment delays and avoids customs and the exchange on money.

THE SIDMANS L.C.K.
Reg. Trade Mark
LONDON CANADA

¶ We are a Canadian company of engineers and lumber curing specialists who make each and every kiln a special engineering study to suit the needs of every client.

¶ We completely guarantee our work to give entire satisfaction. References from many leading Canadian Companies will be furnished on request.

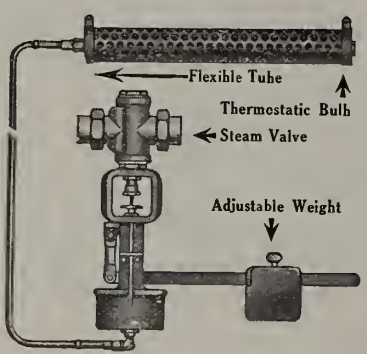
THE SIDMANS
LONDON, ONTARIO
Offices at: Canandaigua, N.Y., London, Ont., Rochester, N.Y.

The Better Way of Controlling Kiln Temperature

The world wants finished products now. All costs are rising and your problem is to produce more. Begin by insuring your wood as it goes into the kiln. Every inch of green wood has cost you real money and represents two values—raw value and finished value. Don't allow fluctuating kiln temperature to tamper with these values. Prevent fluctuating temperatures by equipping your kilns with

Powers Heat Regulators

As long as steam pressure is maintained Powers Regulators operate. Their operation insures correct kiln temperatures, saving of fuel by using only necessary heat, saving of labor by releasing men from watching thermometers and



The Powers Regulator No. 15

Specially designed to control temperature in dry kilns, ovens, varnish and dry rooms, etc. Requires no outside power for its operation.

valves, saving of material by cutting down the loss from case hardening, warping, and checking. They also speed up the drying by fully 25 per cent.

During our more than thirty years of experience in automatic temperature control we have gathered some very profitable information for the woodworking industry. Let us show you how to save money on your kilns or other apparatus where heat is a factor. We are cheerfully at your service. Write us today.

The Canadian Powers Regulator Co.
Limited
Specialists in Automatic Heat Control
82 Chestnut Street - Toronto, Ont.

(1112)

INDEX TO ILLUSTRATIONS
in the New Book
Machine Molder Practice

You can get some idea of the completeness and value in this book by reading the subjects illustrated therein.

Plan and side-view of molder in proper alignment. A square slotted cutterhead fitted with ordinary straight surfacing knives. Solid and sectional knives. Patterns with thin edges worked with top head. Showing how sectional cutters should he arranged. A few different types of knives. Balancing knives set in staggered fashion. Thin high-speed steel knives attached to square head, with caps and bolts. How to use the molder or "stickerman's" rule. Another method of setting knives correctly. Moldings on which undercutting is necessary. Attachment for working Byrkit lath, at rear end of an inside molder. A square self-centering side head fitted with thin knives and caps. Making half-round bushings, for pulleys. Trough in which piano fall boards are run. Cross-section of a front fall board. Making plain tapered staves in one operation. Showing how staves for tapered columns are laid out. Stave in position alongside form. Method of laying out sprung crown molding for circular porches or towers. Arrangement of guides for running circle work. Molding segment and circle work on edge. Arrangement of knives and guides for running molding face down. Three methods of fitting up knives for planing without tearing cross-grain. Another way to fit up surfacing knives for working cross-grain. Special knives for cutting the edge of rabbetts. Methods of fitting up rabbetting knives to make non-tearing cut. Special grooving cutter. Reinforcing a wide knife. Four different kinds of side braces. Two ways to brace extra long knives. Four types of "scoop" knives for making gutter. Bracing a loop knife with T-bolts and steel block. Another method of clamping loop knives to a square cutterhead. Making ogee gutter. Special blocks for enlarging square heads. Hooks in position to hold projecting ends of long knives. Making moldings in pairs, face down. Center guide in pressure bar. Picture frame moldings made in pairs, face up. Four types of practical splitting cutters. Special high-speed steel splitting cutter and holder. Saving an extra molding by under-cutting. Combination head for splitting and planing. One method of making screen door stock and saving the molding. Gang splitting saws mounted on self-centering sleeve for use on molder spindle. Divided rip saw for use on top or bottom spindles. Position of top rolls for feeding special casket sides. Line-up of guide rail and inside head for making slack-center glue joints. Method of making stair rail in two runs. Special head rabbetted to receive formed lips. Self-centering "vise-grip" profile head. Two universal chamfer heads. A three-disc, combination head for grooving heavy planks, etc. Profile beader head fitted with high-speed steel, formed knives. A groove head for flooring. Transverse T-slot head carrying formed knives for multiple work. Knife setting jig for round heads. Radial gage for setting knives. A stand for setting and balancing irregular cutters. Jointing straight thin steel knives on a round head. Jointing thick knives on square head. One type of side head truing device in position. Formed stone and holder for jointing irregular knives on top or bottom head. Another type of side-head jointer and special four-wing, fast-feed head fitted with self-centering sleeve and thick high-speed steel cutters. Side head jointing attachment in position for jointing the formed cutters of a matcher head. Showing one type of jointing device attached to slide bar on a jointing and setting stand. A two-disc combination of self-centering clamp sleeve. Two different methods of making rabbetted molding. Showing how cutting angle changes with depth of cut, and how to lay out molder scale. Laying out knife profile with drawing instruments. Layout of knife to cut a perfect miter. Laying out quarter-round knives. How to cut, spread and twist spike knives. Lower half of cutterhead box prepared for babbitting. Proper location of oil channels. A handy babbitt scraper. Method of sewing belt with wire lace. Showing how laps in single and double-ply belts should run. Molding shapes and patterns.

It is the only book in existence on molder work, the operation and superintendence of the molder machine. 160 pages, 100 illustrations. Flexible Kerotal Leather Binding. Price $2.50 a copy, prepaid. Remit by postal money order.

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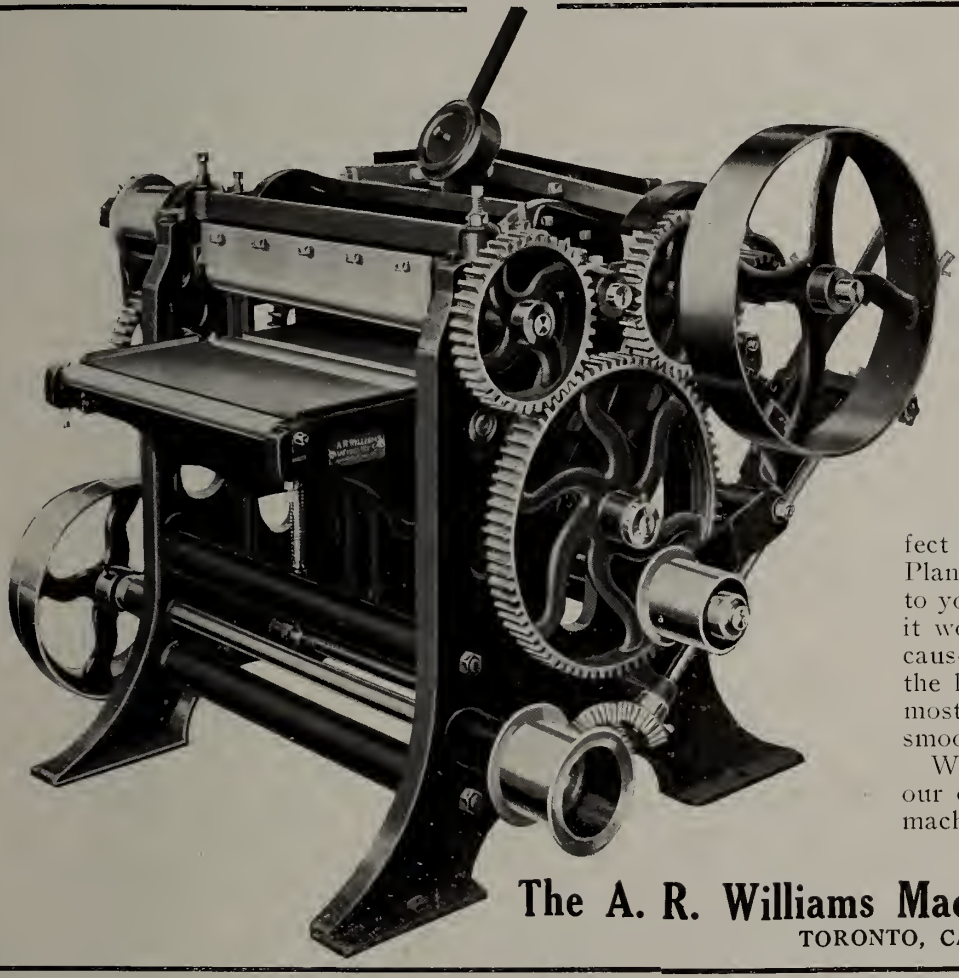

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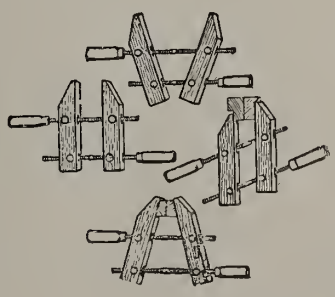

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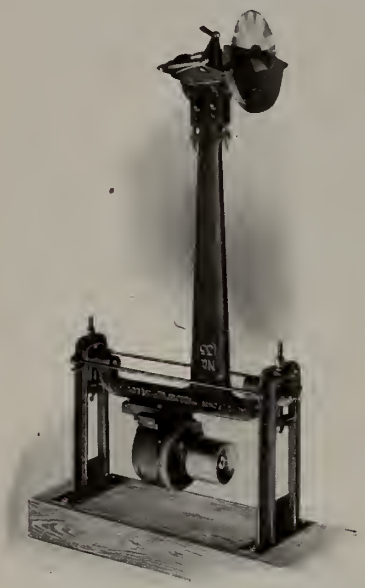

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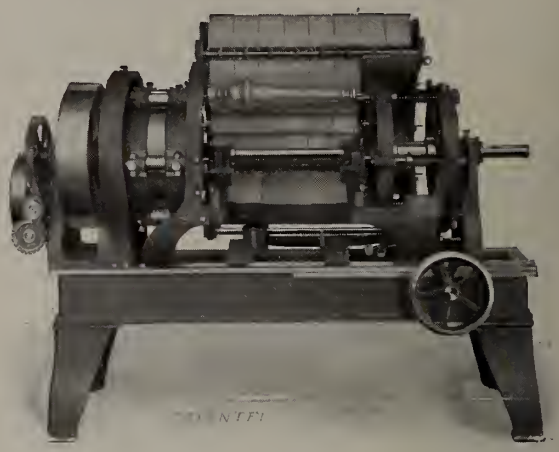

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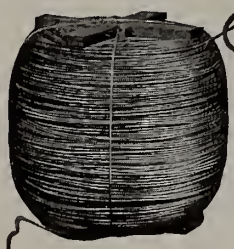

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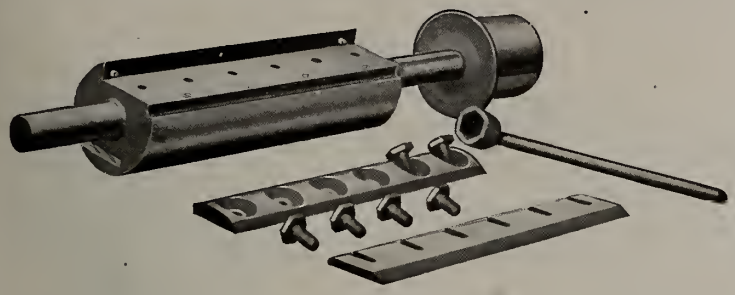

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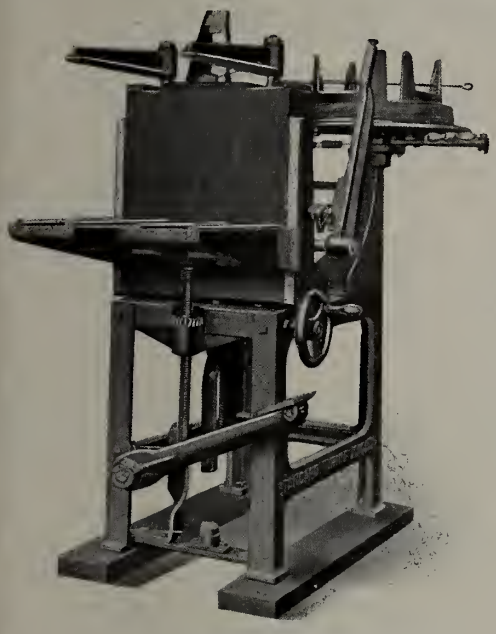

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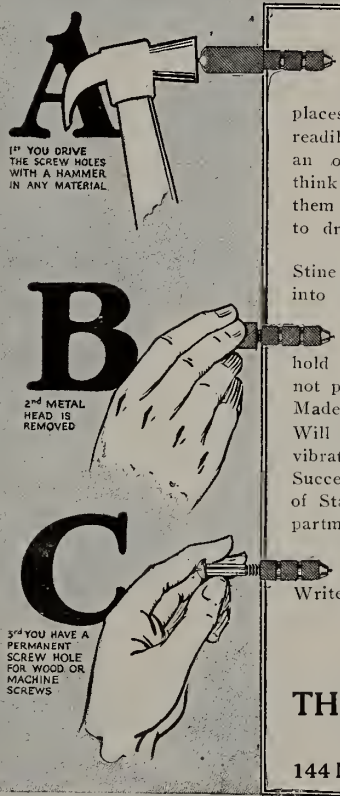
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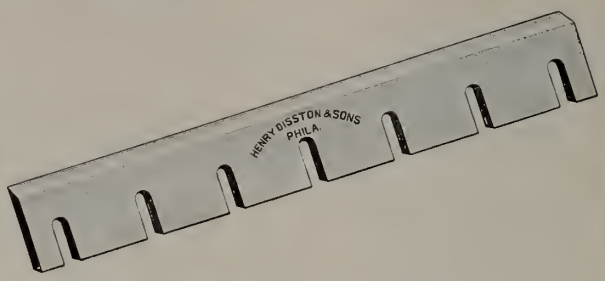

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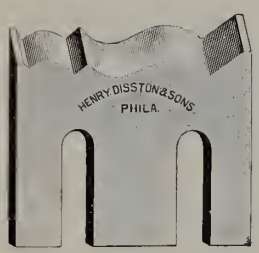

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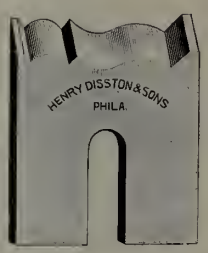

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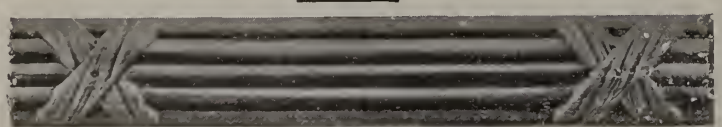
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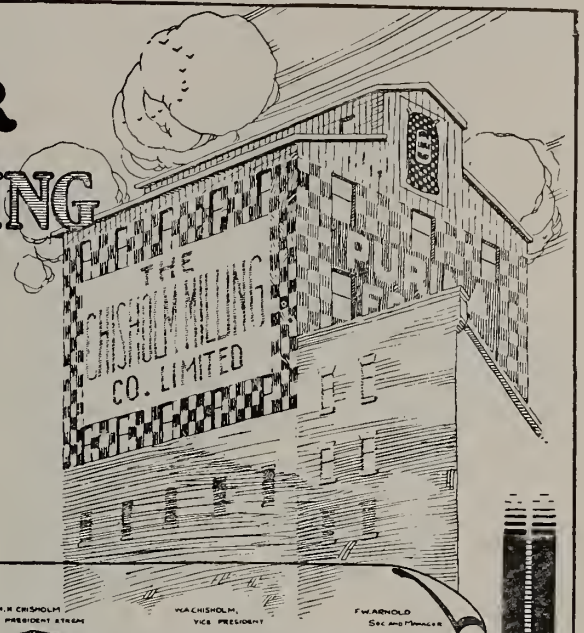

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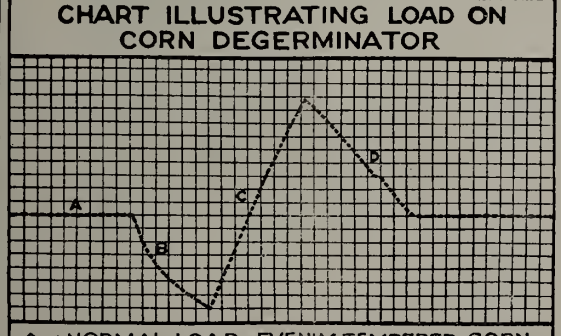

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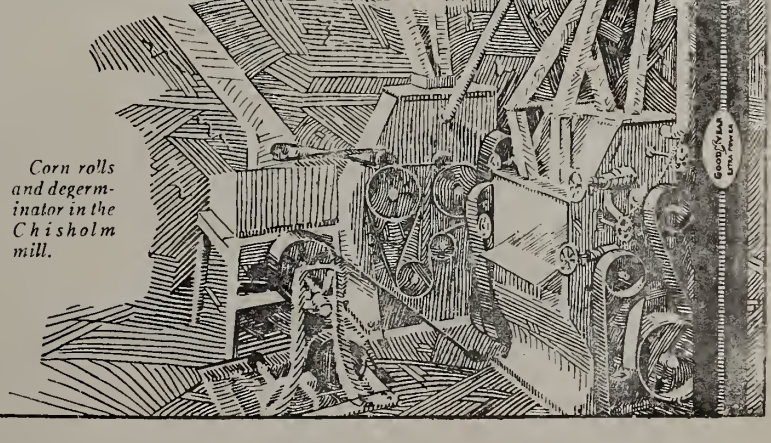

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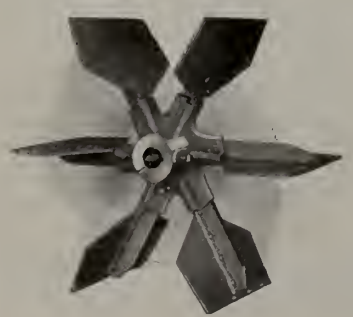

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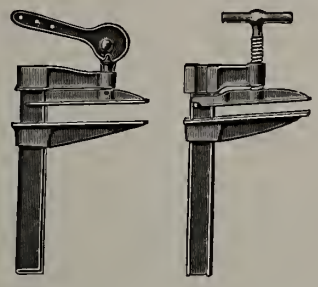

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CABINET PLANERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CARVING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.

CASTERS
Faultless Caster Co., Evansville, Ind.
Foster, Merriam Co., Merriden, Conn.

CIRCULAR SAWS
Wallace & Co., J. D., Chicago, Ill.

CLAMPS
Adjustable Clamp Co., Chicago, Ill.
Batavia Clamp Company, Batavia, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

CLAMP CARRIERS
Taylor Mfg. Co., Poughkeepsie, N.Y.

CORRUGATED FASTENERS
Cary Mfg. Company, Brooklyn, N.Y.

CUT-OFF SAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

CUTTER HEADS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Diehl Machine Works, G. M., Wabash, Ind.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Fischer Mfg. Co., Williamsport, Pa.
Garlock-Walker Machinery Co., Toronto, Ont.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Shimer Cutter Head Co., Galt, Ont.
Yates Machine Co., P. B. Hamilton, Ont.

CYLINDER HEADS
Cowan & Company, Galt, Ont.

DOOR CARRIERS FOR DRY KILNS
Dry Kiln Door Carrier Co., Indianapolis, Ind.

DOVETAILING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

DOWEL MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Williams Machinery Co., A. R., Toronto, Ont.

DOWELS
Canada Wood Specialty Co., Ltd., Orillia, Ont.

DRY KILNS
Canadian Blower & Forge Co., Kitchener, Ont.
Grand Rapids Veneer Works, Grand Rapids, Mich.
National Dry Kiln Co., Indianapolis, Ind.
Sidmans, London, Ont.
Standard Dry Kiln Co., Indianapolis, Ind.

DUST COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

DUST SEPARATORS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

EDGERS (Single Saw)
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

EDGERS (Gang)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

END MATCHING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

EXHAUST FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Toronto Blower Company, Toronto, Ont.

EXHAUST SYSTEMS
Toronto Blower Company, Toronto.

FIBRE CORD
Grand Rapids Fibre Cord Co., Grand Rapids.

FLOORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

FLUTING HEADS
Fay & Egan Co., J. A., Cincinnati, Ohio.

FURNITURE DESIGNERS
Otto A. Jiranek, Grand Rapids, Mich.

FURNITURE LEATHER
Eagle-Ottawa Leather Co., Grand Haven, Mich.

FURNITURE TRIMMINGS
Faultless Caster Co., Evansville, Ind.
Foster, Merriam Co., Meriden, Conn.

GARNET PAPER AND CLOTH
Carborundum Co., Niagara Falls, N.Y.
Macdonald, Norman, Toronto, Ont.
Oakey & Sons, Limited, John, London, S.E.I. (Wellington Emery & Black Lead Mills).

GRAINING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N.Y.

GLUE
Bloede Company, Victor G., Baltimore, Md.
Casein Mfg. Company, New York, N.Y.
Lefeber, H., Montreal, Que.
Perkins Glue Company, South Bend, Ind.

GLUE CLAMPS
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane, & Company, Kitchener.

GLUE HEATERS
Cincinnati Glue Heater Co., Cincinnati, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
International Electric Co., Indianapolis, Ind.
Jackson, Cochrane, & Company, Kitchener,
Pringle, R. E. T., Toronto, Ont.

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"Canadian Woodworker" Buyers' Directory—Continued

GLUE JOINTERS
Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co.. P. B., Hamilton, Ont.

GLUE SPREADERS
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane, & Company, Kitchener.

GLUE ROOM EQUIPMENT
Perrin & Company, W. R., Toronto, Ont.

GRINDERS (Cutter)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

GRINDERS (Knife)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane, & Company, Kitchener, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N.Y.

GROOVING HEADS
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.

GUM LUMBER
Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
Anderson-Tully Co., Memphis, Tenn.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Brown & Co., George C., Memphis, Tenn.
Churchill-Milton Lumber Co., Louisville, Ky.
Cornelius Lumber Co., St. Louis, Mo.
Gum Lumber Association, Memphis, Tenn.
Hyde Lumber Company, South Bend, Ind.
Nickey Bros, Memphis, Tenn.
Paepcke-Leicht Lumber Co., Chicago, Ill.
Probst Lumber Co., Cincinnati, Ohio.
Sondheimer Co., E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Thomas & Proetz Lumber Co., St. Louis, Mo.

HAND SCREWS
Fay & Egan Co., J. A., Cincinnati, Ohio.

HANDLE & SPOKE MACHINERY
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.

HARDWARE
Laidlaw Bale-Tie Co., Hamilton, Ont.

HARDWOOD LUMBER
Aberdeen Lumber Co., Pittsburgh, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
American Oak Mfrs.' Assn., Memphis, Tenn.
American Walnut Association, Washington, D.C.
Anderson-Tully Co., Memphis, Tenn.
Astoria Mahogany Co., New York, N.Y.
Atlantic Lumber Company, Toronto, Ont.
Barr- Holaday Lumber Co., Greenfield, Ohio.
Boland Lumber Co., Grand Rapids, Mich.
Bonner & Sons, J. H., Memphis, Tenn.
Brown & Company, Geo. C.
Bury & Company, Robert, Toronto, Ont.
Buskirk Rutledge Lumber Co., Cincinnati, O.
Cornelius Lumber Co., St. Louis, Mo.
Canadian General Lumber Co., Toronto, Ont.
Churchill-Milton Lumber Co., Louisville, Ky.
Darby Hardwood Lumber Co., Memphis, Tenn.
Des Moines Sawmill Co., Des Moines, Iowa.
Dooley Lumber Co., F. T., Memphis, Tenn.
Evansville Band Mill Co., Evansville, Ind.
Felger Lumber & Timber Co., Memphis, Tenn.
Gayoso Lumber Co., Memphis, Tenn.
Hart & McDonagh, Toronto. Ont.
Heeney, Percy E., Kitchener, Ont.
Hunt, Wellington & Smith, Nashville, Tenn.
Hyde Lumber Co., South Bend, Ind.
Kersley, Geo., Montreal, Que.
Korn-Conkling Co., Cincinnati, Ohio.
Kosse, Shoe & Schleyer Co., Cincinnati, O.
Kraetzer-Cured Lumber Co., Greenwood, Miss.
Lawrence & Co., P. J., St. Louis, Mo.
Long-Knight Mfg. Co., Indianapolis, Ind.
McLennan Lumber Co., Montreal, Que.
Memphis Band Mill Co., Memphis, Tenn.
Mowbray & Robinson, Cincinnati, Ohio.
Paepcke Leicht Lumber Co., Chicago, Ill.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City.
Pickrel Walnut Co., St. Louis, Mo.
Probst Lumber Co., Cincinnati, Ohio.
Reese Sherriff Lumber Co., Williamsport, Pa.
Shafer Hardwood Co., John L., South Bend, Ind.
Sondheimer Co., E., Memphis, Tenn.
Spencer, C. A., Montreal, Que.
Stark & Co., Jas. E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Stimson & Co., J. V., Owensboro, N.Y.
Thompson, Katz Lumber Co., Memphis, Tenn.

HYDRAULIC VENEER PRESSES
Perrin & Company, Wm. R., Toronto, Ont.

KNOBS
Waddell Mfg. Co., Grand Rapids, Mich.

JOINTERS
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Onio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochane & Company. Kitchener. Ont.
Mattison Machine Works, Rockford, Ill.
Petrie. H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Smith, C. W., Grand Rapids, Mich.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

LEATHER (Artificial)
Fibro Mfg. Company, Beverly, N. J.

MACHINE KNIVES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

METALINE NAILS
Canada Tack & Nail Co., Hamilton, Ont.

MITRE SAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto. Ont.
Radcliff Saw Mfg. Co., Toronto. Ont.

MOTOR TRUCK EXTENSIONS
Swedish Crucible Steel Co., Windsor, Ont.

MOULDERS
Hall & Brown Woodworking Machine Co., St. Louis, Mo.

MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.

MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

NAILS
Laidlaw Bale-Tie Co., Hamilton, Ont.

NAILING MACHINES
Morgan Machine Co., Rochester, N.Y.

OIL STONE GRINDERS
Mummert-Dixon Co., Hanover, Pa.

PANELS
Waetjin & Co., L., Milwaukee, Wis.

PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago. Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PERIOD MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.

PERIOD TURNINGS
Walter & Sons, J., Kitchener, Ont.

PLANERS
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PORTABLE DRILLS
Wisconsin Electric Co., Wisconsin, U.S.A.

PRESSES (Veneer)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

RESAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A. Cincinnati, Ohio.

RIP SAWING MACHINES
American Woodworking Machinery Company Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Waddell Mfg. Co., Grand Rapids, Mich.

RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.

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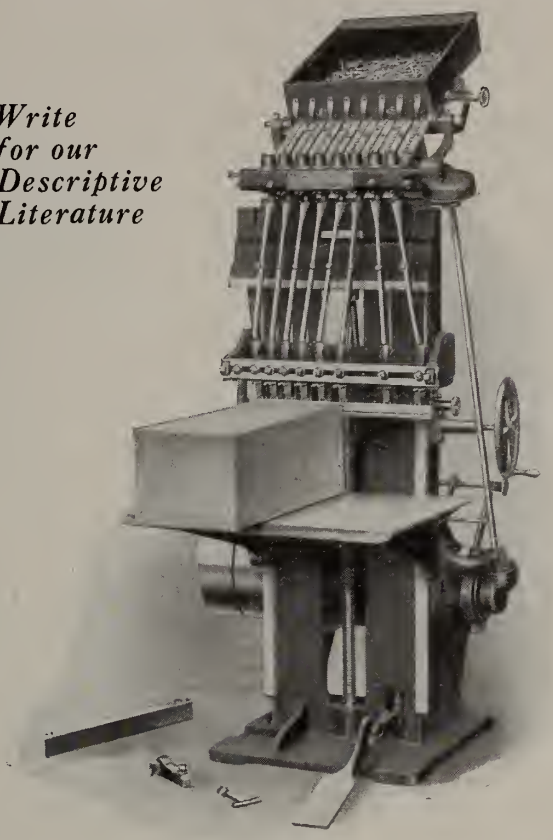

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SANDERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Solem Engineering Co., Sheboygan, Wis.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Elliot Machinery Co., Belleville, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS
Atkins & Co., E. C., Indianapolis, Ind.
Elliot Machinery Co., Belleville, Ont.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Silver Mfg. Company, Salem, Ohio.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.

SAW BENCH
Sidney Machine Tool Co., Sidney, O.

SAW FITTING TOOLS
Crowell, D. J., Buffalo, N. Y.

SAW SWAGES
Cowan & Company, Galt, Ont.
Crowell, J. D., Buffalo, N.Y.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES
Canada Machinery Corporation, Galt, Ont. ..
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Company, Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont. ..
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Reynolds Machine Co., Massillon Ohio.

SCREW HOLES
Stine Screw Holes Co., Waterbury, Conn.

SCROLL SAWS
Canada Machinery Corporation, Galt, Ont. ..
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane, & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamiltonfi Ont.

SECOND-HAND MACHINERY
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Osborne Sexton Machinery Co., Columbus, O.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS
Canadian Bolwer & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

STAINS
Ault & Wiborg, Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ohio.
Shannon Co., Ed. J., Cincinnati, Ohio.
Standard Paint & Varnish Co., Windsor, Ont.

SINGLE SPINDLE BOXING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE
Whitney & Son, Baxter D., Winchendon, Mass.

STEEL DOOR MATS
Cary Mfg. Company, Brooklyn, N.Y.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Colladay Machine Works, Indianapolis, Ind.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Tannewitz Works, Grand Rapids, Mich.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohoa.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES
Walter & Company, B., Wabash, Ind.

TEMPERATURE REGULATORS
Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Compan, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS
International Business Machines Co., Toronto, Ont.

TRIMMERS
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Preston Woodworking Machinery Company, Pretson, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS
National Dry Kiln Co., Indianapolis, Ind.

TWINES & WEBBING
Doon Twines, Ltd., Kitchener, Ont.

UPHOLSTERERS' TACKS & NAILS
Canada Tack & Nail Co., Hamilton, Ont.

VARNISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto. Ont.
Penfound Varnish Co., Toronto, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N.Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS
Astoria Mahogany Co., New York, N.Y.
Batesville Lumber & Veneer Co., Lawrenceburg, Ind.
Bury & Compny, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christmann Veneer & Lumber Co., St. Louis, Mo.
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Evansville Veneer Co., Evansville, Ind.
Freiberg Lumber Co., Cincinnati, Ohio
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Geo. Kersley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Litton Veneer Co., Rockford, Ill.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Veneer Co., New Albany, Ind.
Southern Veneer Mfg. Co., Louisville, Ky.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Underwood Veneer Co., Wausau, Wis.
Veneer Manufacturers Co., Chicago, Ill.
Waetjen & Co., George L., Milwaukee, Wis.

VENEER TAPE
Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.

VENEER JOINTERS
Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY
Garlock-Walker Machinery Co., Toronto. Ont.

VENEER PRESSES (Hand and Power)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont
Perrin & Company, Wm. R., Toronto, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Johnson Co., O. E., Chicago, Ill.

WOOD FINISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Penfound Varnish Co., Toronto, Ont.

WALNUT LUMBER
Des Moines Saw Mill Co., Des Moines, Iowa.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Walnut Company, St. Louis.

WIRE
Laidlaw Bale-Tie Co., Hamilton, Ont.
Pakanship Company, Brooklyn, N.Y.

WIRE BOX STRAPPING
Cary Mfg. Company, Brooklyn, N.Y.

WOOD SCREWS
Robertson Mfg. Co., P. L., Milton, Ont.

WOOD TURPENTINE
Brown Corporation, Quebec, Que.

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Garlock-Walker Machinery Co., Toronto, Ont.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WODD LATHES
Colladay Machine Works, Indianapolis, Ind.

44 Yates No. 275
30 and 60-in. Automatic
Knife Grinders,
Brand New, at
One-half Price

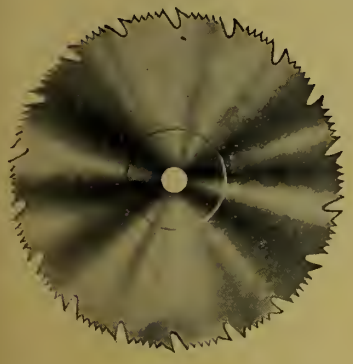
Machines arranged for Motor Application as per cut, or regular belt drive, if wanted.

8 New Andrew Mutiple Vertical Borers, 20, 30, 42 and 60-in., any number of heads.

7 New Hermance Molders, 8, 10 and 12-in., stationary and slip-on heads.

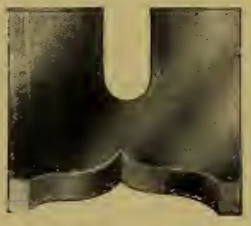
Band rip saw, Fay & Egan, 42-in.
Band saws, 32, 36 and 38-in.
Borer, Andrew, 10-ft., 13-spindle, power table.
Borers, Andrew mult. vert., 20, 42 and 60-in., new.
Carver, 5-spindle, Moore.
Door clamp, Fay-Egan, heavy.
Edgers, two, three and four saws.
Glue cookers and retainers. Glue spreaders.
Hogs, two, Mitts & Merrill.
Jointers, 8, 12, 16, 20, 24 and 30-in.
Knife grinders, two 32-in., F. & E.
Lathe, Ober spoke and handle, almost new.
Lathes, Mattison, No. 8 auto; No. 6 block mach.
Lathes, speed, eight, mounted on iron bed.
Lock-corner machine, Morgan No. 8, full set.
Matcher, American Northwest, 24x8-in., 3 sides.
Matcher, end, Sherman, fine condition.
Matcher, 24x6-in., 3 and 4 sides.
Automobile spoke machines, Defiance, complete set.
Band resaw, 50-in., Fay & Egan, tilting rolls, full set of filing room tools.
Molder, Smith 14-in. outside, latest style, practically new.
Molders, 4-side, 9, 10 and 12-in. American.
Molder, Fay & Egan No. 184, 12-in. outside.
Molders, inside, 13-in. American and Woods.
Mortiser and router, Fay & Egan No. 124.
Mortiser, chain saw, New Britain No. 1, 25 chains.
Mortiser, chain saw, New Britain No. 7, new.
Mortisers, F. & E. vertical, hollow-chisel; also plunger type.
Nailers, two, Morgan No. 8, used three months.
Nailing machines, 2 closed back, 4-track, 4d, 15-in. spread.
Pony planers, 16, 20 and 24-in.
Relisher and mortiser, Greenlee.
Rip saws, self-feed, Hoosier, F. & E., Greenlee.
Router for stair stringers, H. B. Smith, flexible arm with adjustable table and forms.
Sand belt, closet seat and similar work.
Sander, H. B. Smith, spindle and disc, practically new.
Sanders, 30 and 42-in. Columbia; 30, 42 and 48-in. Invincible; 30-in. double Invincible.
Saw, 8-ft. double cut-off, roller table.
Saws, combination and variety, single and double arbor, also tilting arbor, stationary and tilting table, 24 and 30-in. circular resaw.
Saw, circular re-slab, 40-in. blade, power feed rolls.
Shapers, Fay single-spindle reversible, also Shimer single with overhead routing attachment.
Surfacer, 30-in. douhle, cabinet, B. & M., practically new.
Surfacer, Whitney 30-in. double, sectional roll and sectional chipbreaker; American No. 4½, 36-in. sectional and solid; Fay & Egan No. 140, 27 and 30-in. double divided rolls; also 18, 20, 24 and 30-in. single cylinder panel planers.
Tenoners, B. & M. double-end, also several single-end tenoners with and without copes.
Timber sizer, Fay-Egan s4s, 17x12-in.
Window frame machines, Smith & Phillips combination.
Wood-worker, universal, Fay & Egan and Bentel & Margedant. One lot of glue room machinery.

The Osborne & Sexton Machinery Co.
Re-manufacturers **COLUMBUS, OHIO**



100% Production

will be necessary to meet the demand for all wood-working material and furniture that will be required for the 4,000,000 buildings that must be erected in 1920.

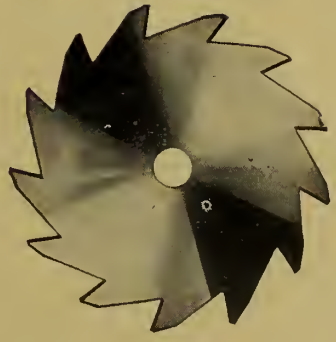


ATKINS

STERLING QUALITY

SAWS and KNIVES

will make it possible for you to meet this demand in producing your share.



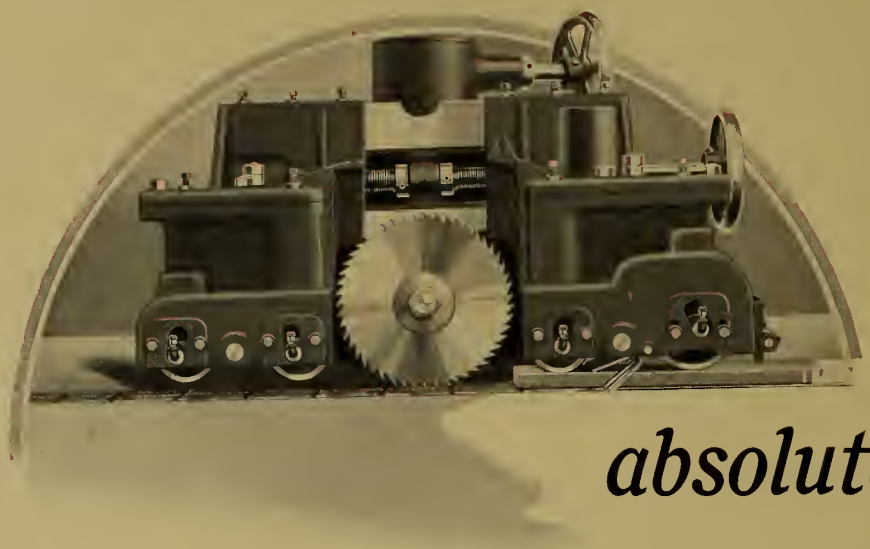
The high grade material and expert construction of Atkins Saws and Knives make possible the superior service they render.

Let Their Efficient Performance Tell You the Atkins Story of Perfection.

Write to-day for our Knife Booklet "CW" and Pattern Template Paper.

E. C. ATKINS & CO., ***Makers of Sterling Saws***

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**



These are the Works —they insure an absolutely straight edge

MATTISON "RIPPER"

Built in two sizes.

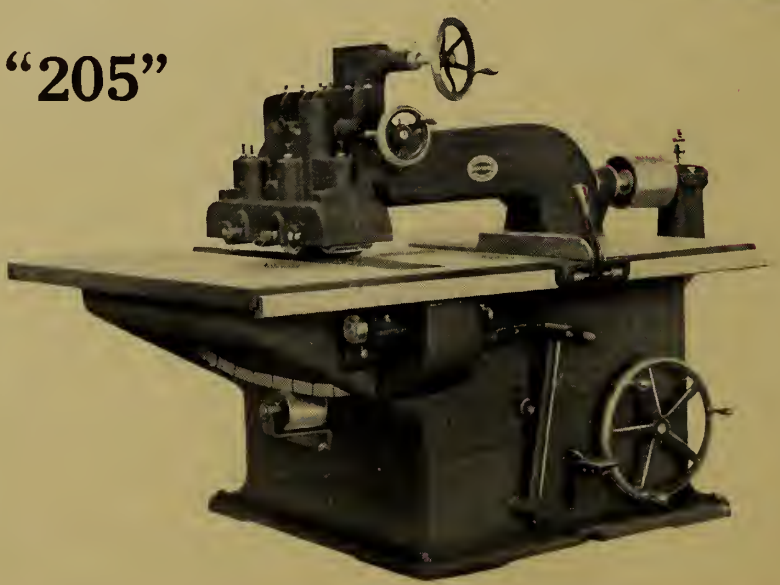
The "205" has 32 inches inside of the saw. The "207" has 18 inches inside of the saw.

Both sizes have the same general construction—built sturdy with the same powerful feed works.

Every possible adjustment is provided for, with all adjustments simple and right at the operator's hand.

"207"

"205"



We shall be glad to send our new descriptive circular upon request.

Mattison Machine Works
Rockford, Illinois, U.S.A.

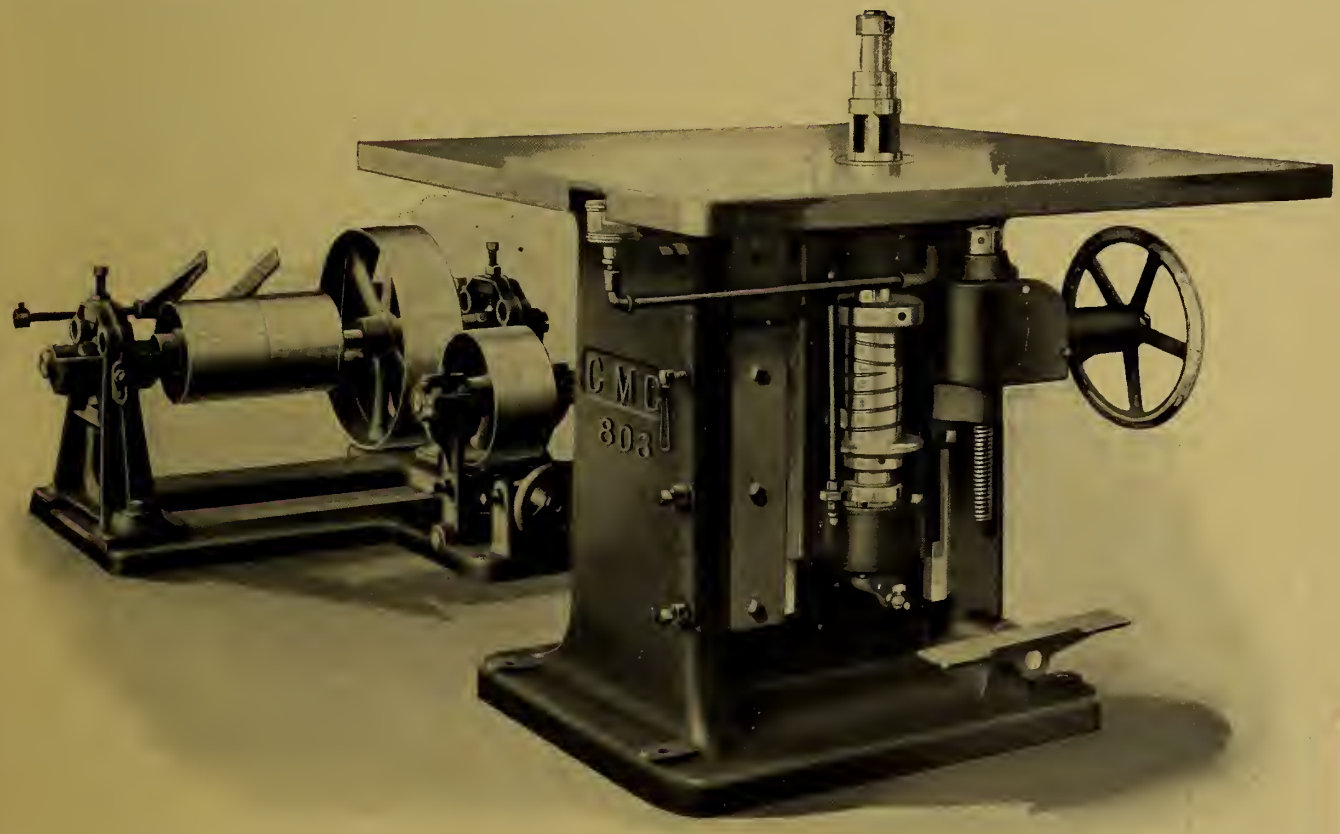
Baxter D. Whitney & Son, selling representatives for New England States.

Volume Twenty TORONTO, MARCH, 1920 Number Three

CANADIAN WOODWORKER and Furniture Manufacturer

C.M.C. 803 HIGH SPEED SHAPER

SINGLE SPINDLE BALL BEARINGS



THE LATEST AND BEST IN SHAPERS. CANADIAN IN ITS ORIGIN.

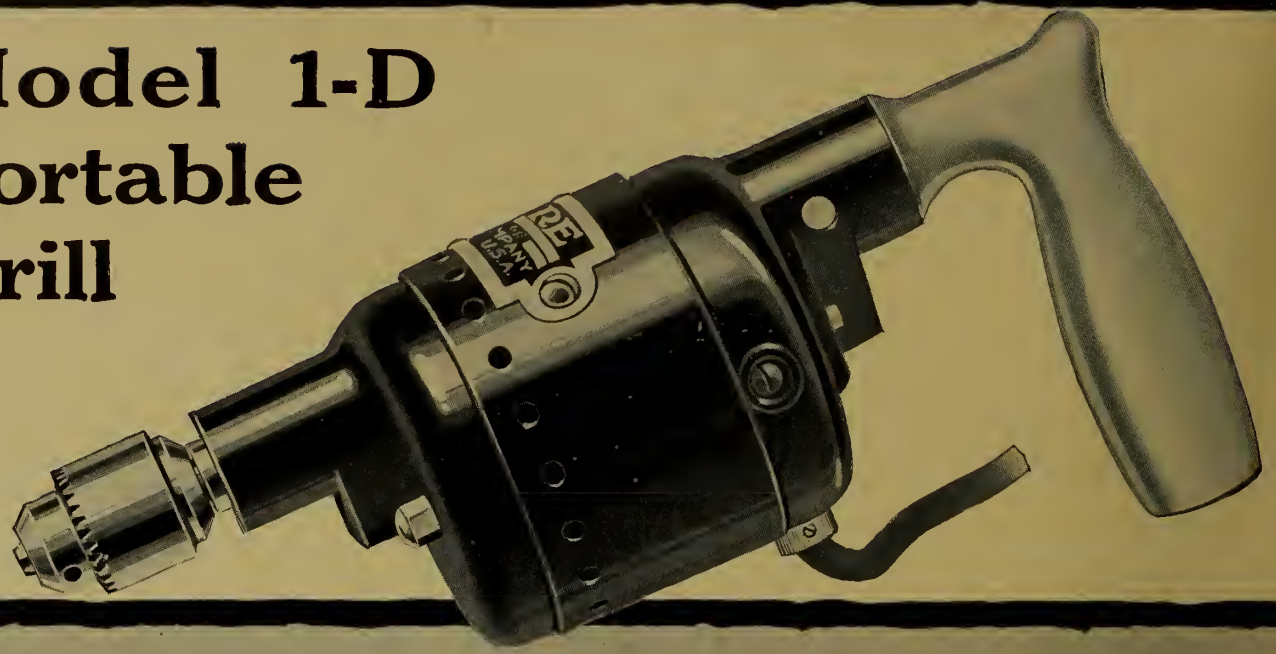
Better Work *Less Shop Room* *Safety*

CANADA MACHINERY CORPORATION, LIMITED, GALT, ONTARIO

Toronto Office and Warerooms, Brock Avenue Subway

Alphabetical Index to Advertisers, Page 12

Model 1-D Portable Drill



HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—4¾ pounds.

Capacity—Steel, 0 to $\frac{3}{16}$". Wood and alloys, 0 to $\frac{1}{2}$".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3⅜ inches.

Spindle—Offset from center $\frac{33}{64}$".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

Jacob's Chucks used as a regular equipment.

FOR speed in drilling and countersinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

Wisconsin Electric Company
7121 Sixteenth Street, Racine, Wisconsin, U. S. A.

DUMORE GEARED ELECTRIC DRILLS

Garlock-Walker's List of Wood Working Machinery in Stock

Manufactured by

American Wood Working Machinery Co.

1—AMERICAN FIG, 640, FOUR SIDED BOSS TIMBER SIZER, capacity 30″ wide, 20″ thick, 8 feed rolls, straight knives on all heads, only three years old, as good as new.

1—AMERICAN No. 229, FIG. 660, 15 x 6 HARDWOOD FLOORING MACHINE, equipped with six knife top and bottom heads, knife setting and jointing attachments, thoroughly overhauled, in first class condition.

1—AMERICAN No. 229, FIG. 660, 15 x 6 HARDWOOD FLOORING MACHINE, same as above.

1—AMERICAN FIG. 8442, No. 26, 10″ x 4″ FOUR SIDED FAST FEED OUTSIDE MOULDER, with slip on and off top and bottom heads, latest type machine, complete, overhauled and in A1 condition.

1—AMERICAN FIG. 8442, No. 26, 10″ x 4″ FOUR SIDED FAST FEED OUTSIDE MOULDER, same as above.

1—AMERICAN FIG. 8442, No. 26, 10″ x 4″ FOUR SIDED FAST FEED OUTSIDE MOULDER, same as above.

1—AMERICAN FIG. 8412, No. 22, 10″ x 4″ FOUR SIDED OUTSIDE MOULDER, in first class condition.

1—AMERICAN FIG. 8521, No. 5, 8″ x 4″ HOUSTON FOUR SIDED OUTSIDE MOULDER, overhauled and in A1 condition.

1—AMERICAN FIG. 8601, 6″ x 4″, FOUR SIDED OUTSIDE MOULDER, new.

1—AMERICAN FIG. 5014, No. 111, 54″ BALL BEARING BAND RESAW, carrying blades up to 7″ wide, capacity 30″ vertically, using extended rolls, 22″ without extended rolls; from ⅛″ to 20″ horizontally, will centre split a 16″ timber; cut a veneer from 12″ stock, rates of feed from 32 to 192 feet per minute, only three years old, in first class condition.

1—AMERICAN FIG. 5859 No. 3 DOUBLE CUT-OFF SAW, capacity between saws 8″ to 6′ 9″, 4″ thick, 30″ wide, equipped with two 16″ saws and power adjustment to movable table; new machine.

1—AMERICAN FIG. 5610, No. 25 EDGING AND RIPPING SAW, complete with countershaft; new machine.

1—AMERICAN FIG. 541, No. 4 CIRCULAR RESAW, with 24″ saw, in good working order.

1—AMERICAN FIG. 5701, No. 2 SELF-FEED CIRCULAR RIP SAW, capacity 25″ wide, 6″ thick, equipped with 14″ saw and countershaft.

1—AMERICAN FIG. 604, HEAVY SWING SAW, right hand to hang from ceiling, equipped with 48″ saw and shield; almost new
84 feet of ROLLER TABLE for use with above SWING SAW.

1—AMERICAN FIG. 616, No. 7½ COMBINATION SAW BENCH, with full set of gauges, without dado head; in first class condition.

1—AMERICAN FIG. 6390, No. 1 DOUBLE ARBOR UNIVERSAL SAW BENCH, with tilting table, full set of rip, cross-cut and mitre gauges, including one 16″ rip saw and one 16″ cut-off saw, countershaft; in A1 condition.

1—AMERICAN FIG. 6390, No. 1 DOUBLE ARBOR UNIVERSAL SAW BENCH, same as above.

1—AMERICAN FIG. 575, No. 2 HAND FEED RIP SAW, with countershaft.

1—AMERICAN FIG. 6312, CROSS-CUT SAW BENCH, movable saw operated by foot treadle, capacity 10½″ x 2½″, particularly adapted for cutting off crating stock; in A1 condition.

1—AMERICAN FIG. 514, 36″ BALL BEARING BAND SAW, with wire screen guards for top and bottom wheels; in first class condition.

1—AMERICAN FIG. 824, 24″ BUZZ PLANER, fitted with square cylinder, power feed attachment and countershaft; in A1 condition.

1—AMERICAN FIG. 937, No. 1 SINGLE SPINDLE SHAPER, with plain countershaft; in first class condition.

1—AMERICAN FIG. 1110, No. 6 DOUBLE DISC SANDER, 36″ dia. discs; in first class condition.

1—AMERICAN FIG. 1126, No. 9 UNIVERSAL KNIFE GRINDER, capacity for knives 31″ long, two sided knife bar, one side fitted with clamps for holding thin high speed knives, one side slotted and fitted with bolts for holding ordinary thick knives; in A1 condition.

1—AMERICAN FIG. 1127, No. 9 UNIVERSAL KNIFE GRINDER, same as above.

1—AMERICAN FIG. 1145, No. 2 DOUBLE END EMERY GRINDER, bench type, complete with countershaft; in A1 condition.

In addition to the machines listed above, we have a complete line of high grade new and used machinery for any and all purposes.

We solicit your inquiries

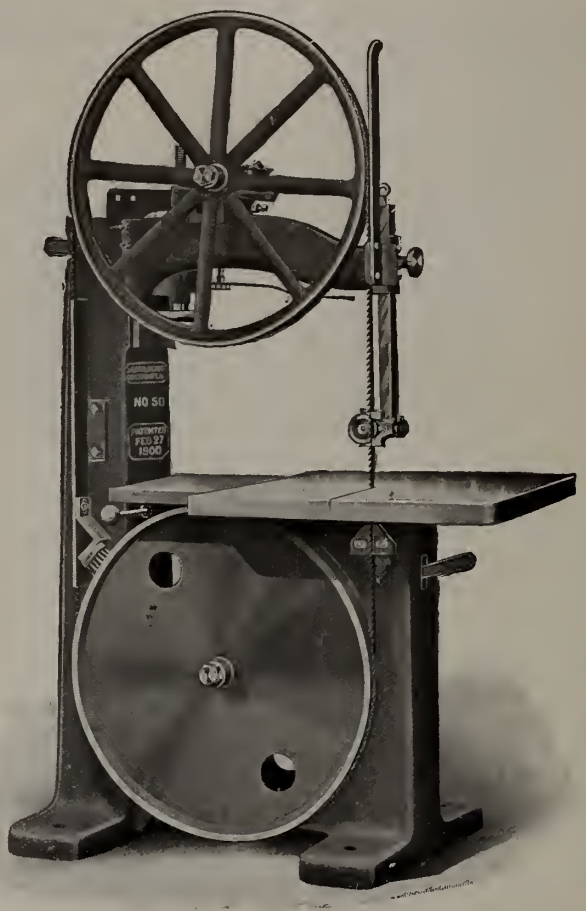
GARLOCK-WALKER MACHINERY CO. LIMITED

334 St. James St. MONTREAL

32 Front St., West TORONTO

567 Banning St. WINNIPEG

Everything in Wood Working and Metal Working Machinery



Save 25% to 50% of Blade Upkeep and Power Cost
Get Two, Even Three Times As Much Work

It's not the blades that wear out that cost, it's those that break.

It's the broken blades that cut down productive time and cost to repair and to replace.

Blade breakage is reduced to a minimum on Fay-Egan No. 50—36" **Square Column "Lightning Line" Band Scroll Saws.**

The Fay-Egan "Knife Edge" Blade Tension, made on the principle of a fine laboratory balance scale, is so sensitive that it compensates for changes in atmospheric conditions—yet, so flexible, you can pass a block between blade and wheel, while running, without breaking the blade. Folks tell us blade expense on "No. 50" averages 50 to 75 per cent. less than on the old timers.

The solid lower wheel acts like the fly wheel on your engine, its momentum carrying the load, so that the power consumption is reduced fully one-half, while at the same time it controls the light-spoked upper one, preventing over-running and choking down on a heavy cut.

The heavy square column eliminates vibration and permits the wheels to be revolved at 50 to 100 per cent higher speed, increasing the cutting capacity to double, and in some cases, triple that of the ordinary band saw.

As a user of saws, you cannot afford to ignore what Fay-Egan Square Column Band Saws are doing for others and can do for you. An investigation does not obligate you.

Write for Bulletin M-4

J. A. FAY & EGAN CO.

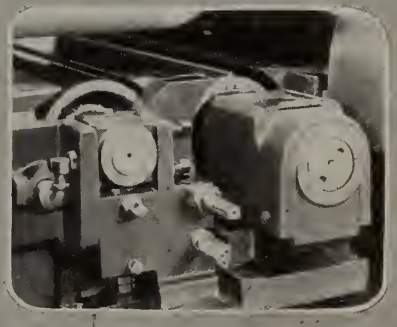
153-163 W. Front St. CINCINNATI, O.

"A CLEAR BARGAIN—A DEAR FRIEND."

Yates type B-2 has earned its famous name by remarkable performance wherever it has been installed, not by bursts of speed for short periods, but by steady day after day production.

To learn more about this machine, write for our new illustrated circular, which will be sent free on request.

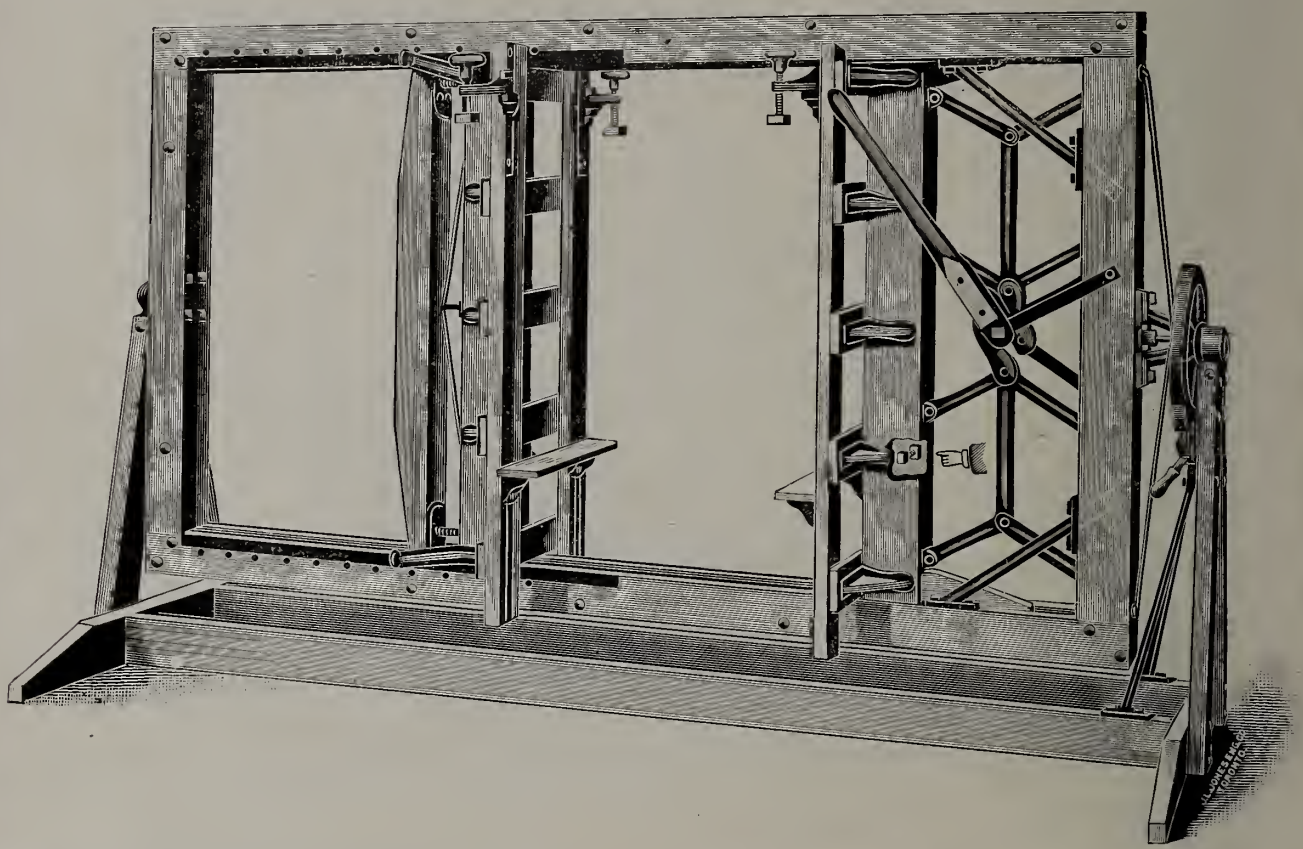
P. B. Yates Machine Co. Ltd.
HAMILTON. ONT. CANADA
United States Plant, Beloit, Wisconsin



SECTION OF B-2 SHOWING BOTTOM HEAD

"The Invariable Choice of the Man Who Knows"

No. 190 Improved
Revolving Case Clamp
for dressers, bureaus, wash stands, phonographs, etc.



Will Give You Five Times The Output

This machine eliminates all unnecessary handling of the work. The clamp takes in a wide range of sizes as one end is moveable to any position, while the other end has sufficient movement to allow the case to be tightly clamped. This is done by means of the large lever shown at right of cut. A brake at the extreme right instantly stops the machine in any position.

The clamp requires but one man to operate. It will not spring, does not have to be released before revolving, and the workman can get at all parts of his case while standing in front of the machine. Made in two sizes, 50 inches high, by 5 feet wide; 72 inches high, by 5 feet wide.

Prices and further particulars await your request.

Jackson, Cochrane & Company
KITCHENER - CANADA

The "Shimer Limited" Expansion Head

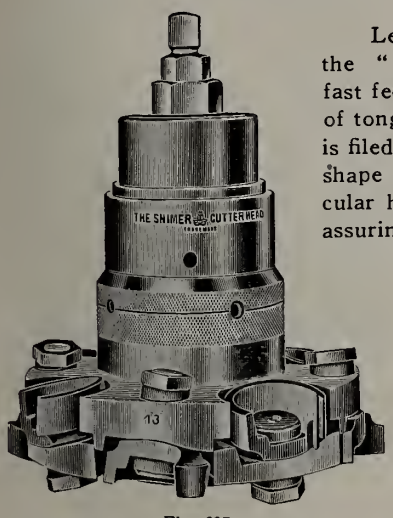


Fig. 627

Let us draw your attention to the advantages of using the "SHIMER CUTTER HEAD" for general Mill and fast feed Planer work. The Cutter is turned to cut the shape of tongue and groove desired, so that to sharpen the cutter it is filed or ground on its face, guaranteeing the user the same shape of cut during the life of the cutter. The bit being circular has from 3½ in. to 5 in. cutting length to the cutter, assuring long wearing life to the cutters.

Note that the cutter, being fastened to a concave seat on a compound angle, assures the user of the proper clearance of cutters, consequently they never burn.

These heads are fitted with or without the Self-Centering Sleeve, and made Expansion or Solid, to suit the customer's wishes.

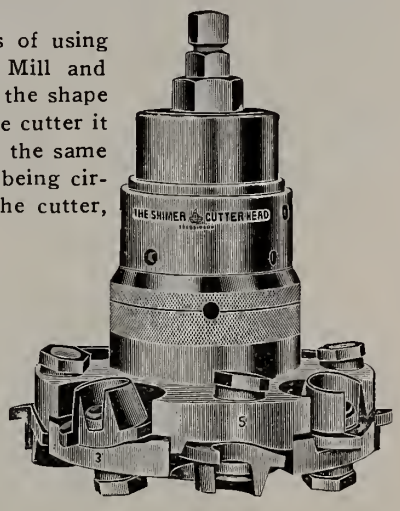


Fig. 268

Shimer Heads have been in use for sixty years, and their reliability and reputation have spoken for them in the past. Let us know your wants and we will guarantee their reliability at the present.

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

Successors to Samuel J. Shimer & Sons, Inc.

GALT, ONTARIO

Beaver Quality Saws

We manufacture a complete line of saws for the woodworking and furniture manufacturing industries. The quality of Beaver Saws is well known, only high-grade material and skilled workmanship enter into their manufacture.

Beaver Saws will give you the maximum of clean cutting service. Let us know your requirements.

Radcliff Saw Manufacturing Company, Limited

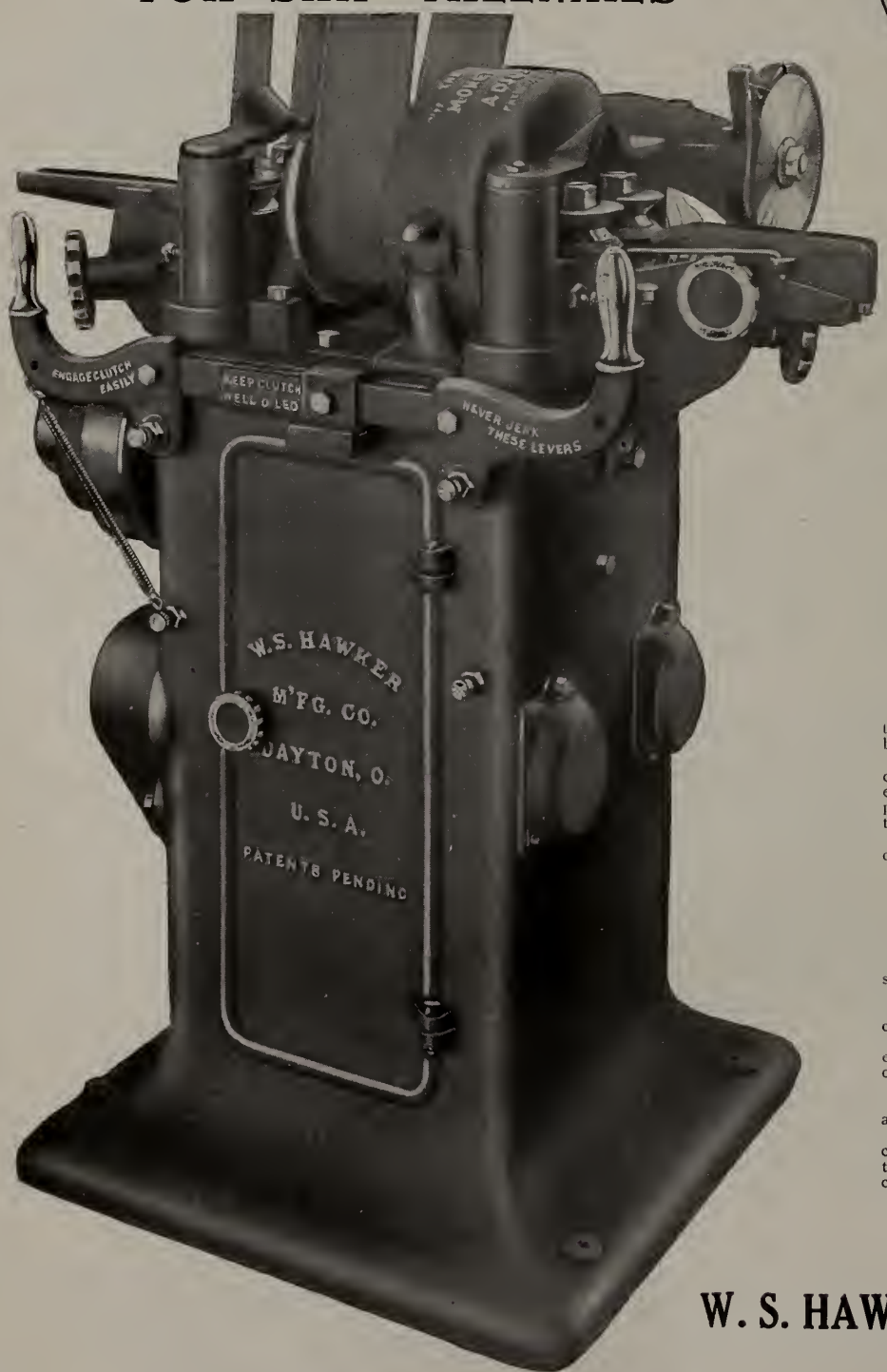
1550 Dundas Street West TORONTO, ONT.

UNIVERSAL ADJUSTABLE CUTTER HEAD Patented.
Infringements (maker or user) will be vigorously prosecuted.

Two Heads

that have put 100% more profit in the production of Dowel Stock.

FOR SHIP TREENAILS



W. S. HAWKER.

Inventor and Designer of the World's most efficient Tubular Turning Machinery

THE

Money Maker Adjustable Rod

and

Dowel Machine

The machine that is sent under a guarantee to show you a gain of from 100 to 400 per cent. before you buy it.

The improved dowel machine that 90 per cent. of the largest and oldest machinery builders and dealers now endorse and recommend in preference to the solid chuck machines they themselves previously built.

One cutter head turns from 1/4 in. to 2 in. diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

Works stock as short as five inches.

Rolls automatically centre variations in squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid chuck dowel machine.

We can save you from one dollar out of every two, to four out of every five, that the operation of solid chuck machines costs you.

Engagements for competitive test solicited.

Formal orders not solicited. All sales made after demonstration.

The only question is, are you willing to cut cost of your dowel turning to one-half or one-third of what it costs with any make of solid chuck machine?

Machine delivers the goods before you buy.

State conditions of stock closely.

Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY

DAYTON, OHIO.

The Defiance 42"

COMBINED

Spoke & Handle Lathe

WILL TURN

Heavy Railway Pick Handles
Standard Pick Handles
Mining Pick Handles

Hammer Handles
Hatchet Handles

Sarven Spokes
Common Spokes

42 in. Combined Spoke & Handle Lathe

Write for Illustrated and Descriptive Circulars

THE DEFIANCE MACHINE WORKS

New York City **DEFIANCE, OHIO, U.S.A.** *London, England*

HIGH LABOR COSTS

are giving you as much worry as they are giving us. We can show you how to ***reduce*** them by driving ***seven*** screws in the time formerly occupied in driving four.

Read below what one large furniture manufacturer said about our screws to one of his competiors.

See That Square Hole?

See That Square Hole?

Robertson Patented Socket Head Wood Screws

We are in receipt of your letter of the 17th in reference to the Robertson screw. We were rather backward in trying to make ourselves believe that this screw is as good as the old slot screw, but we have entirely changed and are now using the socket head screw exclusively. It would surprise you how many more screws of this make the workman can drive than of the old style. You will make no mistake in using their screws altogether.

WE MAKE AND SUPPLY FREE WITH FIRST ORDER BITS FOR USE IN REYNOLDS MACHINE OR ANY OTHER TYPE DRIVER.

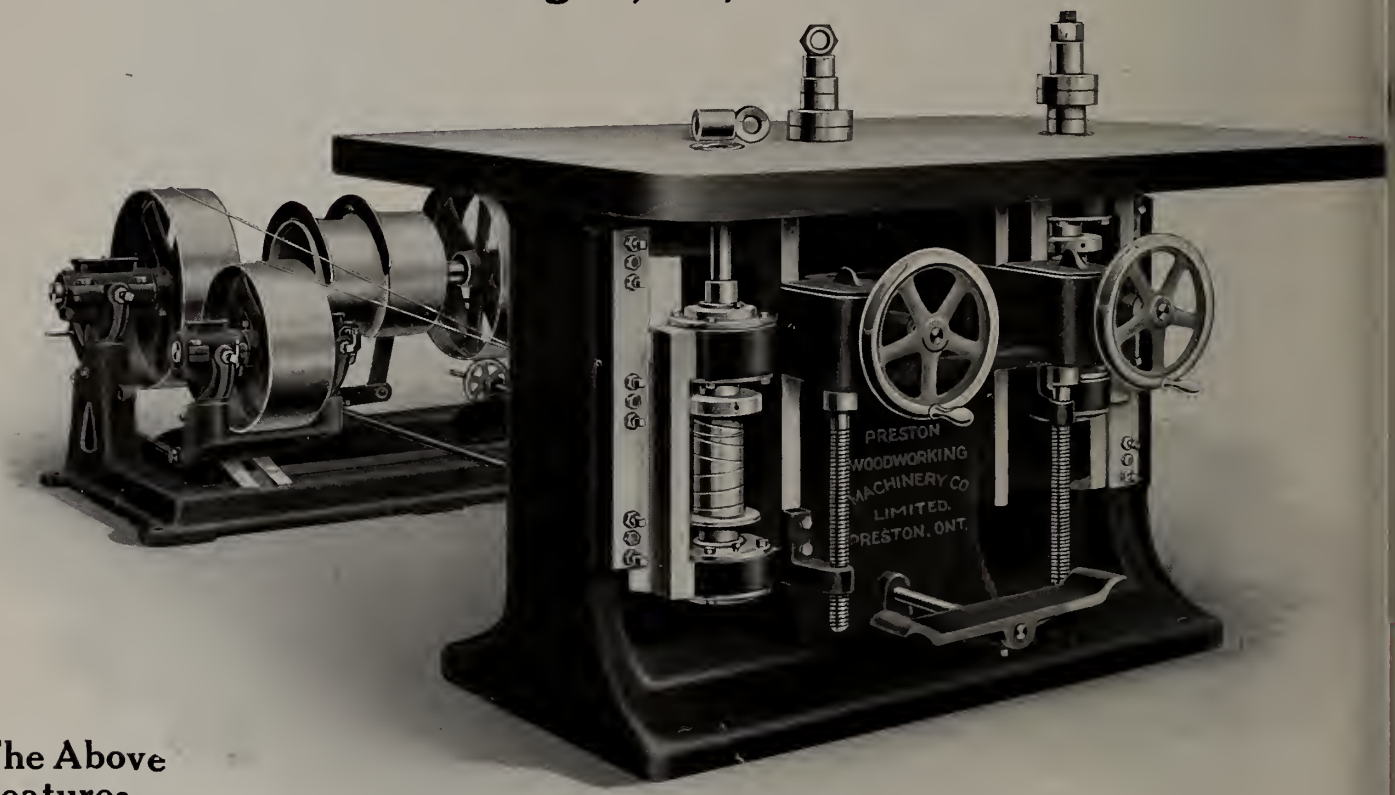
P. L. Robertson Mfg. Co., Ltd.

Milton - - - Ontario

7,000 to 8,000 R. P. M.

S K F BALL BEARINGS

Weight, 2,750 lbs.



The Above Features on a "PRESTON" No. 162

Heavy High Speed Ball Bearing Shaper

Guarantee

100% More Production

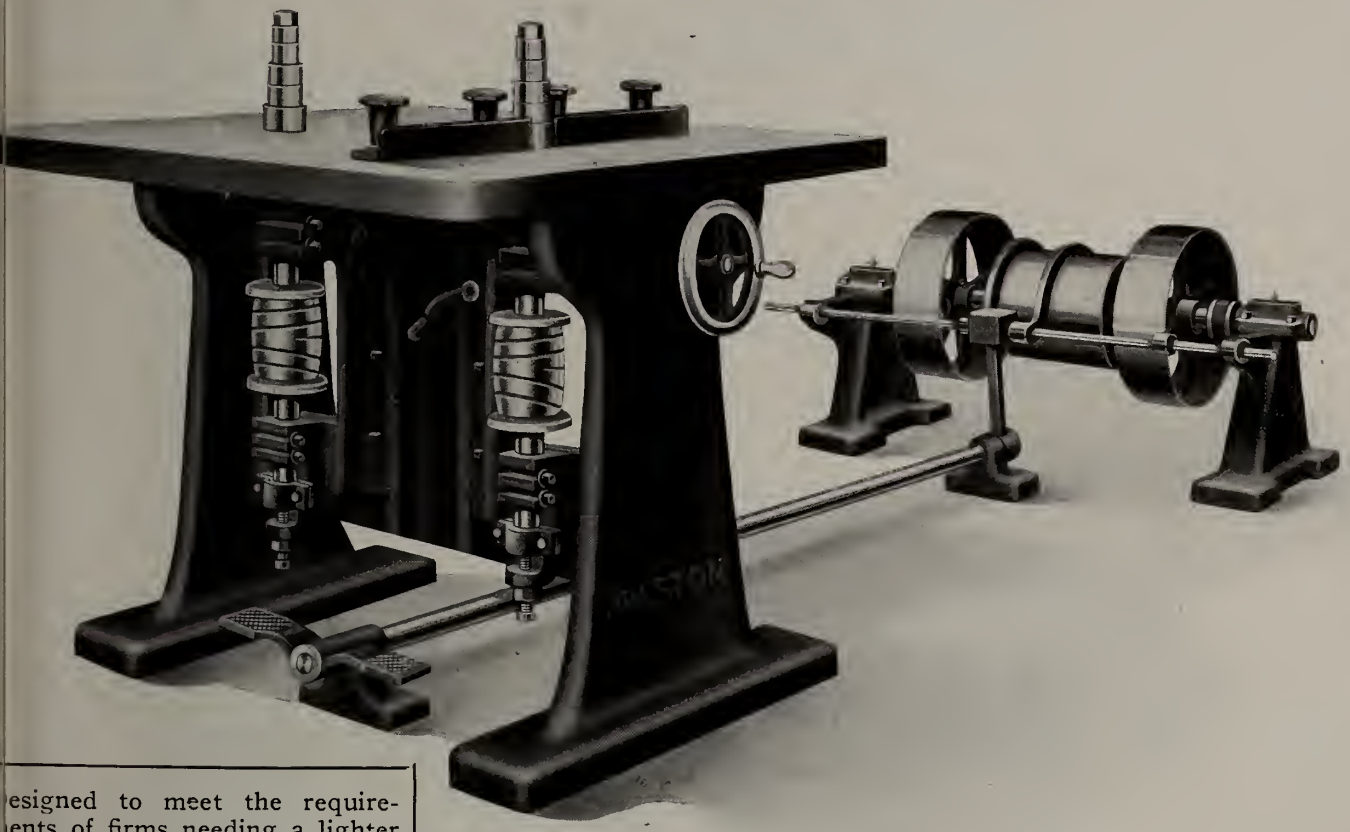
MADE EITHER AS A SINGLE SPINDLE OR DOUBLE SPINDLE MACHINE to meet the particular needs of the customer.
We will be glad to go into the matter with you from every angle and help you figure what will be most suitable for your particular line of work.

The Preston Woodworking

PRESTON
BALL BEARING SHAPER

A NEW SHAPER

"Preston" No. 164 Ball Bearing



esigned to meet the require-
ents of firms needing a lighter
nd less expensive Shaper than
ur No. 162.

Made with

Babbitt Bearings, Plain Countershaft
S K F Ball Bearings, Plain Countershaft
S K F Ball Bearings, Special Countershaft

This machine, equipped with BALL BEARINGS, will be found particularly suitable for the needs of many firms. Don't hesitate to ask for information.
WE ARE SHAPER PEOPLE and make Shapers for every purpose. Ten years of careful study and research have placed us in the enviable position of being able to supply information and advice not easily gained elsewhere.

Machinery Company Ltd.

ONTARIO

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Wood Working Machinery

BELT SANDER 319
CONVENIENT, SIMPLE, SUBSTANTIAL, EFFICIENT. TABLE 5½′ or 8′.

COWAN & COMPANY OF GALT, LIMITED, Galt, Canada

HART MIRROR PLATE CO.

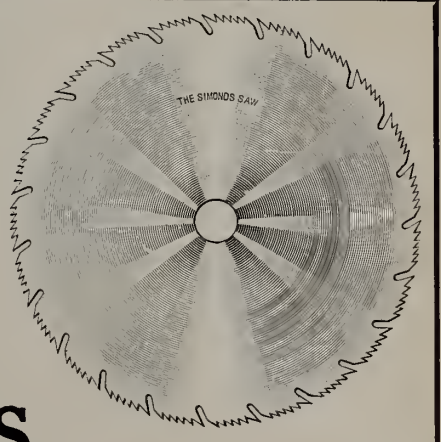
IMPORTERS AND MANUFACTURERS OF

MIRRORS

GRAND RAPIDS QUALITY

Grand Rapids, Mich.

Largest manufacturers of high grade mirrors in America serving the furniture trade exclusively.



SIMONDS SAWS AND KNIVES

The woodworkers' friend. They are satisfactory and guarantee the best results. Made of Simonds Special Crucible Steel, they are evenly tempered, uniform in construction and have the cutting qualities.

We make all kinds of Saws and Knives for either wood or metal cutting

SIMONDS CANADA SAW CO., Limited

St. Remi Street and Acorn Ave.

VANCOUVER **MONTREAL, Que.** ST. JOHN, N.B.

SKF Payroll Policy

THE FIRST ESSENTIAL in Ball Bearing applications is to give you a recommendation that will be absolutely successful, and surpass your highest expectations as to efficiency and durability.

THE SECOND is to make the price as low as possible. This can only be done by large production of "one quality product"—THE BEST.

Our affiliations are a guarantee to you of the above requirements being properly fulfilled—

SKF Industries, Inc., New York.
SKF Ball Bearing Co., Hartford, Conn.
Hess-Bright Mfg. Co., Philadelphia.
Atlas Ball Mfg. Co., Philadelphia.
SKF Engineering Laboratories, Philadelphia.

Factories also in England, Sweden and France.

"A SERVICE UNEQUALLED."

CANADIAN SKF COMPANY, LIMITED

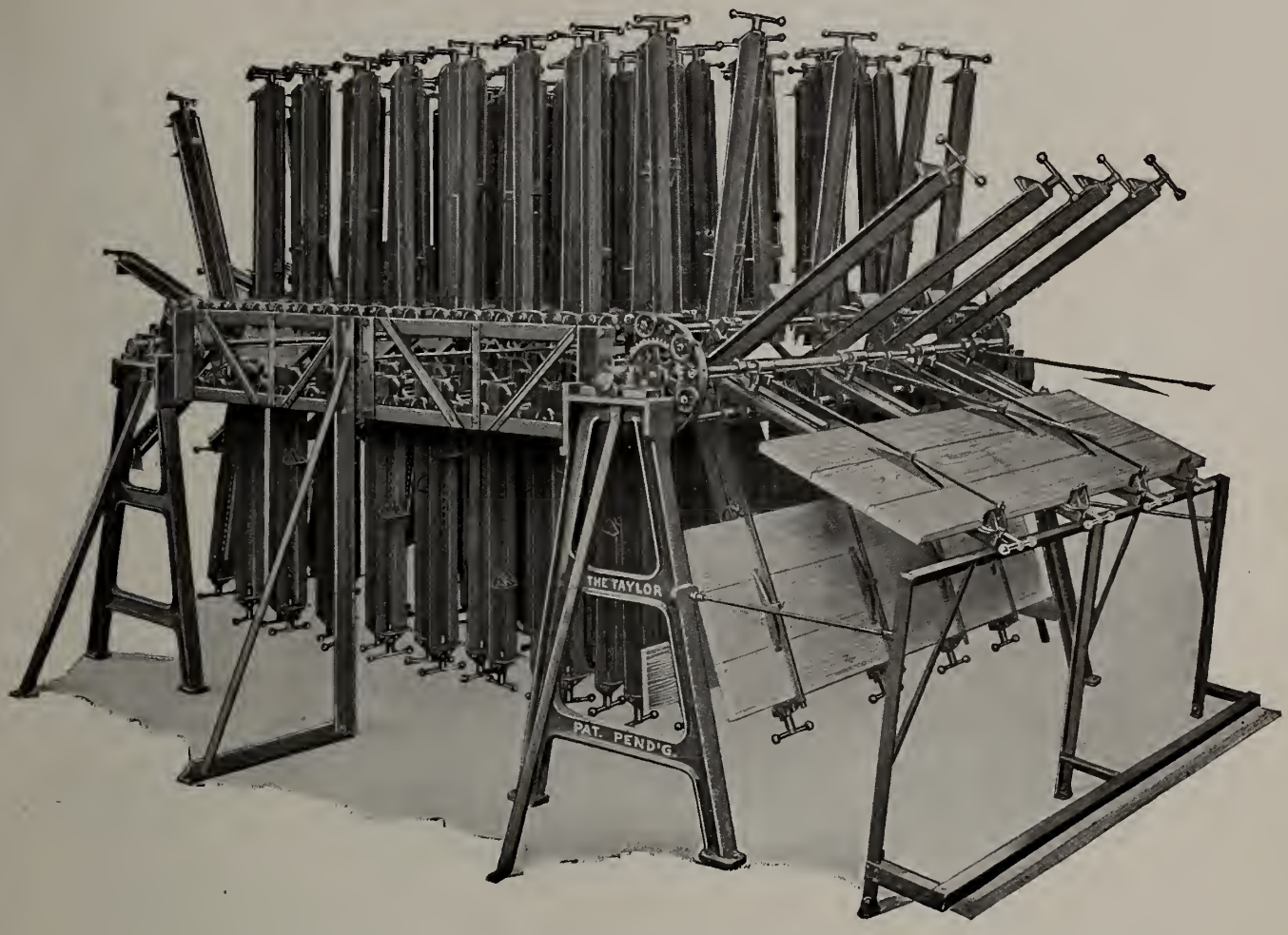
412 St. James St.
MONTREAL

82 King Street W.
TORONTO

SKF INDUSTRIES

Hess-Bright Ball Bearings
S K F Ball Bearings
Atlas Steel Balls
Gronkvist Chucks
Transmission Hangers

CLAMP The Taylor TRADE MARK CARRIER



Forty section machine carrying 160 clamps, measuring 8 ft. 2½ in. between shaft centers.

The clamp is one of the most interesting features of the clamp carrier. A remarkable strain can be applied with greatest ease; the work it turns out—both thick and thin stock—is 100 per cent. perfect.

An Engineering concern recently wrote:

"I am recommending Taylor clamps to the Germain Mfg. Co. because I have proven the clamps more efficient through scientific time studies on both and all existing types of gluing-up machines and devices."

As a result of the above recommendations, The Germain Mfg. Co. referred to bought two Taylor carriers. They installed them, and tested them and have since purchased two more. We can tell you numerous instances where customers are using from two to nine Taylor carriers each as a result of similar experiences.

Let us prove the truth of these claims by showing you one of these carriers in operation, or you can try the clamps out on your own work. Ask for C. C. Folder and further information.

A. R. Williams Machinery Co., Toronto, Canada — Representatives

James L. Taylor Manufacturing Co.

POUGHKEEPSIE, N. Y.

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DRY AND PARTLY DRY STOCK

Ready for Shipment

GUM

21,246 ft. 8/4 1st and 2ds Qtd. Red
24,462 " 8/4 No. 1 Com. and Sel. Qtd. Red
80,125 " 6/4 No. 1 Com. and Sel. Red
15,000 " 6/4 No. 2 Common Red
40,609 " 4/4 1st and 2ds Red
41,859 " 4/4 No. 1 Com. and Sel. Red
7,296 " 1 x 9-12" Box Boards
8,103 " 1 x 13-17" Box Boards
42,860 " 4/4 1st and 2ds Sap
210,246 " 4/4 No. 1 Com. and Sel. Sap
151,246 " 4/4 No. 2 Common Sap
15,000 " 4/4 No. 3 Common Sap
14,000 " 5/4 No. 1 and No. 2 Com Sap
21,135 " 6/4 1st and 2nds Plain Sap
49,080 " 6/4 No. 2 Common Sap
17,060 " 6/4 No. 3 Common Sap
11,429 " 5/4 No. 2 Common Sap

LA. CYPRESS

53,085 ft. 4/4 No. 1 Shop
128,000 " 4/4 No. 1 Common
18,205 " 4/4 No. 2 Common
9,000 " 4/4 No. 3 Common
24,125 " 4/4 Peckie
20,175 " 4/4 Log Run
14,246 " 4/4 Boxing
11,428 " 5/4 No. 1 Common
6,125 " 5/4 No. 2 Common
5,696 " 5/4 Peckie
12,007 " 6/4 No. 2 Common
7,263 " 6/4 Peckie
7,590 " 8/4 1sts and 2nds
11,024 " 8/4 Select
7,106 " 8/4 Shop
11,220 " 8/4 No. 1 Common
11,150 " 8/4 No. 2 Common
2,250 " 8/4 Peckie

HICKORY

10,976 ft. 2/3-6/4 1/3-4/4 Log Run Dry
12,011 " 8/4 Log Run, Partly Dry
11,428 " 6/4 8/4 Log Run
Can cut 2 Cars 8/4 10/4 Log Run

MAPLE

12,428 ft. 8/4 Log Run, mostly Hard
25,000 " 8/4, 10/4, 12/4, 16/4 No. 2 Com. and Btr., 75 per cent Hard
50% 3" 4", 40% 2½", 10% 2" .

ARKANSAS YELLOW PINE

51,296 ft. 1x6", 8", 10", 12" No. 1 and 2 Com. Air Dried. Rough or Dressed

RED OAK

14,930 ft. 10/4 No. 1 Com. and Sel.
11,080 " 10/4 No. 2 Common
5,400 " 6/4 1sts and 2nds Plain
32,486 " 4/4 1sts and 2nds Plain
61,527 " 4/4 No. 1 Com. and Sel.
71,146 " 4/4 No. 2 Common
11,426 " 4/4 1sts and 2nds Qtd Red
29,118 " 4/4 No. 1 Com. and Sel. Qtd. Red
9,186 " 4/4 No. 2 Com. & Btr. Qtd. White
2,429 " 4/4 No. 2 Com. Qtd. Red
13,425 " 3/4 No. 3 Com., Plain
45,000 " 4/4 No. 3 Common Plain
38,611 " 4/4 Sound Wormy
14,296 " 4/4 No. 1 Com. and Btr. Qtd. W.
17,247 " 4/4 No. 2, No. 3 Com. Qtd. W.
11,429 " 4/4 8 ft. Tie Siding
12,426 " 6/4 No. 1 Com. and Btr., largely Red
13,290 " 4/4 No. 1 Com. and Btr., largely Red

LA. WHITE ASH

8,242 ft. 6/4 No. 1 Common
11,164 " 5/4 No. 2 Common
12,400 " 8/4 No. 2 Common
17,584 " 5/4 No. 3 Common Wormy
1 Car consisting of:
2,500 ft. 4/4 Log Run
6,500 " 6/4 Log Run
2,500 " 8/4 Log Run
1,000 " 10/4 Log Run
1,000 " 12/4 Log Run
500 " 16/4 Log Run
Can cut 2 Cars 10/4, 12/4, 16/4 Log Run
Can cut 1 Car 8/4 Log Run
Can cut 1 Car 6/4 Log Run

ELM

10,426 ft. 4, 6, 10, 12/4 Log Run
6,230 " 8/4 Log Run, Green
5,820 " 4/4 Log Run, Green
2,500 " 2½", 3" Log Run, Green
3 Cars 10/4, 12/4 No. 2 Com. & Btr., Green

6/4 & 8/4 DOG BOARDS

11,000 ft. mostly 6/4 Cypress
14,142 " mostly 8/4, 10/4 Cypress
12,486 " mostly 6/4, 8/4 Gum
14,292 " mostly 6/4, 8/4 Oak

PECAN

5,724 ft. 8/4 No. 3 Common

SOUND WORMY CHESTNUT

1 Car 8/4 No. 2 Com. & Btr.

ABERDEEN LUMBER COMPANY, Pittsburgh, Pa.

Tennessee Aromatic Red Cedar

STRAIGHT CARS OR MIXED WITH HARDWOODS

Quartered Sap Gum

4 cars 4/4" Common & Better
3 " 6/4" Common & Better

Plain Sap Gum

3 cars 4/4" 1st and 2d, 13/17" w.
10 " 4/4" No. 2 Common
5 " 4/4" No. 3 Common
5 " 4/4" No. 2 & 3 Common
2 " 6/4" Common & Better
1 " 6/4" No. 1 Common
10 " 6/4" No. 2 Common
5 " 6/4" No. 2 & 3 Common
5 " 6/4" No. 3 Common
1 " 4/4" 9/12" Box Boards

Plain Red Gum

3 cars 4/4" 1st and 2nd
3 " 4/4" No. 1 Common
2 " 4/4" No. 2 Common
1 " 6/4" No. 2 Com. & Btr.
1 " 8/4" No. 2 Com. & Btr.
2 " 8/4 No. 3 Common

Quartered Red Gum

2 cars 4/4" 1st and 2nd.
2 " 4/4" No. 1 Common
2 " 6/4" Common & Better
2 " 6/4" No. 2 Com. & Btr.
1 " 8/4" 1st and 2nd
1 " 8/4" No. 1 Common

Red Gum Figured Wood

2 cars 4/4" Com. & Btr. Plain
2 " 4/4" 1st and 2nd—Qtd.
2 " 4/4" No. 1 Common Qtd.
1 " 8/4" Com. & Btr. Qtd.
1 " 10/12/4 Com. & Btr. Qtd.

Plain Red Oak

2 cars 4/4" Common & Better
3 " 4/4" No. 1 Common
1 " 6/4" No. 2 Com. & Btr.

Quartered Red Oak

1 car 4/4" No. 1 & 2 Common

Plain White Oak

2 cars 4/4" 1st & 2nd
5 " 4/4" No. 1 Com. & Btr.
5 " 4/4" No. 2 Common

Quartered White Oak

1 car 4/4" Common & Better
1 " 4/4" No. 1 & 2 Common
1 " 4/4" 2" to 5½" Clear Strips Snd.

Miscellaneous

5 cars 4/4" No. 3 Com. Mixed Oak
1 " 8/4 & 10/4 No. 3 Com. & Btr. Mixed Oak
1 " 4/4" L. R. Pl. Black Gum
1 " 4/4" L. R. Qtd. Black Gum
1 " 8/4" L. R. Elm
1 " 10/4" L. R. Elm
2 " 6/4" No. 3 Common Elm
1 " 8/4" No. 3 Common Elm
1 " 10/4" No. 3 Common Elm
1 " 4/4, 5/4 & 6/4 No. 3 Com. Ash
1 " Shop & Better Cypress

St. Francis Basin Hardwoods

GEO. C. BROWN & COMPANY

Mills — PROCTOR, Ark., COSGROVE, Ark., GRENADA, Miss.

Main Office — MEMPHIS, Tenn.

Canadian Representative: M. E. Cummings, 814 Richmond Ave., Buffalo, N. Y.

Specialists in Oak Poplar and Gum

Our Own Stock—Ready for Prompt Shipment

POPLAR

14M	5/8	No. 1 and 2 Com.
11M	4/4	Panels
19M	4/4	Box Boards, 9-12"
15M	4/4	FAS
34M	4/4	Saps and Selects
61M	4/4	No. 1 Com.
30M	4/4	No. 2 Com.
4M	6/4	No. 1 and 2 Common
94M	8/4	FAS—rift sawn
79M	8/4	No. 1 Com.—rift sawn

PLAIN RED GUM

24M	3/4	Common and Better
15M	4/4	FAS
145M	4/4	No. 1 Common
84M	4/4	No. 2 Common
5M	6/4	No. 2 Common
28M	8/4	FAS
19M	8/4	No. 1 Common
2M	8/4	No. 2 Common
1M	12/4	Common and Better
4M	16/4	Common and Better

QUARTERED WHITE OAK

2M	3/4	No. 1 Common
18M	4/4	FAS, 10" and up
82M	4/4	FAS, reg.

QUARTERED WHITE OAK (Continued)

150M	4/4	No. 1 Common
30M	4/4	No. 2 Common
31M	4/4	Clear Strips, 4-5½"
7M	4/4	Clear Strips, 3-3½"
4M	4/4	Clear Strips, 1½-2½"
11M	4/4	No. 1 Com. Strips, 1½-3"
15M	5/4	FAS
24M	5/4	No. 1 Common
3M	5/4	No. 2 Common
1M	6/4	FAS

PLAIN WHITE OAK

18M	4/4	FAS
40M	4/4	No. 1 Common
24M	4/4	No. 2 Common
35M	4/4	Sound Wormy
2M	12/4	Common and Better

QUARTERED RED OAK

31M	4/4	FAS
95M	4/4	No. 1 Common
2M	5/4	Common and Better
2M	6/4	Common and Better

QUARTERED RED GUM

6M	4/4	No. 1 Common
4M	5/4	Common and Better
12M	8/4	Common and Better

QUARTERED RED GUM (Sap No Defect)

15M	6/4	Common and Better
35M	8/4	Common and Better

PLAIN RED GUM

26M	4/4	No. 1 Common
13M	4/4	No. 2 Common
5M	6/4	No. 1 Common

SAP GUM

4M	4/4	Box Boards, 13-17"
19M	4/4	Box Boards, 9-12"
5M	4/4	FAS, 12" and up
21M	4/4	FAS, 6-12"
22M	4/4	No. 2 Common
34M	6/4	No. 1 Common

COTTONWOOD

11M	4/4	Box Boards, 9-12"
6M	4/4	FAS
26M	4/4	No. 2 Com.

MEMPHIS BANDMILL COMPANY - Memphis, Tenn.

Boland Lumber Company

Murray Bldg., Grand Rapids, Mich.

Manufacturers Northern and Southern Hardwoods

Northern Woods:

Ash, Basswood, Beech, Birch, Hard Maple, Quartered Maple, White Maple, Soft Maple, Soft Elm, Rock Elm.

Southern Woods:

Cherry, Chestnut, Cottonwood, Cypress, Gum, Hickory, Magnolia, Oak, Poplar, Sycamore, Walnut, Willow.

Please send us your inquiries and it will be a pleasure to quote you and describe our stocks

Band Mill and Yards, Memphis Plant.

Subject to prior sale, wire acceptance, prompt shipment, and change without notice, we are pleased to offer the following stock F. O. B. cars Memphis, Tenn.

ASH

20M 5/4 Common and Better
15M 6/4 Common and Better
14M 10/4 No. 2 Com. and Btr.
200' 5 and 6 Com. and Btr.
15M 5/4 No. 2 Common
50M 6/4 No. 2 Common
5M 5/4 No. 3 Common
15M 6/4 No. 3 Common

COTTONWOOD

15M 4/4 No. 1, 2 and 3 Com.

CYPRESS

4M 4/4 FAS
15M 6/4 FAS
13M 4/4 Select
13M 6/4 Select
12M 6/4 Shop
15M 4/4 Common
20M 6/4 Common
4M 4/4 Pecky
15M 4 x 6 Pecky

ELM

12M 4/4 Log Run
4M 6/4 Log Run
50M 10/4 Log Run
50M 12/4 Log Run
6M 6/4 No. 2 and 3 Common
4M 8/4 No. 2 Common
30M 8/4 No. 3 Common

QRT'D RED GUM

600' 5/4 FAS
5M 6/4 Common and Better
50M 8/4 Common and Better
14M 10/4 No. 1 Common
6M 12/4 No. 1 Com.

PLAIN RED GUM

10M 4/4 FAS
3M 6/4 FAS
15M 6/4 No. 1 Common
3M 6/4 No. 2 Common
6M 6/4 No. 2 and 3 Com.
30M 8/4 No. 2 and 3 Com.

QRT'D. RED GUM
(SAP NO DEFECT)

30M 8/4 Common and Better
10M 6/4 No. 1 Common
6M 12/4 No. 2 Common
4M 10/4 No. 3 Common

SOUND WORMY OAK

75M 6/4

PLAIN SAP GUM

4M 13-17" Box Boards
50M 4/4 No. 1 Common
50M 6/4 No. 1 Common
200M 4/4 No. 2 Common
60M 6/4 No. 2 Common
5M 10/4 No. 2 Common
2M 8/4 No. 2 Common
60M 4/4 No. 3 Common
30M 5/4 No. 3 Common
5M 6/4 No. 3 Common
28M 8/4 No. 3 Common
9M 12/4 No. 3 Common

TUPELO GUM

250M 4/4 Common and Better

HACKBERRY

4M 4/4 Log Run

QRT'D WHITE OAK

15M 4/4 FAS
30M 5/4 FAS
200M 4/4 No. 1 Common
100M 5/4 No. 1 Common
15M 6/4 No. 1 Common
15M 8/4 No. 1 Common
1M 10/4 No. 1 Common
7M 6/4 No. 2 Common
3M 8/4 No. 2 Common
9M 4/4 No. 3 Common
1M 5/4 No. 3 Common

PLAIN WHITE OAK

7M 4/4 FAS
40M 10/4 Common and Better
30M 5/4 No. 1 Common
5M 6/4 No. 1 Common
4M 8/4 No. 1 Common
12M 6/4 No. 2 Common

QUARTERED RED OAK

50M 4/4 FAS
15M 5/4 FAS
1M 6/4 FAS
100M 4/4 No. 1 and 2
30M 5/4 No. 1 Common
10M 6/4 No. 1 Common

PLAIN RED OAK

15M 4/4 FAS
4M 5/4 FAS
200M 6/4 Common and Better
50M 10/4 Common and Better
50M 12/4 Common and Better
15M 5/4 No. 1 Common
30M 8/4 No. 1 Common
12M 5/4 No. 2 Common
80M 6/4 No. 2 and 3 Common
100M 4/4 No. 3 Common

"DIRECT FROM PRODUCER TO CONSUMER"

GAYOSO LUMBER COMPANY

MEMPHIS, TENNESSEE

Reese Sheriff Lumber Co.

WILLIAMSPORT, PENNSYLVANIA

Manufacturers of

Northern and Southern Hardwoods White Pine, Spruce and Hemlock

With special attention to **Oak, Chestnut, Poplar, Cherry, Walnut, Gum and Basswood.**

OUR MOTTO

REASONABLE PRICES—that you can afford to pay.
EFFICIENT SERVICE — that you have a right to expect
FAIR TREATMENT — that you can depend on getting

We would appreciate an opportunity of furnishing a portion of your lumber requirements.

RED GUM

"AMERICA'S FINEST CABINET WOOD"

The really successful merchant, it matters not in what line, is he who takes the trouble to ascertain

WHAT THE PUBLIC WANTS

This is especially true in its application to the furniture manufacturer and his retailer. He *has to* study his public—or he soon will have no public.

That portion of his public which is influenced by the principles of good taste wants RED GUM furniture—Why? Because the color, grain and soft, velvety quality of this, the finest of America's cabinet woods, when handled by a master cabinet-maker, results in a thoroughly charming piece of furniture—the kind that people of nice discrimination like to have around—and want strongly enough to *ask for*. Then can YOU supply it?

Makers and dealers desiring to see samples of RED GUM, both rough and finished, are invited to correspond with us at once.

ADDRESS: RED GUM DIVISION

AMERICAN HARDWOOD MANUFACTURERS' ASSOCIATION

1314 Bank of Commerce Bldg., Memphis, Tennessee

I offer the following West Virginia stock for immediate shipment:

100,000 Ft. 4/4 Sound Wormy Chestnut.
100,000 " 5/4 " " "
75,000 " 6/4 " " "
70,000 " 8/4 " " "

No. 1 Common and Better Chestnut

100,000 Ft. 4/4
100,000 " 6/4
100,000 " 8/4 60% 14 and 16 feet long, 50 to 60% 10" and wider.
15,000 " 4/4 FAS Plain White Oak.
75,000 " 4/4 No. 1 Com. Pln. Wh. Oak.
100,000 " 6/4 No. 1 Com. Pln. Wh. Oak.

I have also a car of 4/4 No. 1 C & B Tennessee Red Cedar in transit.

I can make immediate shipment of Crating Lumber, Excelsior and Wood Wool.

Write, Wire or Phone for Prices.

PERCY E. HEENEY
202 Weber Chambers, KITCHENER, ONT.

H. W. Darby Hardwood Lumber Company

Manufacturers of

Hardwood Lumber

Red and Sap Gum a Specialty

Gum, Oak, Tupelo, Poplar
Ash, Elm, Cypress

Rooms 1531-33 Bank of Commerce & Trust Bldg
MEMPHIS, TENN.

Mills at:
Sidon, Miss Money, Miss.
Greenwood Miss.

& YET AGAIN

here's proof that we are not only PULLING FOR GOOD OLD

OAK

but also *for those WHO SELL IT—*

IS THIS YOU?

Month by month we are working on the CONSUMER (*Your Customer*) for a big, strong "COME-BACK" **of OAK!**

Watch us!

Does your line meet the issue? If not, it can by next season.

STILL ANOTHER OAK FURNITURE ADV. APPEARING IN THE BEST MAGAZINES IN AMERICA.

OAK, as a CABINET WOOD, is serene in its conscious superiority.

Responsive alike to the best skill of the artisan and the artist, OAK combines all the qualities which contribute most to a home whose FURNITURE must (because of the little folks) at the same time impart ideas of beauty, dignity, poise and permanence—and good-naturedly repel the onslaughts of buoyant youth.

no finer heirloom than good OAK furniture."

...fe and enduring investment—none bet...

American Hardwood Mfrs' Assn.
Let Us Consult Together for the Good of All Concerned. Write Us. We'll Answer.
Oak Division
ROOM 1408, 14 MAIN STREET, MEMPHIS, TENNESSEE

Iowa Walnut

for

Dining Room Furniture

No cabinet wood responds so fully to the art of the furniture designer or the skill of the workman as Black Walnut. It meets every requirement.

Dining room furniture of walnut possesses a lasting charm and beauty that age does not destroy, and a liberal use of this wood in furniture factories guarantees the quality of their product.

The cost of walnut is moderate. In view of existing conditions it is the most economical cabinet wood now on the market.

We will appreciate a list of your requirements of walnut lumber and veneers.

Des Moines Sawmill Company

DES MOINES, IOWA

"Hartzell" Lumber and Veneers "Hartzell"

American Walnut Exclusively

"Hartzell's Choice Walnut"

Furniture manufacturers will do well to note that we produce only American Walnut, and therefore can be classed as the logical source of supply in this wood, and our years of experience in handling American Walnut will prove valuable to you if you desire to take advantage of it.

By saying that our long experience will prove advantageous to you we mean that you should by all means take time to examine our line before purchasing, because the quality will be far superior to the average line and the price no greater.

We study your particular interests and produce veneer of the kind and quality that is best adapted to your work, and whatever class of figure you are using we can give you a complete uniform line of just the wood you want for your selection, and it will not be necessary for you to handle a great lot of all sorts of samples and then find only a few stocks suitable for your needs.

When you purchase our line you can rest assured that you can duplicate your purchase just as near as it is possible to do so in Veneers, that is our part in serving you and we see to it that you are served right.

"SEND YOUR INQUIRIES FOR VENEERS TO US."

"Hartzell" Piqua, Ohio "Hartzell"

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

WHITE ASH

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	22,000	3,800	60,000	95,000
1¼ in.	78,000	5,500	108,000	35,000
1½ in.	26,900	1,200	10,000	36,000
2 in.	85,300	500	19,000	58,000
2½ in.	50,500	.....	10,000	5,500
3 in.	59,500	.....	15,500	7,500
4 in.	500	.....	1,000	500

BUTTERNUT

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	12,300	35,800	23,600	.....
2 in.	8,400	17,000	10,000	.....
2½ in.	3,000	3,000	.....	.....

CHERRY

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	13,500	210,200	94,500	62,000
1¼ in.	11,500	9,600	18,500	41,900
1½ in.	22,000	20,700	78,300	36,000
2 in.	4,100	22,200	31,900	5,500
2½ in.	4,500	2,100	1,200	.....
3 in.	20,700	2,500	2,300	.....
4 in.	9,900	.....	.....	.....

CHESTNUT

	1 & 2	Clear Strips	No. 1 Com.	S.W.& No. 2 Com.
¾ in.	.....	.....	.....	.....
1 in.	15,900	1,500	49,300	180,500
1¼ in.	149,800	1,800	68,200	125,200
1½ in.	116,500	.....	86,000	29,000
2 in.	33,200	.....	54,300	91,200
2½ in.	4,000	.....	1,150	500
3 in.	2,800	.....	1,300	500
4 in.	1,500	.....	300	.....

PLAIN RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
⅜ in.	30,200	.....	.....	.....
¾ in.	43,000	.....	30,400	20,200
⅝ in.	2,500	.....	87,000	53,600
1 in.	193,200	.....	38,000	73,400
1¼ in.	94,700	2,400	4,000	1,200
1½ in.	157,900	4,300	39,200	40,000
2 in.	83,100	.....	92,800	20,000
2½ in.	61,100	.....	10,000	2,100
3 in.	28,800	.....	14,500	11,000
4 in.	16,600	.....	8,900	.....

PLAIN WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
⅜ in.	1,000	.....	.....	.....
½ in.	.....	.....	.....	.....
⅝ in.	25,150	.....	2,000	16,900
¾ in.	37,900	.....	95,000	6,000
1 in.	29,300	1,200	75,000	60,200
1¼ in.	73,300	.....	6,000	8,000
1½ in.	48,500	.....	21,000	9,000
2 in.	47,000	.....	80,000	50,000
2½ in.	166,800	.....	47,500	3,000
3 in.	75,800	.....	51,800	14,400
3½ in.	5,500	.....	3,000	1,500
4 in.	72,000	.....	18,500	2,000

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	300	.....	3,700	200
1 in.	20,200	2,300	500	.....
1¼ in.	2,000	.....	.....	.....
1½ in.	150	.....	500	.....
2 in.	1,000	.....	7,400	.....

QUARTERED WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
½ in.	5,500	.....	.....	.....
¾ in.	18,500	.....	44,600	9,000
⅝ in.	5,800	.....	6,500	.....
1 in.	41,400	9,000	22,400	17,000
1¼ in.	6,000	.....	400	1,300
1½ in.	9,500	.....	8,000	.....
2 in.	31,500	.....	25,100	4,700
2½ in.	1,000	.....	.....	.....

POPLAR

	1 & 2 18" & up	1 & 2 13" & up	Box Boards	Bright Saps
⅝ in.	.....	17,600	.....	.....
1 in.	.....	45,000	4,600	11,200
1¼ in.	2,800	9,300	.....	2,000
1½ in.	4,300	.....	.....	9,000
2 in.	.....	13,600	.....	1,000
2½ in.	.....	44,800	.....	11,000
3 in.	.....	27,900	.....	20,600
4 in.	.....	6,000	.....	7,300

POPLAR (Continued)

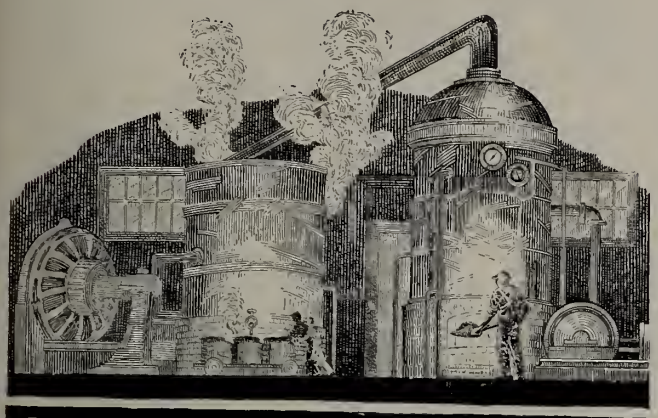
	Stained Saps	No. 1 Com.	No. 2 Com.	No. 3 Com.
⅝ in.	10,800	22,300	2,600	.....
1 in.	40,600	160,900	171,000	40,000
1¼ in.	7,600	23,600	8,000	.....
1½ in.	6,700	41,000	9,500	4,000
2 in.	4,000	118,500	27,500	.....
2½ in.	3,700	2,000	500	500
3 in.	1,500	21,000	47,000	10,000
4 in.	700	17,750	5,000	.....

Also Large Stock of BEECH, BIRCH and MAPLE

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY



The Canadian Wood Turpentine – made at our mills at La Tuque, P.Q. is an excellent diluent and solvent and contains no free rosin ~

This Turpentine is made by an improved laboratory process from Canadian wood and its distinctive odor clearly indicates that it is a different product from that given by the older methods of distillation ~

Further information gladly furnished upon request

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Sales Office 56 St. Peter St.,
Quebec, P.Q.

HAVE you considered contracting for 1920 Hardwood requirements?

Edward Clark & Sons, Limited
807-9 Bank of Hamilton Bldg.
Toronto, - Ont.

Our dry kiln capacity has been increased to 1,000,000' per month; so there is no reason why you should suffer for the want of

Dry Hardwood Lumber

Write us about it

James E. Stark & Co., Inc.
MEMPHIS, TENN.

Canadian Hardwoods

Good Stocks, Right Goods,
Prompt Shipment

C. A. SPENCER, Limited
LUMBER MERCHANTS
Offices—500 McGill Building
MONTREAL - - Quebec

STEELE & HIBBARD LUMBER CO
St. Louis, Mo.

52 Years in Business

Five Million Feet Dry Hardwoods
25 Different Kinds,
QUICK SHIPMENT

F. Huntington Smith
Canadian Representative.

J. H. Bonner & Sons
Memphis, Tenn.
Mills:
Jonquil and Ruffwood, Ark.

Manufacturers

Band Sawn Hardwood Lumber

Write or wire for prices on

Gum, Oak, Elm, Etc.

Southern Hardwoods

Our mills now producing high grade stock, well manufactured, including

Poplar, Chestnut, Basswood Buckeye, Hickory Red and Sap Gum, Plain and Quartered Red and White Oak.

Agricultural and other special purpose stock, Oak Planking, Railway Material, Heavy Timbers, in fact almost anything in the line of Hardwood Lumber.

Buskirk-Rutledge Lumber Co.
Cincinnati, Ohio.

American Hardwood Lumber Co.
St. Louis, Mo.

Large stock of—

Dry Ash, Quartered Oak Plain Oak and Gum

Shipments from — NASHVILLE, Tenn.,
NEW ORLEANS, La., and BENTON, Ark.

Aromatic Tennessee Red Cedar

CAR LOAD LOTS
OR LESS

Earthman Lumber Co.
Murfreesboro, Tenn.

E. SONDHEIMER CO.

MEMPHIS, TENN., U.S.A.

Manufacturers and Exporters of

American Hardwoods

Specializing in RED GUM and SALIX

Dry Stock for Immediate Shipment

1 car 1" 1s and 2s Plain White Oak
1 " 1½" No. 1 Com. Pl. W. Oak
1 " 1" 1s & 2s Plain Red Oak
2 " 1¼ x 12" and up, 1s & 2s Plain Red Oak
2 " 1¼" No. 1 Com. Pl. Red Oak
1 " 1½" No. 1 Com. Pl. Red Oak
5 " 1" 1s & 2s Qrt. Red Oak
3 " 1" No. 1 Com. Qrt. Red Oak
2 " 1" No. 2 Com. Qrt. Red Oak
1 " 1¼" 1s & 2s Qrt. Red Oak
1 " 1" 1s & 2s Qrt. White Oak
1 " 1 x 10" & up Qrt. White Oak
3 " 1" No. 1 Com. Qrt. W. Oak
2 " 1" No. 2 Com. Qrt. W. Oak
3 " 1 x 12" & up 1s & 2s Pl. Red Gum
1 " 3/4" 1s and 2s Pl. Red Gum
1 " 3/4" No. 1 Com. Pl. Red Gum
2 " 4/4" 1s & 2s Pl. Red Gum
3 " 4/4" No. 1 Com. Pl. Red Gum
100,000 ft. 1" 1s & 2s Sap Gum
100,000 ft. 1" No. 1 Com. Sap Gum
1 car 2" 1s and 2s Soft Elm
200,000 ft. 1" No. 2 Com. & Btr. Salix
3 cars 1" No. 1 Com. & Btr. Qrt. Red Gum (Figured wood)

Also Pecan, Hickory, Sycamore, Black Gum, Poplar, Tupelo, Circassian Figured Red Gum

Distributing Yard and Sales Office
McLean & Chelsea Ave., Memphis, Tenn. U.S.A.
Cable Address: "Sonderco"

We have Four Band Mills:
Sondheimer, La., Tallulah, La.,
Ferriday, La., Baton Rouge, La.

Walnut Lumber with Mahogany

Straight or Mixed Cars

WALNUT VENEERS

Plain---Striped---Figured---Circassian Effect

Let Us Know Your Requirements

The Kosse, Shoe & Schleyer Company

Eastern Branch
Baltimore, Md.

325 Powers Theater Bldg.,
Grand Rapids, Mich.

Main Office and Band Mill
Cincinnati, O.

Quality First-Service Always

The superiority of our lumber can only be determined by the use of our stocks.

We have the following thoroughly dry items on which we can make immediate shipment:—

ASH

1 car 4/4" No. 1 Common
1 " 6/4" No. 1 Com. and Btr.
2 " 10/4" No. 1 Com. and Btr.
2 " 12/4" No. 1 Com. and Btr.

PLAIN RED OAK

1 car 4/4" 1s and 2s

QUARTERED RED OAK

2 cars 4/4" No. 1 Common
1 " 5/4" No. 1 Com. and Btr.
1 " 6/4" No. 1 Com. and Btr.
2 " 4/4, 5/4, 6/4 & 8/4 L. R.

PLAIN WHITE OAK

1 car 8/4" No. 1 Com. and Btr.

QUARTERED WHITE OAK

5 cars 4/4" No. 1 Common
1 " 4/4" No. 1 Com. 10" & up
3 " 4/4" 1s and 2s
1 " 5/8" No. 1 Com. and Btr.
2 " 4/4" No. 1 Com. Strips

POPLAR

1 car 4/4" 1s and 2s SND.
2 " 4/4" No. 1 Common
2 " 4/4" No. 2-A Common
1 " 5/4, 6/4 & 8/4" No. 2-A C.

ELM

1 car 6/4" No. 2 Com. and Btr.
2 " 8/4" No. 2 Com. and Btr.
1 " 12/4" No. 2 Com. and Btr.

MAPLE

1 car 6/4" No. 2 Com. and Btr.
1 " 8/4" No. 2 Com. and Btr.
1 " 12/4" No. 2 Com. and Btr.

BEECH

2 cars 8/4" No. 2 C. & B. Green

HICKORY

1 car 8/4" No. 2 C. & B. Green

WALNUT

1 car 6/4" No. 2 Common

GUM

2 cars 8/4" No. 1 Com. and Btr. Quartered Red Gum, SND.
1 " 8/4" No. 1 Com. and Btr. Quartered Red Gum.
1 " 4/4" No. 1 Common Plain Red Gum.

J. V. Stimson & Co., Owensboro Ky.

Mercerau-Hawkins Tie Company

Huntington - W. Va.

Manufacturers and Wholesale Dealers

West Virginia and Southern

HARDWOODS

We specialize in

Oak Tie Siding
White and Red Oak
Yellow Poplar
Basswood
Chestnut and
Gum Lumber.

Canadian Sales in Charge of

C. W. PETERS

Vice President and Manager of Lumber Dept.

Bone Dry

Right now dry lumber is scarce. Here's a list of dry stock ready for prompt shipment. Remember there's 30 years' experience back of every board.

1 car 5/8 FAS Plain Red Oak.
1 car 5/8 No. 1 Com. Plain Red Oak.
10 cars 4/4 No. 2 Com. and Btr. Plain Red Oak.
1 car 5/4 FAS Plain Red Oak.
1 car 5/4 No. 1 Com. Plain Red Oak.
2 cars 6/4 FAS Plain Red Oak.
2 cars 6/4 No. 1 Com. Plain Red Oak.
1 car 8/4 FAS Plain Red Oak.
1 car 8/4 No. 1 Com. Plain Red Oak.
3 cars 10/4 FAS Plain Red Oak.
1 car 10/4 No. 1 Com. Plain Red Oak.

Write for our Complete List with Prices

North Vernon Lumber Co.

NORTH VERNON, IND.
LOUISVILLE, KY. DYERSBURG, TENN.
Every Board Branded "NVLCO." Quality Guaranteed

The Hyde Lumber Co.

Band Mills: LAKE PROVIDENCE LA.
Southern Office: MEMPHIS, TENN.
Bank of Commerce Bldg.
Northern Office: SOUTH BEND, IND.

MANUFACTURERS

Plain Red Gum
Quartered Red Gum
Plain Sap Gum
Quartered Sap Gum
Cottonwood, Cypress
Tupelo, Ash, Elm, Oak

CHARLES O. MAUS
Canadian Representative

American Walnut

Our large supply of well selected logs makes it possible to produce and maintain an abundant stock of high grade walnut lumber.

A part of our log supply being cared for in a pond of water.
The picture shows surface of pond.

All Grades and Thicknesses.
American Walnut Exclusively.

Pickrel Walnut Company

St. Louis, Missouri

GUM

Churchill-Milton Lumber Company

GUM

General and Sales Office: LOUISVILLE, KY. Mill: GREENWOOD, MISS.

Let us have your inquiries for—

Ash
Plain Oak
Quartered White Oak
Quartered Red Oak
Elm
Tupelo
Cottonwood

Plain Red
Quartered Red
Sap
Qtd. Red, Sap
No Defect

GUM

GUM

Our Specialty is DELTA GUM

F. T .DOOLEY, President. T. E. JONES, Secy.-Treas.

F. T. Dooley Lumber Co.

Inc.

MANUFACTURERS and WHOLESALERS of

SOUTHERN HARDWOODS

Plain and Quartered Oak
Cypress, Gum, Ash
Soft Maple and Elm

Send us your inquiries

Memphis ∴ ∴ Tennessee

Hardwoods

We can furnish you immediately Factory Stock including all grades and thicknesses of

Walnut, Chestnut
Mahogany, Teak, Oak
Ash, Cypress

ALSO

VENEERS

Oak, Maple, Walnut and other Fancy Woods

The McLennan Lumber Co.

Limited

MONTREAL

Felger Lumber and Timber Company

MANUFACTURERS AND WHOLESALERS

NORTHERN AND SOUTHERN HARDWOODS

Main Office:
GRAND RAPIDS
733 Mich. Trust Bldg.

Southern Office:
MEMPHIS, TENN.

Indiana

Quartered Red and White

OAK

1,000,000 feet of dry stock carried at all times

ALSO PLAIN OAK AND ASH

We manufacture all stock carriea

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
GEO. H. FOOTE, Vice-Pres. & Treas.
JOSEPH WALTMAN, Secretary

Mills at EVANSVILLE, Indiana

SPECIALS!

For Immediate Shipment

QUARTERED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.

PLAIN SAWED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.
5 " 1¼" Common.

QUARTER SAWED OAK

10 cars 1" No. 1 Com. and Btr., White.
10 " 1" No. 1 Com. and Btr., Red.

Thomas & Proetz Lumber Company

No. 3400 Hall St. St. Louis, Mo.

GUM

Sap Red Tupelo Black

Prompt Shipments any Time

Cypress Cottonwood Oak
Ash Elm Beech Sycamore
Crating Fir Spruce
Yellow Pine

INQUIRIES SOLICITED

Manufacturers & Wholesalers

Cornelius Lumber Co.

Home Office—Arcade Building, St. Louis, Md.
Northern Office—Lumber Exchange, Chicago, Ill.
Northwestern Office—St. Paul, Minn.
Southern Offices—Tupelo, Miss., Memphis, Tenn.
Saw Mills—Drew, Miss., Osmeek, La., Lake City, Ga.

ATTENTION:

"Auto Body and Furn. Manfgs."

We are one of the few firms in the country handling

White Ash Exclusively

We sort it to meet all requirements. **Tough** texture and **Medium** texture. Can furnish **Special Widths** and **Lengths** one to four inches thick. Write or wire when needing WHITE ASH.

THOMPSON, KATZ LUMBER CO.

Memphis, Tenn.

Cable Address "TomKats"

ASTORIA MAHOGANY

The Certainty of Promised Delivery

One of the most important elements in the service of this company is **the certainty of promised delivery**, which is largely assured by the fact that we are probably the largest complete organization in the country devoted to the production, manufacture and distribution of

Mahogany Lumber and Veneers

With the largest mill on the Atlantic and Gulf Seaboard, centrally located at Long Island City, New York, with half a mile of dock frontage and immediate accessibility to railroads, we enjoy unusual facilities both for the receipt of logs and for the shipment of lumber and veneers either by water route or rail.

Astoria Mahogany Co., Inc.
347 Madison Ave., New York
Successors to
Huddleston-Marsh Mahogan Co
Astoria Veneer Mills and Dock Co.
F. W. Kirch, Inc
Mills and Yards, Long Island City, New York
BRANCHES:
44 North Market Avenue, Grand Rapids, Mich.
2256 Lumber Street, Chicago, Ill.

OAK

Plain and Quartered
Uniform Color—Soft Texture

Poplar, Ash

and other

Hardwoods

We have 35,000,000 feet dry stock—all of our own manufacture, from our own timber grown in Eastern Kentucky

Prompt Shipments

The Mowbray & Robinson Co.
(INCORPORATED)
Manufacturers
Office: CINCINNATI, OHIO
MILLS
Quicksand, Ky.; Viper, Ky.; West Irvine, Ky.
Canadian Representative:
M. E. CUMMINGS, 814 Richmond Ave., Buffalo N. Y.

Yellow Poplar Lumber Co.

Manufacturers of Band Sawed

Poplar Plain Oak
Quartered Oak
Chestnut Basswood

Capacity, 50,000,000 per annum

SPECIALTY: Monogram Brand Oak Flooring

CANADIAN ENQUIRIES SOLICITED

COAL GROVE, OHIO, U. S. A.

3 Ply Fir Panels For Immediate Shipment

We offer the whole or part of 100,000 ft. 3 ply ¼" good one side and 3 ply ½" good two sides Fir panels in sizes 24 x 72 and 36 x 72. From Montreal stock.

LIGNUM VITAE LOGS

We have 200 Lignum VITAE LOGS 4 ft. and up by 6" to 10" diameter. WE WANT TO MOVE QUICKLY at a bargain price.

The

Wm. Rutherford & Sons Co., Ltd.

LUMBER AND MILLWORK

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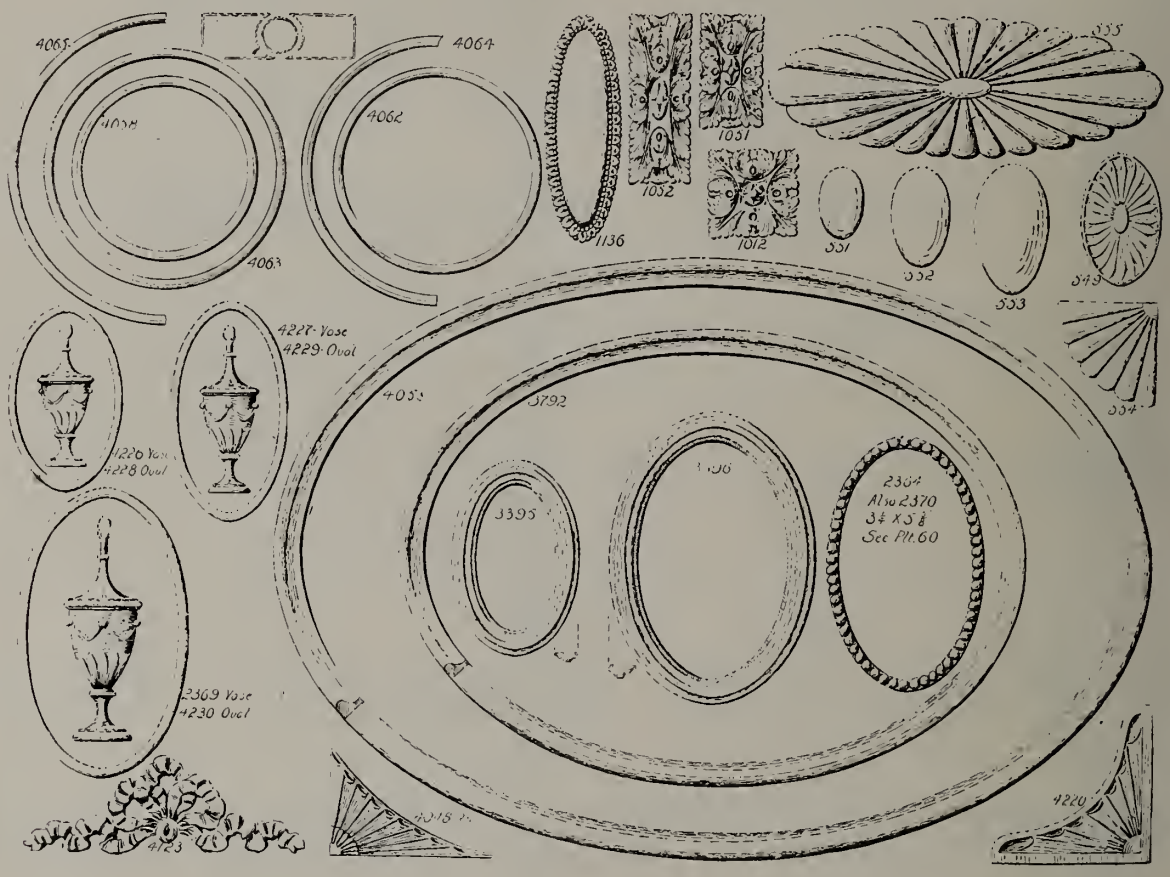

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Training the Factory Help

It is generally conceded that present conditions are abnormal, and that increased production is the panacea that will cure most of the economic troubles with which we are confronted. The demand for manufactured products is greater than the supply. The demand for skilled labor is also greater than the supply, and many employers do not recognize or have closed their eyes to this fact.

There may be many basic reasons for the world-wide demand for goods, yet the shortage of everyday necessities and the inadequate supply of capable mechanics are very closely related. In spite of this many manufacturers attempt to improve conditions in the production end while ignoring the fact that some effort should be made, at the same time, to improve the labor situation.

The output of a certain plant is to be increased. A large addition may be erected, new labor-saving equipment may be installed, the whole factory system reorganized, or other changes made that will further this plan. When all is in readiness the usual procedure is to go into the larbor market and make an effort to secure the required number of skilled workmen.

If the inducements offered and the working conditions are sufficiently attractive no doubt this effort will be successful and thus production will have been increased, but at the expense of some other plant or some other industry. The labor situation has not been improved. The available number of skilled employees has not been increased. What has occurred is that a certain number of trained hands have been induced to transfer their services from one employer to another. The furniture manufacturers have had this fact brought to their attention through the automotive and other industries taking their cabinetmakers and upholsterers.

It is possible that this may be one of the reasons underlying the restlessness that permeates the ranks of labor. Workmen who might have learned to settle down and stick to a worth-while position have found it easy to jump from one job to another. Their services are in demand and they think that they will have no trouble in securing employment wherever they go.

While lumberjacks should not, perhaps, be classed with skilled mechanics, the situation which is found in the camps this season will serve as an illustration. Practically all the logging camps are shorthanded, consequently every man who applies for work is taken on. The result is that the men are taking advantage of this demand for their services and are wandering from camp to camp, working anywhere from a day to a week or two in each place, then moving on. This movement has developed such proportions that the output of logs is being curtailed and operation costs are mounting. If the men were not sure of employment in the next camp they would hesitate before throwing down their tools.

Every manufacturer, whether woodworker or ironworker, should adopt the policy of training his own help. True, there are the technical schools; and they are doing a good work, one that merits the encouragement and active support of every employer of skilled workmen. The idea behind the technical classes is to make better citizens, rather than train mechanics for any particular factory. It is a case where each employer must as an individual do his part. The "let George do it" attitude will not avail. On the other hand, there is plenty of room for mutual understanding and co-operation.

In the woodworking plants a desirable course should consist of practical instruction in the care and operation of the different machines and other phases of the work as cabinet making, veneering, finishing, etc. Other subjects, such as the reading of drawings, the making and reading of rods, taking off stock lists and the simpler forms of shop arithmetic might profitably be covered. As a person can read a drawing with greater accuracy and speed if he is able to make a drawing, so a course in drafting, designing and sketching should be desirable.

This policy is being followed in many plants and the results achieved have been most gratifying. The efficiency of the different shops has been improved, with a consequent increase in production. In addition, it has been proven that intelligent, though inexperienced workmen, with proper assistance and training can become better producers than the average mechanic who is available in busy times, and who claims to be an expert workman.

Designing Built-in Buffets and Cabinets

Should Conform to General Style of Room—Utility of Article Should Never Be Lost Sight of—Space Saved When Let Into Wall—Attractive in Mission Style

By W. H. Shaw

There is a considerable difference of opinion as to the usefulness of sideboards or buffet. Some housekeepers consider them indispensable, while others look upon them as useless expensive ornaments. There is much to argue on both sides of the question, and the opinions of various ladies are usually based upon their own personal experience, rather than upon general information on the subject. Many sideboards are mere ornaments, having very little practical use, and costing a considerable amount of money. Sideboards, however, can be made both practical and ornamental. To make them mere ornaments, or mere cupboards to use as a china closet, is an easy matter, but to combine both beauty and usefulness, presents many difficult problems.

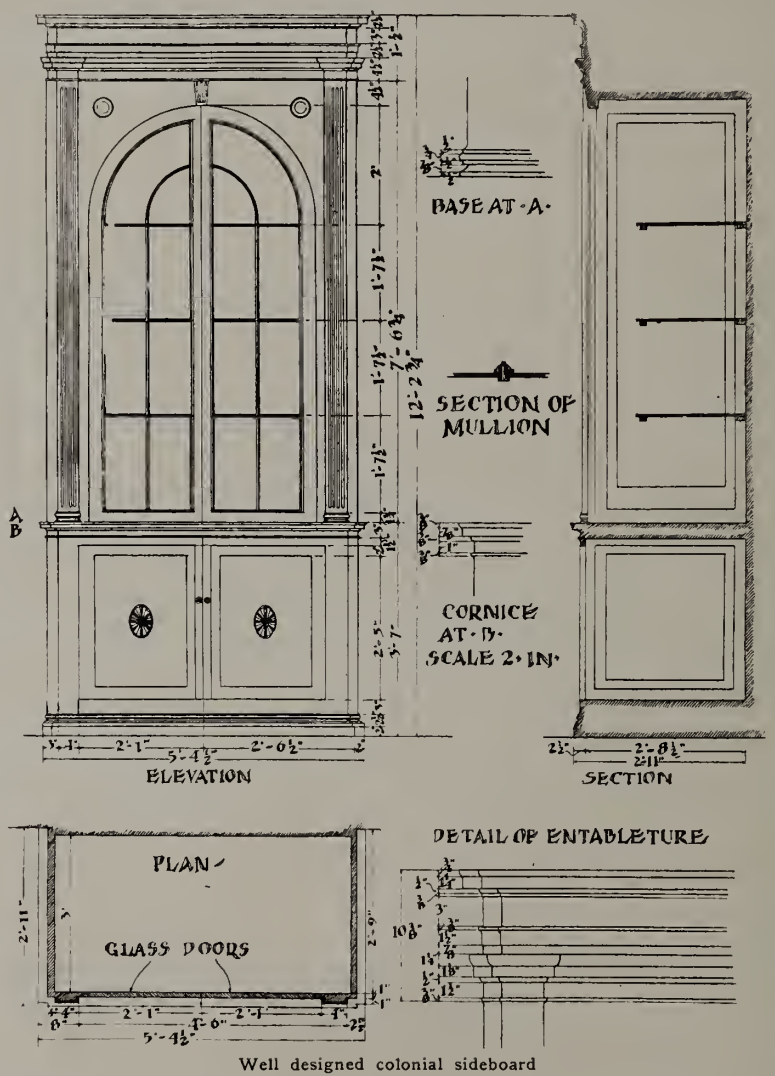
Consider Style of Room

In the designing of a sideboard or buffet, the very first consideration should be the style of the room. If it is a simple home having a plain stairway and fireplace, the sideboard should be made in keeping with the general style. For example, if the general style adopted throughout the house is colonial, a mission sideboard would not be in good taste. Neither would a colonial sideboard be proper for a mission interior. The size of the room in which the sideboard is to be built, should also be taken into consideration. Many an otherwise pretty dining room has been ruined through building in a large massive sideboard, which seems to predominate over the entire room, making the room look smaller than it really is.

To overcome this very fault, mirrors are used in sideboards to a large extent, to give the effect of distance, and here is the one place where a mirror is in good taste. This cannot be said when they are used on mantels over fireplaces.

Some builders and owners prefer instead of the sideboard being built into the house, to provide an alcove in the wall to permit a movable sideboard being used, and in many rented houses and apartments they are built of the same wood as the dining room trim, and although movable, are considered as a part of the permanent furniture of the apartment. In many cases the mission design is followed.

Although this mission furniture may seem simple to make, it requires considerable skill. However any carpenter, who is proficient in the use of his tools and is capable of applying to furniture making the knowledge he has of carpentry, can turn out some attractive and saleable pieces.



Well designed colonial sideboard

In the olden times the mortise and tenor joints were much in evidence, the tenons projecting through and being held with wedges. But now the term "mission furniture" is applied to almost any style of hand made work, although the builder of the early mission furnture would hardly recognize the pieces turned out today. Then oak lumber, which grows more and more beautiful with age, was nearly always used. Now all sorts of woods are used and usually are stained to represent oak.

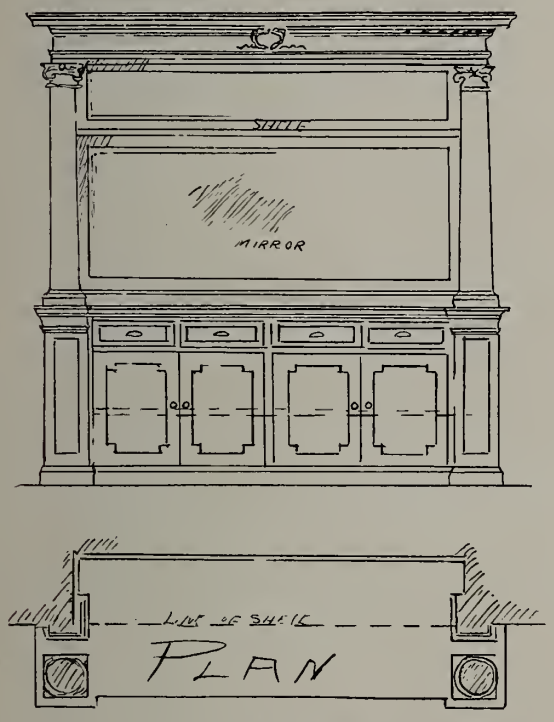
Space Saving Features

The built-in sideboard should be made to take up as little space in the dining room as possible, and for this reason it is a good plan when practicable, to build it into the wall, taking the space necessary for it off the ajoining kitchen or pantry, as the case may be. When this is done, it is often a convenient arrangement to have a little sliding door arranged in the back for passing dishes through, especially when there is no servant in the house. It saves many steps and sometimes accidents. These sliding doors should be pretty well concealed. To be entirely practical, the built-in sideboard should have one large open space in the center for the cut glass punch bowl or the silver service, with possibly a shelf or a row of small cupboards with glass doors above it for valued

pieces of china. In the lower part, there should be at least two shallow drawers subdivided with quarter inch partitions for knives, forks and several sizes of spoons. There should also be double cupboard doors with one or two long shelves behind on which to lay table cloths with as little folding as possible. These things are necessary for a well arranged sideboard. In addition, however, it is best to have several more drawers in which to keep table linen, etc.

Attractive Mission Style

Illustrations show several sizes and styles of sideboards and china cupboards. Some of these designs are distinctly mission and should only be used in the dining rooms which are otherwise in the mission style. In both of these designs the arrangement of having a row of small square cupboards at the top with dividing glass lights has been adopted. Place behind these small pieces of decorative china, and the effect is very pleasing. In one design the cupboards



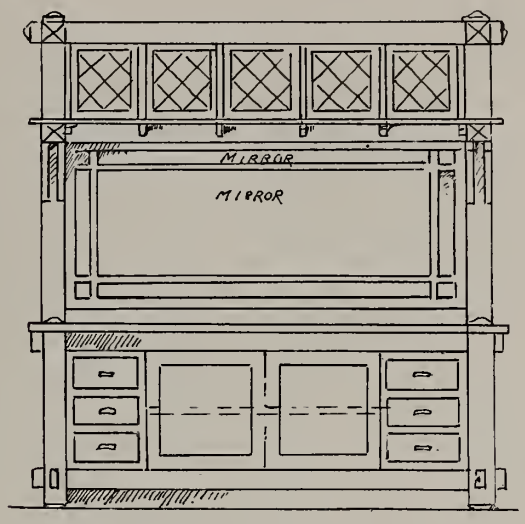
Massive design for large room

have been carried down both sides and in the rear of the center portion. An unusual effect is obtained by panelling off the mirror with narrow strips in front of it, giving a kind of garden fence effect.

Below the main counter shelf are six drawers and plenty of cupboard space. This fixture if stained or dark mission and placed in a suitable room, would be very attractive. It is not, however, a fixture suitable for a small room.

Well Designed Colonial Sideboard

One of the simplest, but at the same time, most attractive designs of those submitted in the line of drawings is that of the colonial sideboard, having a cornice supported by two small Ionic columns, which are set upon pedestals. This fixture is drawn, as shown by the plan, to be set partly into the wall and



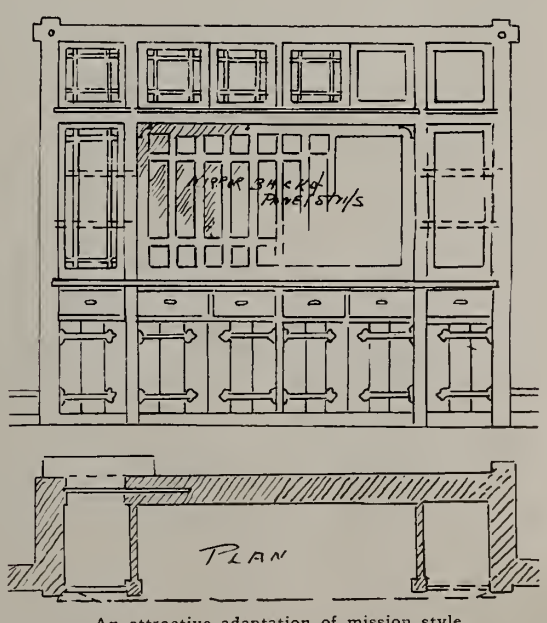
Mission style built-in buffet

partly into the room. In this manner good depth is obtained. Right here that point should be emphasized. Never build a built-in sideboard of shallow depth. It not only fails to look well, giving a cramped appearance, but in addition it is very annoying as little use can be made of it.

The Colonial fixture shown would look very well in mahogany or birch, stained dark. If the dining room were finished either in mahogany or white enamel, this sideboard would harmonize. There is nothing fussy about it. It is perfectly simple and therefore calls for little description; but it is probably the best appearing sideboard in this collection, being practical as well as ornamental.

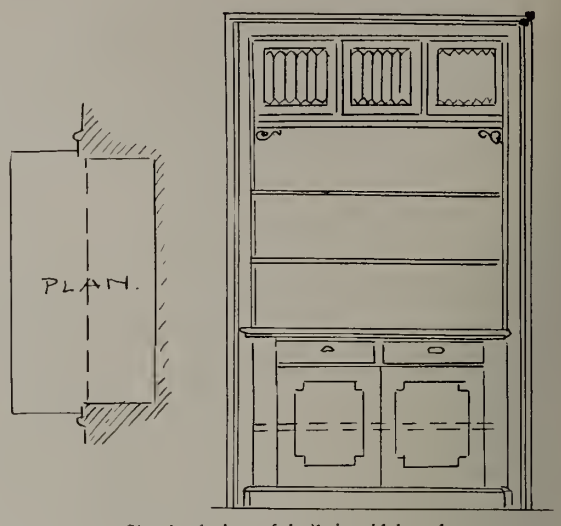
Size Conforms to Room

The dimensions of sideboards vary considerably. There is nothing about them that calls for any fixed rules. They look the best however if kept on a line at the top with the top line of the window casing, and



An attractive adaptation of mission style

Plain built-in sideboard for small cottage



Simple design of built-in sideboard

if there is a plate rail in the room, it is best to have it line up with some part of the sideboard. Also if there is a wainscoting or panelling in the dining room, it looks best to have that line up with the main counter shelf of the sideboard, which should be, under most conditions, about table height from the floor or 30 to 32 inches. The width of the sideboard can vary according to its design and the size of the room.

One very simple sideboard is shown and for a simple little cottage home it has much to merit attention. The general effect is that of a cased opening, a casing has been carried around it in the same manner as a rounded door with the upper part of the sideboard built into the wall and the lower part projecting into the room about one foot. In the upper part is a row of cupboards with leaded glass lights, separated by brackets. Two shelves are shown between them and the counter shelf, but the lower one may be omitted if desired.

Preparation of Stock for Bending

To render wood pliable, both moisture and heat are required. Neither of these factors is fully effective in the absence of the other. There should be moisture enough, experiments at the Forest Products Laboratory indicate, to saturate the cell walls, which amount is equivalent ordinarily to a moisture content of 20 to 30 per cent. No better effect is noticed where there is additional water in the pores or open spaces of the wood. The pliability of wood apparently increases quite rapidly with increase of temperature. Very high temperatures, such as accompanying steam under pressure, however, are not advisable, since they render the wood brash; in fact, boiling for any length of time permanently reduces the strength and toughness of wood to small fractions of their normal values.

Freshly cut stock is, of course, thoroughly saturated and needs no additional moisture. Only heat is required to produce flexibility. If the stock has dried for a long time, it will have a uniformly low moisture content throughout, probably about 12 to 15 per cent. Such material requires the addition of a considerable amount of moisture before it is in proper condition for bending. If the stock has dried for a shorter period, the interior part may be at a high moisture content while the exterior surfaces are quite dry. Such stock needs the addition of sufficient moisture to bring each part of it up to about 25 per cent.

Condensation of the steam may not furnish sufficient water if the stock is very dry; in this case the addition of a hot-water spray to play on the stock in the steam box would be advantageous. Admission of the steam through water will insure its being thoroughly wet.

During steaming, the stock should be so piled that steam has access to all sides of each stick.

The following is an extract from an interesting letter recently received at the Forest Products Laboratory from a chair manufacturer, regarding the preparation of stock for bending in a hot press: "We use a horizontal retort for steaming our wood before bending. We previously had been using fairly green lumber with a high moisture content steaming it with live steam about 30 to 40 minutes at 5 lbs. and 10 lbs. pressure and then bending. Our breakage averaged around 15 per cent. on lumber about 11/16 inch thick. Recently we experimented along the lines of filling the lower part of the retort with water, through which the steam had to pass, and raising our grates to keep the material out of the water. We found by experiment that we got the best results by this method and by carrying no pressure on the inside of the retort and steaming about 4 hours before bending. In this way, on lumber "bending dry", we reduced our breaking to about 5 per cent. We have just bent some ¾ in. mahogany (Cuban) over two years old in this way, with about 10 per cent breakage."

Another manufacturer states that in the hot-plate bending of red gum chair posts, he has recently improved his output by spraying the stock with hot water while in the steam box.

Don't try to wipe or oil machines while in motion; stop the machine first. It's safer.

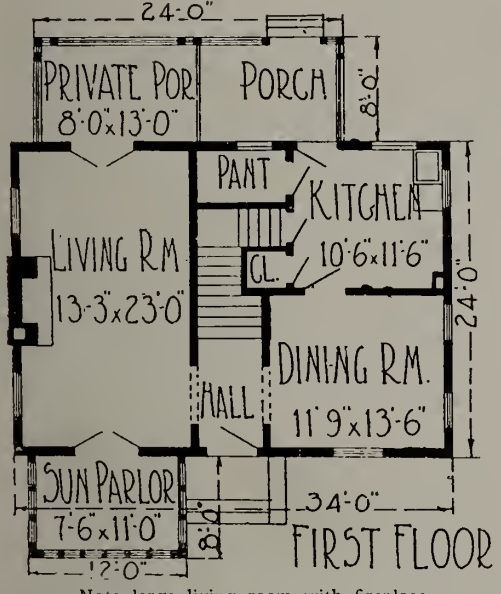
The modern A.B.C. for the whole community, "Always Be Careful."

Attractive Design for a Comfortable Home

Six Roomed House Built for Comfort and Convenience—Sun Parlor and Sleeping Porch Desirable Features—Designed for Economical Construction

The plans which have been published in recent issues of this journal were of houses that, while giving a maximum of comfort and convenience, could be built for a minimum outlay. This month we illustrate a house that is larger, more pretentious and that would cost more money to erect.

The accompanying prospective shows a very attractive design for a six room house with sun parlor



Note large living room with fireplace

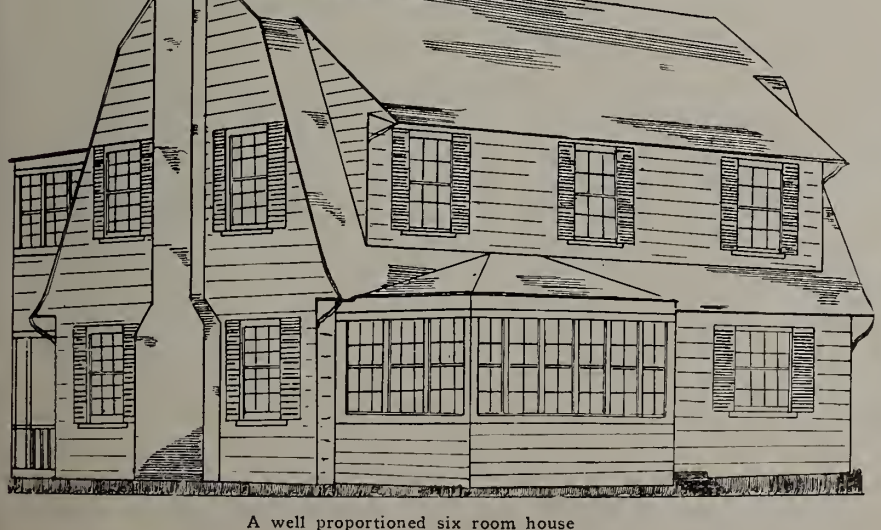
and sleeping porch. The large living room with its grate, sun parlor and porch and the equally large bed room above should prove particularly attractive to the lady of the house.

The rooms are well laid off with a minimum amount of space devoted to halls. The pantry off the kitchen could be fitted up as a breakfast alcove if desired. Having the living and dining rooms separated by the hall is desirable as it gives greater privacy to the latter room. A plentiful supply of closet room is provided for, the bedrooms being especially fortunate in this respect. The entrance, which does not appear on the drawing is beside the sun parlor.

The gambrel roof type of house with a large dormer, such as this, is very economical to build. The front and real walls of bedrooms are practically formed by the roof. The large number of windows provided, each room having two or more, not only enhance the appearance of the house but make it bright and cheery inside. The shutters while not essential certainly add to the appearance and should if possible be included.

The cost of constructing a house like this, not including plumbing, heating and excavating would figure out to about $9,000. This figure would be influenced by locality, freight and local conditions. If the sun parlor and porches were omitted, the cost would be lowered but the utility, comfort and desirability would be correspondently lessened. The estimated figure of nine thousand provides for good solid construction and includes labor, lumber, lath, shingles, No. 1 fir finish, edge grain flooring, plaster, cement, etc., windows and doors, storm windows and doors, screen windows and doors, fittings, paint and other items required to complete the house.

The first permanent wooden house under the new building scheme was completed and occupied near Norwich, England. The house was erected by a Norwich firm which has converted its aircraft factory into a workshop for making standardized sections for these houses. The manufacturers state that they will be able to turn out similar houses at the rate of 50 per week. The total cost, providing for six rooms, is about $3,275 (at normal exchange) and such houses may be completely erected within one month.



A well proportioned six room house

Layout of second floor

Motion Pictures of Furniture Industry

Furniture Manufacturers Discuss Publicity Campaign—Business Profit Tax Considered—Interesting Report of Buffalo Meeting—XL Plates Unobtainable

A special meeting of the Furniture Manufacturers' Association was held in Toronto on Wednesday, March 10. This called for the purpose of discussing the Business Profits War Tax Act and the question of a publicity campaign, including the employment of motion pictures and also to hear the report of the representative who attended the meeting of the National Association of Upholstered Furniture Manufacturers, which was held recently in Buffalo, N. Y. The number of members in attendance was most gratifying and a very interesting and instructive discussion ensued.

It was decided to form a Publicity Committee consisting of two sections, one to consider the question of the general advertising of furniture made in Canada and the other to obtain full particulars regarding educational motion picture films, portraying the making of furniture from the tree to the finished article. G. W. Gibbard, of the Gibbard Furniture Co., Limited, Napanee, Ont., was elected chairman of this committee.

Make Home More Attractive

The opinion was expressed that it was most important that Canadians in both rural and urban centres should feel a special attachment for their homes, as any nation, the citizens of which are homelovers, is bound to be prosperous, as well as contented and happy. Besides it was felt that if rural home life were made more desirable through the medium of an attractively-furnished homes, there would be greater joy in the family and farm life would have a stronger appeal.

The Business Profits War Tax Act was discussed and the opinion was expressed that in a general way it checked enterprise, in many cases taking away from industry money that was urgently needed for its expansion. In that way the Act was detrimental to the business growth of Canada. If this war tax were withdrawn it would lead to an expansion of business and increased revenue for the Government through the operation of a general income tax. A motion to this effect was unanimously carried and will be forwarded to the proper authorities.

Studying Labor Conditions

Jas. E. Ferguson, who had attended the meeting of the National Association of Upholstered Furniture Manufacturers, held recently in Buffalo, stated that the labor situation there was much the same as in Canada and that Professor Elliot, who addressed the meeting in Buffalo, stated that the general public was tired of strikes and that he looked forward to their gradual abolition because employers of labor and the workmen were getting closer together and also because no section of the community were studying labor conditions as much as the employers themselves. Manufacturers have awakened to the fact that they must introduce conditions which will be both favorable to labor and themselves. This opinion was endorsed by the Canadian furniture manufacturers who have been one of the first groups of employers in Canada to co-operate in every legitimate way for the betterment of their employees, with marked success, and they realize and have acted on the principle that industrial problems and labor conditions must be studied and dealt with by each individual plant.

Mirror Plate Situation Serious

Reports from all factories show large advances in lumber, finishing materials, upholstery coverings, and labor. The mirror situation is even more serious as not only have prices advanced enormously but plate glass is very difficult to obtain and there is practically no X.L. mirror plate obtainable. This was used in all the cheaper cases and means that British plate prices will have to be paid instead of X.L. for all qualities.

As an instance of how prices have advanced. During the last twelve months quartered cut oak has risen from $110.00 per thousand feet to $400.00 per thouand. Native hardwoods have doubled in prices in the last six months. These advances have been caused by domestic and foreign demands, which continue to be heavy. In 1914 turpentine was 54c per gallon, it is now $3.35 and shellac that was 18c per pound is now $2.25.

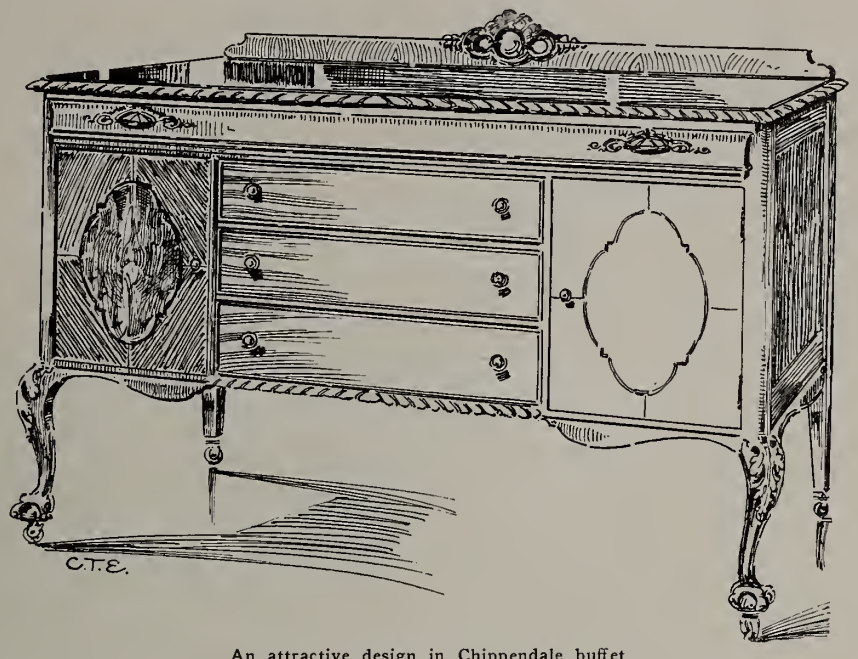
Large Volume of Orders

The volume of orders placed at the factories for furniture is unprecedented and as the supply of materials is uncertain it is impossible for manufacturers to quote prices for future deliveries, therefore, most of the furniture manufacturers, both in the United States and Canada, have been compelled to protect themselves by only accepting orders for future deliveries at prices prevailing at time of shipment. A few Canadian furniture men will only accept orders for goods that they can deliver in 60 or 90 days from date of order.

A tariff committee has been formed with the object of furthering the manufacture in Canada of all materials which can possibly be made in Canada. It is felt that many items that are being purchased in the States should be manufactured in Canada.

Safety League to Convene

The Sixth Annual Meeting of the Ontario Safety League will be held on Tuesday, April 13th at 9.30 a.m., following which will be a three day safety convention in the Banquet Hall of the King Edward Hotel, Toronto. Mr. J. T. Burke, Chief Inspector of Factories, Chairman of the sub-committee on papers, is arranging for papers on steam railroad hazards; elevator hazards; accident prevention in the pulp and paper industry; industrial dust; accident prevention in the rubber industry; plant sanitation; resuscitation; woodworking hazards; accident prevention in the steel industry; grinding wheels; hazards in grain elevators and cereal mills; accident prevention in the automobile industry; shop lighting; public utilities; shop safety committees and industrial relations and fire prevention, by men prominent in industry throughout the country.



An attractive design in Chippendale buffet

A Buffet with Chippendale Motif

Simple in Design and Construction—Attractiveness in Furniture Lines Assuming Greater Importance—May be Transformed to Other Adaptations

By C. T. Eichelsdoerfer*

A well designed piece of furniture has a strong appeal when on the floor of a furniture store and this attraction increases as the article is lived with and put to use. The buffet shown in the accompanying illustration is from a dining room suite designed in Chippendale motif. It is of simple construction, well balanced and proportioned and has a very practical arrangement of drawer and cupboard spaces.

Design is of greatest importance in the production of any line of furniture. This phase will assume greater importance in the demands of the near future. As competition becomes keener it will probably be the design and quality that will account for the popularity of any particular line. The limited supply and the strong demand which exists at the present time apparently suggests that anything in the line of furniture will be accepted and sell. This may be true to a very limited extent but the curtailment in the variety of patterns, which many manufacturers are making in order to stimulate production, has created a condition where there is a great similarity in the design of the different lines. As the prices of these items are increased from time to time, owing to the constant advance in the cost of materials and labor, they will lose much in selling qualities in the approaching competitive market.

The buying public, today, know and appreciate good furniture and are willing to pay the price. But at the figures that furniture is bringing it must be well made, well designed and look the part.

Never before has the practical designer had a greater opportunity to serve the producers of fine furniture and perhaps never before has economy been such a vital issue. The manufacturer must scrutinize every item of his production costs. The unprecedented values of cabinet woods and materials, also, the increased cost of labor, demand that the utmost care be exercised in their usuage to ensure a legitimate profit. This means that the designer must give value to his product by the quality of the design and at the same time must give heed to the construction and standardization of parts so as to facilitate production.

The buffet illustrated may readily be transformed into adaptations of other period designs and still retain the individual parts that will permit of its manufacture in quantities, thus increasing production. Through the designer coming in constant contact with the economics and methods of individual factories, he is in a position often to offer suggestions on vital issues pertaining to manufacturing problems. Perhaps having a larger perspective he may be able to help solve important points and his conscientious efforts often prove of value.

*Consulting designer, Shelbyville, Ind.

Large Car Order Placed

The C. P. R. recently placed orders for equipment which total roughly $15,000,000. These orders call for freight equipment, 2,500 sixty-ton box cars, 500 refrigerator cars, 500 automobile cars, 67 ore cars. Passenger equipment, 12 dining cars, 53 sleepers, 13 compartment cars, 24 baggage cars. The company will be able to execute a considerable portion of the orders, while the Canadian Car & Foundry Company, Limited, will get a large part of the total.

Selling Furniture on Sixty Day Basis

Open Price Method Proves Unsatistactory to Retailers—New System Eliminates Many Bad Features of Present Practice—Tends for Greater Stability in the Furniture Industry

By R. R. A.

The manufacturer of furniture is to-day surrounded by many uncertainties. Manufacturing costs are increasing continuously with the result that the furniture maker does not know with any degree of certainty what a particular article will cost him four or six months hence. On the other hand he finds an unprecedented demand for all his product. He is literally swamped with orders, so that in many instances his entire output is sold for months ahead. Naturally, in view of advancing manufacturing costs, he must, too, protect himself and to secure the replacement value of the materials used in producing the various items of his line, base the selling price on the market conditions prevailing at the time of delivery. That is only just and right. The retailer should not expect to purchase goods at a lower figure than it would cost the manufacturer to replace them.

Selling Methods Could be Improved

Is there not a better method of dealing with this problem? When business is conducted along these lines, the dealer thinks he has a grievance, and perhaps he has a real one. Owing to the abnormal demand, deliveries are slow and uncertain, which, when coupled with an open price, does not place the retailer in a very favorable position. In addition, slow deliveries and the possibility that only a small percentage of an order will be filled within a reasonable time, has a tendency to induce the retailer to place orders in excess of his requirements or to place a similar order with two or more firms, feeling secure in the belief that the whole order in any one case will not be supplied. This is a very bad feature and one that should be combatted by every means possible.

Another bad phase of the system followed by many manufacturers is that where they figure their production for six months or a year and then place their travellers on the road with instructions to divide this business up among the trade and then come in for the balance of the season, the manufacturer has lost touch with his customer. The traveller is really the mouthpiece or ambassador of the furniture maker and is able to explain to the retailer the exact conditions that exist at the factory, outline for him the material market and show him why prices are advancing, what lines are likely to advance most, why deliveries are delayed and in other ways keep him in close touch with conditions, so that he can figure with some degree of certainty what the immediate future has in store for his business. This information can be conveyed more satisfactorily and more impressively by personal representation than it could by fifty letters. Then again, the manufacturer has spent years working up close personal relations with his customer and should not at this late date be willing to lose the position thus gained. Personal contact is an asset which, if retained, will be found very valuable when present conditions change.

Sixty Day System Employed

A selling plan adopted by many American furniture manufacturers eliminates almost all the objectionable features outlined above. Under this system the output of a plant is calculated for a sixty-day period and each traveller given a part of that output as a quota to be divided among the dealers in his territory, with the distinct understanding that the stock will be shipped within the prescribed sixty days and at the quoted price. This latter is possible because the cost for the sixty-day period can readily be calculated as all the necessary raw materials should be on hand. Toward the end of this period the quota for the next two months is calculated and a new price fixed that will cover any increase in manufacturing costs. Then the process is repeated.

Say a furniture manufacturer wishes to adopt this system beginning April 1st. He would first strive to fill before that date as many of the orders on his books as possible. All the remaining orders would go on the April and May quota. The travellers would then be instructed to divide the surplus production over and above the orders booked for the months of April and May. As soon as the available amounts were disposed of, no more orders would be accepted. Then about May 15th the production for June and July will be disposed of for delivery during those months. Under no condition or at any prices would orders be accepted after the full quota for the period is sold, until the beginning of the next sixty days.

Advantages That Will Accrue

There are many advantages accruing when this system is followed and it might be well to mention a few of them. The dealers, knowing that all orders accepted will be delivered within the specified sixty-day period, will hesitate before placing orders in excess of their requirements or buying goods that they do not need. Thus overbuying, with the fictitious demand it creates, will be practically eliminated. It will curtail correspondence and put an end to a large number of letters and telegrams which are being received begging for the goods and asking when deliveries may be expected.

This system will enable goods to be shipped at a stated price instead of at quotations prevailing at the time of delivery, as is customary at present. There is no doubt that the practice of accepting orders with the price open has caused a lot of dissatisfaction and complaining on the part of the retail men, and they can hardly be blamed. At best it is a very unsatisfactory way to do business. Being in a position to accept orders with delivery and prices assured, would overcome this entirely and would win the friendship and goodwill, together with the hearty co-operation of the dealer. This is something that will stand in good stead when the demand for furniture is not so strong as it is at present.

Manufacturer in More Favorable Position

Doing business by the method described, will keep the manufacturer in very close touch with the conditions which exist in the retail trade. He will know that all orders received are real orders instead of working under the delusion that the orders booked for

twelve months ahead represent a true demand. He will be certain that all orders taken will be delivered and paid for. He will know when delivery will be made, the amount of money the orders total and when this money may be expected to come in.

Knowing that all the orders on the books are bona fide, places the producer in a very advantageous position when buying raw material and supplies. He will not be tempted to overbuy, neither will he be in the position where he is buying for orders that will not be filled and which in all probability would not be accepted if the goods were delivered. He is thus able to buy conservatively and is not forced to purchase needlessly large quantities at present high rates.

Why Not Adopt the Bonus System?

Human Nature to Respond to Proper Treatment—Divide Labor Into Groups With Standard for Each Division—Increased Earnings Provides Bonus—Manufacturer Benefits by Greater Production

By F. Moss

Every employer of labor, in general, and every furniture manufacturer, in particular, has been faced, during the past few years, with the rising cost of labor, but the actual increase in the daily wage roll has not been nearly so serious a problem to face as the decreased efficiency of the labor paid for. The many causes that might be given for this condition are beyond the scope of this article. The remedies suggested have been many, from "Let the Proletariat take over all industry" (Bolshevism) to "Let things alone. They will right themselves in time." (Inanimatism). I believe there is no such word in the dictionary but there ought tto be.

Give Labor Share of Increased Earnings

Conditions being as outlined and as it is recognized, generally, that labor is entitled to a larger share of the profit on the wealth it produces than has been customary for it to receive in the past, I will offer a few suggestions to the furniture manufacturer, or other woodworker, as to how he can increase the pay of his men and at the same time secure the increased production that will enable him to pay this additional sum.

Human nature being as it is (and even Woodworker's Unions are made up of human beings, although I once heard a furniture manufacturer say he didn't think so) any man or body of men will be glad to entertain a proposition whereby he or they can do better for themselves than they are doing at the time, or than they have ever done. If a man or a group of men find that any extra efforts on their part, or any better co-operation is promptly rewarded by increased pay, they will make the effort. This is proved by the fact that piece-workers almost invariably turn out more work per day than day workers.

Workmen Divided Into Groups

Very well, my suggestion is simply this that if you are not already doing so, you divide your men into groups and pay each group a bonus on any increased efficiency it shows. The exact method to be employed will have to vary with different factories and with different departments of the same factory. I will outline a sample of how this can be worked in a furniture factory, making a staple line of goods and with no very wide range of lines.

In the first place, the dividing of men into groups is a very simple matter and involves no expense and very little trouble. It is all done on paper. When paying a man on the swing or cut-off saws, you would charge his pay to Group No. 1, or breaking out group. When paying a packer you would charge his pay to Group No. 10 or 12 or whatever it happened to be, and so on through the whole pay roll. It is best to subdivide the pay roll as much as possible as it costs no more and is little, if any, more trouble.

The packing group, which we will call No. 10, and which is the easiest to check up daily will serve as an illustration. We will say that your daily pay roll in the packing room is $25.00 and that you are shipping on an average $1,000.00 of goods a day. Now if by better co-operation and a little more energy, the men can pack $1,200.00, they have actually earned $5.00 more. You perhaps cannot give them all of the $5.00 (because if they drop below the standard of $1,000.00, you cannot reduce their pay) but the point I want to make is, that if they can make the $1,200.00 the standard instead of the $1,000.00, and if you can get each group to do correspondingly well, you can well afford to pay the **whole of the increased earning of each group to the men,** because you will reap the benefit in increased production and reduced overhead charges.

Method Differs For Various Groups

Some of the groups will require that a different method be followed in ascertaining the relative value of the labor to the work done. For instance, in the veneer room. You make some goods that are all veneered, some with only a little veneering on them and some without any. Consequently the total cost of labor in the veneer room per day or month may have no fixed or fixable relationship to the total value of the output, and this condition may apply to a certain extent to every department or group in the factory. This fact, however, remains in all cases; that where you pay a man or group of men a certain wage, it is up to you to know whether that man or group of men is earning that amount or more. If they do more, pay them at least part of their extra earnings in the shape of a bonus. You will get increased production, your men will be more prosperous and better satisfied.

Increased Efficiency Should be Rewarded

It is impossible, in an article of this length, to go into the details of each group and work out a scheme suitable for each department. If any one interested in the working out of this idea will write the publishers of this journal, I will gladly furnish details or other information pertaining to its application to any group, department or factory or to answer any questions that the reader may wish to ask.

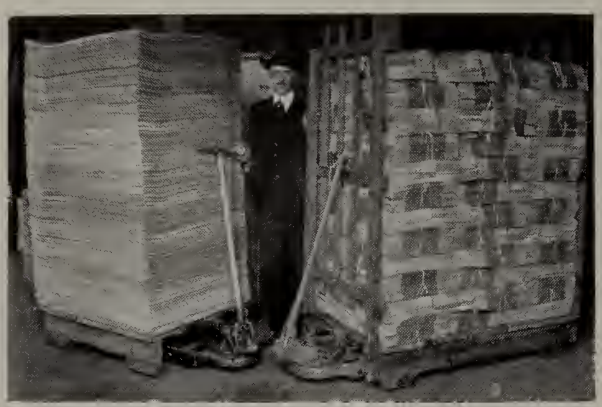
In the meantime the principle underlying the above suggestion is to encourage greater production by bonusing the men or groups of men who by reason of the expenditure of increased energy, greater willingness, greater efficiency or heartier co-operation, prove that they are worth it.

Greater Economy in Factory Trucking

How the Transveyor Truck Helps to Reduce Manufacturing Costs—Sufficient Trucks Readily Available—Large Loads Moved with a Minimum of Effort—Damage by Handling Almost Eliminated

By R. A. Johnstone

The high costs of labor and the demand for increased production and efficiency have focused the attention of many woodworkers on their factory trucking problems. Not only is labor costing more than formerly but there is a marked shortage of skilled hands; therefore any improvement in the method of moving stock through the plant that will either



"Tranco" trucks, manufactured by Chapman Double Ball Bearing Co., Toronto, hauling good loads

release one or more hands for productive work or will enable the mechanics to stick closer to their jobs should be welcomed on all sides.

In addition to the ordinary platform factory truck, which has been the standard in the majority of plants, lift-trucks and overhead carriers are being employed. The overhead carrier system, while applicable to any factory, is particularly adaptable for plants where the material handled is nearly all in long lengths, whereas the elevating truck and the platform truck give better satisfaction when the stock to be moved is in comparatively short pieces.

Platform Truck Being Replaced

As intimated, the ordinary type of platform factory truck has been the standard for years, but these are being replaced in many plants by the elevating or lift type of truck. It has been demonstrated that this latter type lends itself more readily to the solving of many of the inside transportation problems, and in addition offers many advantages that commend it to the progressive manufacturer.

Probably the first items to consider are the initial investment, labor and cost of upkeep. Instead of tieing money up in fifty or one hundred wheel trucks at $20.00 each, one lift truck, costing $125.00, with a sufficient number of cheap wooden platforms, at about $5.00 a piece, will do the same amount of work and give as efficient, if not a more efficient, service. Figuring on one hundred trucks it represents an investment of $625 against an investment of $2,000. Not only that but when this truck is employed, a considerable saving in upkeep expense will be effected, for instead of having to oil and repair a large number of individual trucks, there is one ball-bearing truck, that requires very little attention, to look after.

Sufficient Empties Always On Hand

Very few plants seem to have an adequate supply of trucking equipment, as empty trucks are usually at a premium. The result is that either some work must be unloaded on the floor or on to partially-filled trucks, or the workman is forced to pile his stock on the floor as he finishes his operation and perhaps carry it to the next machine. This is a needless waste of time and energy. The cost of the wooden platform for an elevating truck is so low that where this form of transportattion is employed a sufficient number of empties may be kept on hand. Someone may say that there is nothing, except the extra investment, to prevent a large number of wheel trucks being used. What about the storage? An empty platform truck requires as much room as a loaded one, while the platforms for the transveyor type may be piled in stacks in some out-of-the-way place until required.

The capacity of a transveyor truck is much greater than the older type. This is due to several reasons. The almost frictionless ball bearings, with which this truck is equipped, enable a heavy load to be moved with ease. One man can readily transfer a load that would require four or even six men to move with the ordinary equipment. This ease of operation enables the truck to be loaded to capacity, In addition,

Moving load of ten empty platforms

owing to its sturdy construction and ease of operation, a larger platform is usually built.

Regular System Employed

In his efforts for greater efficiency, the up-to-date manufacturer has, in many cases, adopted a regular inside transportation system with aisles or passages marked off by painted lines, regular parking areas and other features that tend to facilitate the move-

ment of stock and to reduce any confusion that may exist in the factory. The lift type of truck lends itself readily to a system of this kind; in fact, where it is employed, the handling of stock is almost automatically placed on a more efficient basis, for while a workman might be tempted to leave a loaded wheel truck in an aisle or passage-way, knowing that it could be pushed to one side, he would not be so ready to block the same aisle with a loaded platform, knowing that it could not be moved unless the lift truck were at hand.

Damage to Stock Reduced

The handling of the material is a very important item, especially when considered in relation to production. A lot of time is lost when the stock is unloaded on the floor and then later piled on a truck and unloaded again at its destination. By loading the stock in the first place on inexpensive patforms and then dropping the patforms and load in a storage or parking area, the work progresses through the plant with a minimum of handling, often enabling one or more stock handlers or truckers to be dispensed with.

Close quarters and lack of space do not prove a very great hindrance as the transveyor truck is constructed so that it will turn and manoeuvre around sharp corners and in very limited areas. Consequently the materials may be stored on platforms in a minimum of space and with a minimum of passage area.

The Warping of Kiln Dried Stock

Indicating How Allowing Stock to "Set" Equalizes Moisture Content of the Various Parts of Each Piece, Lessening the Tendency to Warp

By L. H. McDonald*

As it is now necessary to kiln dry nearly all the heavy lumber, I feel that it might not be amiss to call your attention to some of the difficulties that are often encountered.

A kiln of two-inch oak has been dried; samples are taken at reasonable distance from the end of the boards, and test shows 5% moisture. This material is run into the mill and worked up into pieces, as indicated in Figure 1.

Almost immediately they begin to warp. What is the trouble?

This factory had no trouble with the last run that was milled with 6% moisture content.

A more careful test will show somehting like the following: Take a test piece 2 in. x 6 in. and divide it up into sections as indicated in Figure 2.

Sections 1, 6, 13 and 18 show (say) 1%; sections 2 to 5 inclusive, 7 and 12, 14 to 17 inclusive (say) 4%; while 8, 9, 10 and 11 may show 10%. So, when you average it up, you only have 5%.

It is very plain to see what will heppen when you mill lumber in this condition, as per Figure 1.

Still you wonder why the other run that contained 6% did not warp. The reason for this was that the first run was taken from the kiln and not milled for some time, and the excessive moisture that was in sections 8, 9, 10 and 11 moved into the drier sections, and then the immediate outside may have even picked up moisture.

The second run was milled immediately and no chance was given for this equalization.

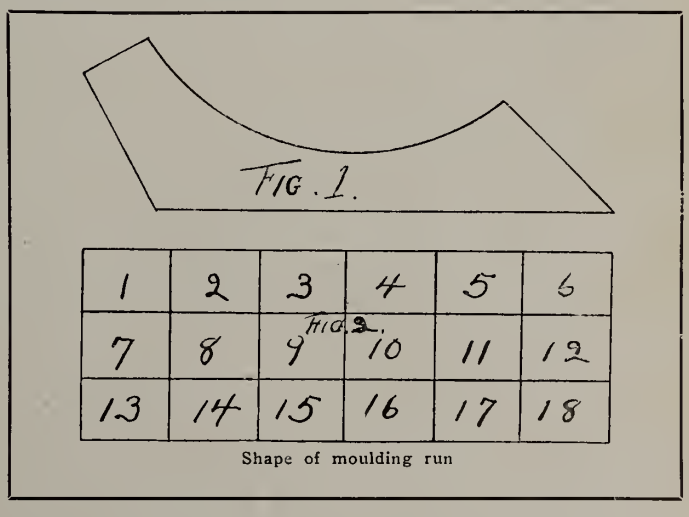
I know you are in a big hurry—the other fellow is after you for shipment—but you are much more certain of saving your lumber and pleasing your customer if you wait a while.

I cannot help calling your attention to the piling. Usually the same 7/8 in. piling sticks are used. This is permissible, but be careful to maintain air spaces, so that the air may have free passage up through the loads of lumber. That is more important than with the thinner stock, for the reason that this thick stock is not subjected to as great a circulation, and if the entire car is not subjected to the same conditions, the retarded sections will not dry as fast as the others—for instance, the ends and sides of car.

Boards that are warped should be loaded in the bottom of the car, and plenty of sticks should be used—say not less than four or five for sixteen-foot lengths.

In drying any kind of lumber, it is bad practice to allow temperatures to go up and down. This practice will prove very disastrous to heavy green lumber.

No doubt you remember the time when you connected a dry kiln up with the exhaust line from the engine and "let her go at that." The only heat you kiln ever had was when the engine was running—off every night and all day Sunday. Your memory tells you that you got along in great shape and made good furniture.



Shape of moulding run

But times have changed. If your memory serves you right, it will tell you that you bought that lumber one year air-dried and then kept it one year on your yard before you put it in the kiln.

So, when you remember how you did "once upon a time," remember the whole story, for you are headed for sure ruin if you attempt to dry the heavy lumber you now have in the same manner as you did in what we are inclined to call "the good old times."

*Vice-president, National Dry Kiln Co., Indianapolis, Indiana.

The Manufacture of Wooden Clothes Pins

These Small Articles Produced in Large Quantities—Strong Export and Domestic Demand—Possible Market in the United States—Description of Operations

By H. A. Rolphe

Just at the present time clothes pins are scarce and in good demand and as a consequence are bringing a comparatively good price. Slotted pins that formerly sold for fifty cents a box of five gross are now bringing one dollar and twenty to one dollar and thirty cents a box.

When one considers the number of factories making this commodity and that one hundred thousand pins a day is not a large output for such a plant, one may well wonder where a market can be found for this enormous number of pins. Not counting the export trade, which annually takes a large proportion of the output, there is a strong, steady local demand. Clothes pins will break, become lost or be carried off by children. Replacing these losses together with new business is responsible for the local demand.

Shortage in American Market

It would appear as if there are good possibilities in the manufacture of this commodity. At the present time there is an acute shortage of pins in the American market and high prices are being received. Many American clothes pin factories, which closed during the war, have not started up again because their supply of timber is depleted. What is more probable than that Canada, with her plenteous supply of raw material, will be able to supply an ever increasing quantity of pins to our friends south of the border.

Some attempts have been made to introduce an all wire pin but the wooden article easily maintains its supremacy. The two varieties in greatest demand are the slotted and spring types. The spring type consists of two pieces of wood suitably grooved and bevelled and then connected together with a wire spring. The slotted pin is made in two styles, the flat or square and the round.

Made on Specially Equipped Stickers

The flat type and spring pin are no doubt made by feeding short blocks of wood, edgeways, through a specially fitted sticker and then running the formed pieces through a fine gang saw which rips the pins to the required width.

They are then run to a heated timbler where they are polished and dried. Then sorted and packed and are ready for shipping. In the case of the spring pin the two pieces of wood and the spring must be assembled before packing, while this operation may be performed automatically on specially constructed machines, the probability is that it is done by boys and girls.

Pins Made from Logs

The round pins are manufactured differently. If the pins are being made from round stock the bolts are first cut to about 16 in. long and sawn into ¾ or ⅞ in. boards on a suitable bench saw. If made from lumber the stock is first cut to the 16 in. lengths. The next operation is slitting or ripping the boards. This is usually done on a roller or endless feed gang saw carrying twelve or more fine blades. If this machine will handle short lengths the boards, not the bolts, may be cut to five or five and one-half inches as required before being ripped thus saving the next operation.

As many machines will not handle the very short pieces the next operation is cutting the small squares to the required length. This is usually done on a cylinder cutting off machine. The operator merely places the lengths on the cylinder or drum, fitted with cleats, which carries the pieces under a gang of four saws. These saws are set to cut the length required and produce suitable planks with nicely squared ends.

Automatic Lathes Increase Output

The blank now go to the lathes where they are turned to shape. These lathes may be either automatic or hand fed. The hand fed machine operated by a good man, is capable of turning out about 100 gross a day. The automatic machine has about twice this capacity and has in many instances superseded the simpler lathe. In this machine the square blanks are carried to the spindles on an endless apron from which they are taken and turned at the rate of from 100 to 125 per minute. The slower rate produces a cleaner, better finished product.

The slotting of the pin is the next operation. This is done on special machines. The turned pieces are fed into a hopper and are taken by a sliding carrier past the saws or cutters which make the cut, smooth its sides and flare the outer ends, discharging them fully slotted. The slotters are made single, having one saw and feed arrangement or double with two hoppers, saws, and feed works. The capacity of the single machine is 100 to 120 pins a minute, while the larger machine just doubles that output.

Dried in Large Bins

As the stock used is usually green the common practice is to dry the pins in large bins. These bins have slatted bottoms through which a strong current of warm air is forced. As the pieces are small the drying is quickly accomplished. From the drying bins the pins are carried to the tumblers where they are polished, this completing the product. The writer does not see why a hot blast could not be sent through the timbler thus drying and polishing in one operation.

In an up-to-date plant the pieces would be carried from one machine to another by belts or other forms of equipment, perhaps combined with large storage bins with hopper bottoms situated behind or near each machine. There are so many pieces to be handled that any device that lessens the labor makes a considerable reduction in manufacturing costs.

The wood employed is common hardwood such as beech, birch or maple.

Mill waste is carbonized and turned into good, dense charcoal in six hours by a new process, the economy of which has been demonstrated recently. A closed air-circulating system includes a fan, a stove for heating the air pipes, a condenser and an electrical precipitation unit for extracting the liquid hydrocarbons, and a brick-lined retort, 14 ft. high and 3½ ft. in diameter, in which the waste material is placed.

Reducing Trim Saw Waste to Minimum

Every Inch of Lumber Worth Real Money—Careless Breaking-out Responsible for Large Loss—Handle Each Board Separately—Extra Swing Saw Advisable

By Albert Hudson

The trim saw or swing cut-off in the breaking-out room accounts for a good percentage of the lumber waste that takes place in any woodworking plant; in fact I do not think that there is another machine in the factory where money may be saved or lost in such large amounts as at this machine.

A few figures may be taken as an example. Two men are cutting stock in a furniture factory. Each man cuts about 3000 ft. a day. They are paid $4.00 apiece for nine hours' work. The stock, which is being cut, we will figure at $75.00 per M. feet, (a very low figure at present prices.) We then have the following equation:—Two men x 3000 ft. x $75.00 equal $450.00. $450.00 represents the value of the stock cut each day by these men at a labor cost of $8.00.

Some Waste Unavoidable

The unavoidable waste may be 900 ft. or 15 per cent., which would be worth $67.50. Now this amount of waste is probably covered in the cost sheets. Suppose that one of these cutters is careless, does not use his head as he should or through plain inefficiency is not able to get the most out of a board, it can be readily seen how easily the waste might jump to 25 per cent. It is much easier for the proportion of waste to increase than it is for it to be held at a minimum amount. Should the waste jump to 30 per cent., the additional loss would amount to $67.50 more daily.

We find some swing-saw men, who go on from day to day butchering the lumber and not giving any thought to the value of the material they are handling. A man of good, sound judgment should be placed at every machine in this department. The labor cost in comparison to the value of the lumber cut is so small that it is not profitable to employ any but the most efficient hands on the swing-saw. Good men, as a rule, command good pay, but in this particular position they have the very best chance to earn all they may receive.

Stock Lost in Trimming Ends

Trimming waste should be cut down to an irreducable minimum. The amount of stock cut off in squaring the ends of the boards might well be watched. I have seen a swing-saw operator cut a 12 in. length off a 9 in. oak board when the end was perfectly sound. This is simply ridiculous. Oak to-day is worth around $425.00 to $450.00 per M. feet in the pile at the factory yard. That means that 1 in. cut from the end of a 9 in. oak board costs about 3c, so that that amount of money is actually thrown away for every inch cut off or wasted in breaking out 9 in. stock. Is it worth looking after? Some waste is unavoidable but the workman should be impressed with the value of the wood and instructed to save every inch possible.

The lengths of the boards and the stock lengths may conflict to the extent of from 3 in. to 5 in. waste on the last cut. Take a total end waste of 5 in. on stock of an average width of 10 in. and averaging 15 ft. long. This figures out to 3 per cent. waste and may be said to be unavoidable or legitimate waste. How easy it is to waste an additional 5 in., bringing the loss up to 6 per cent. Eternal vigilance is the price of economical cutting.

Not Advisable to Cut Number of Boards

In some factories a stock cutter may be seen piling three or four boards on his bench and cutting them in one operation. If the stock were absolutely clear and of an even length this might be permissible, but with the ordinary run of lumber it is a practice that should be condemned. While this method may increase the capacity of the machine, does it really pay? The operator is, certainly, not able to cut each individual board to the best advantage.

The superintendent of a certain plant, seeing that the work was piling up at the swing-saw, suggested to the operator that he cut out five or six jobs at once, and in so doing pile three or four boards on his bench and thus increase production. This method relieved the congestion in this department, but with an unlooked for result.

After carrying on in this way for a while, it was found that many of the lengths cut were unfit for further use owing to the presence of knots, shakes, etc. Working under the old system of handling each board separately the operator had a chance to cut out clear material. By making two cuts close to a knot or other defect, the bad spot could be eliminated with very little waste, but when working a number of boards together, these spots were hidden. In addition, it was found that trying to cut out a number of different jobs at once was not only wasting valuable time but made for confusion as well.

Lumber is too valuable to be handled carelessly or wastefully. It would pay many a manufacturer to instal an extra swing cut-off in his breaking-out department so that the men cutting up the stock could give a little more thought and care to their work, thus securing the most from any board and at the same time reducing the waste to a negligible quantity.

Succeeds in Securing Mirror Plate

The head of a large Grand Rapids furniture factories recently made a trip to Europe to purchase a quantity of mirror plates. According to the latest report he was eminently successful in his mission having placed several large orders for plate, both silvered and unsilvered, with some Belgian manufacturers. Deliveries are expected to commence in the near future.

The Canadian furniture men are being seriously handicapped by a shortage of this commodity. Does not this suggest a way out? Why couldn't the Canadian furniture manufacturers co-operate and pool their orders and either work through the F. M. A., or send an independent buyer to the Continent to purchase the much needed glass. If an American manufacturer is able to take this step surely it is not too big an undertaking for a number of Canadian furniture manufacturers.

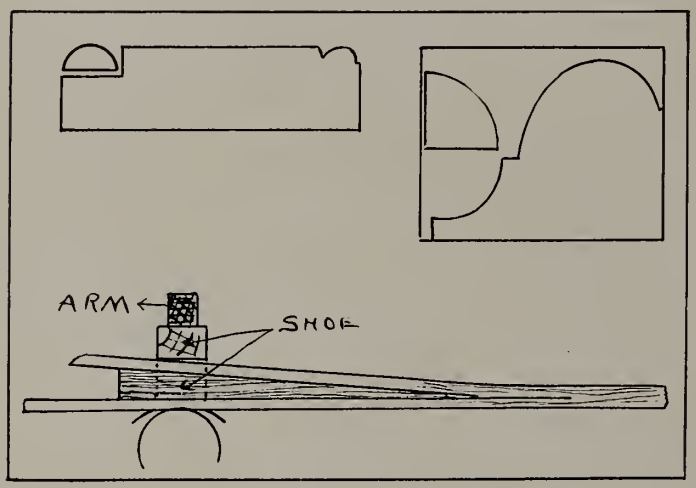
Manufacturing Costs Lowered by Sticker

Machine a Money Saver in Capable Hands—How One Manufacturer Used It Advantageously—Capable of Wide Application

By D. L. W.

The number of operations that a capable, efficient mechanic can perform on the sticker is almost unlimited and, with proper handling, this is one of the most useful and profitable machines in the woodworking factory.

A well known woodworker recently received a contract for a large quantity of 3 in. by 1/2 in. and 4 in. by 1/2 in. dressed on the face. The usual method of getting out this stock would be to run the lumber through the resaw and then dress it on the planer. Another method often followed, especially in box factories, would be to dress the thick stock on both sides on a sticker or inside moulder and then split it on the resaw. As the quantity of lumber involved was considerable the second handling of the stock, necessitated by using two machines, added condesirably to the cost of manufacturing, both with regard to the additional labor entailed and the time required putting it through the second machine.



How sticker may be used to advantage

It was here that the sticker demonstrated how it can save labor and increase production on occasion. The side heads were removed and two circular saws placed on the spindles, being held tightly by suitable collars. Two sets of saws were provided, the smaller pair being used on the narrow stock.

The shoe was made in two pieces the back section extending as far as the inside head. It was designed so that it would lift the upper half of the board as it cleared the inside saw, and at the same time maintain a pressure over the bottom head so as to ensure that the underside was being surfaced.

This rig worked very satisfactorily and made quick work of the contract. The saving in time and labor easily amounted to fifty per cent. When this saving is considered together with increased output and overhead the real value of the saving will be realized.

The same idea may be employed in other ways. For instance, when running rabbeted stock for wire window and door screens it is often possible by using a shaped knife on the top head and a saw or splitter knife on the inside head to cut a half round or other small moulding from the stock ordinarily removed when making the rabbet. This is like money found as the stock and running does not cost practically anything except the added work in setting up.

While this idea is possible of wide application as it may be worked out when running a moulding that is thin on the edge, yet a considerable amount of judgment must be exercised. As it would not be wise to work this scheme indiscriminately, on a short run, or where the saving effected is almost negligible.

Many operators when running a moulding that is thin on one edge often cut a bevelled piece from the corner which would be removed in making the thing edge and later run this into a small moulding. When lumber values are so high every effort should be made, even at the cost of extra labor and handling, to extract the fullest value from every foot purchased.

Suitability of Various Hickories for Vehicle Manufacture

The principal species of hickory are divided botanically into two groups—true hickories and pecan hickories. True hickories include shellbark, shagbark, mockernut, and pignut or black hickories. Pecans include bitternut, nutmeg, pecan, and water hickories.

The chief difference between true and pecan hickory, as shown by tests at the Forest Products Laboratory, is in toughness or shock-resisting ability. This is the property which is so valuable in wood handles and vehicle parts. In this property true hickories are far superior to the pecans.

The strength properties of pecan are somewhat in excess of those of oak or maple, and for such articles as handles and buggy spokes, carefully selected woods. In heavy wagon parts, such as axles, spokes, and felloes, maple and oak are reputed to stay in place better than hickory. Except in case of extreme shortage of maple, true hickory, and oak, it would probably be inexpedient to use pecan hickory for these heavy parts.

The sapwood or white wood of hickory, which is usually preferred by the trade, is the better wood in young, thrifty trees; but in over-mature trees it is inferior to the heartwood. A red color does not necessarily make sound hickory unsuitable for vehicle stock.

A more useful criterion than color is the proportion of summerwood, or nonporous wood, in the annual growth rings. In hickory stock intended for the more exacting uses, the nonporous wood should form at least one-half and preferably three-quarters of the annual ring; and the remaining part should contain very few pores. A further precaution to be observed is that the nonporous part of the annual ring should be hard and flinty.

The best criterion of the strength properties of either true or pecan hickory is the weight of a cubic foot of the dry wood. This weight should not be more than 10 per cent. below the average for true hickory; or not less than 45 pounds per cubic foot of oven-dry wood.

Retires from McLagan Company

H. S. Robertson, Stratford, Ont., who for nearly seven years has been connected with the McLagan furniture interests in Stratford and Meaford, recently retired from active participation in the affairs of the company. Mr. Robertson succeeded Chas. Farquharson, in 1913, as secretary-treasurer of the Geo. McLagan Furniture Co., Limited, holding also the position of director of the Stratford Chair Co., and the Classic Furniture Co.

In 1918 upon the death of George McLagan, of whose estate he was appointed trustee, he became vice-president and treasurer of the two Stratford companies and also president of the Meaford Manufacturing Co. In the re-organization which took place last October he was made a director and secretary-treasurer of the new amalgamation—the McLagan Furniture Co., Limited.

H. S. Robertson, Stratford, Ont.

Mr. Robertson is a member of the Advisory Council of the Furniture Manufacturers' Association of Ontario and Quebec, and was recently elected chairman of its Credit Section. He has for many years taken a deep interest in the Y. M. C. A. and similar public interests and is at present chairman of the Collegiate Institute Board. In reply to a query he stated that he had no immediate plans, other than taking a needed holiday following his strenuous work of the last two years.

Chas. E. Casey Succeeds Brother

Chas. E. Casey, brother of the late Mr. M. E. Casey, is now manager of the M. E. Casey Company, Limited, Montreal. This firm represents the P. B. Yatets Machine Co., Limited, of Hamilton, Ontario, and Beloit, Wisconsin, manufacturers of woodworking machinery. Associated with Mr. Casey are Horace Bennett, who looks after the company's business in the Maritime Provinces, and J. W. H. Pontbriand, who covers Quebec and Eastern Ontario.

You cannot make good furniture out of green lumber.

Midland Woodworkers to the Front

The Midland Woodworkers, Limited, Midland, Ont., were re-organized in October last and took over the business formerly operated by the Georgian Bay Shook Mills. The new company is under entirely new management, the following being the officers: President, A. H. Vanderburgh, of Toronto; vice-president, W. H. Firstbrook, of Toronto; secretary-treasurer, R. H. Scrivener, of Midland; director, W. Benson, of Penetang, and managing director, Fred M. Beatty, of Midland. It was decided to discontinue the manufacture of box shooks as carried on by the old company and to devote the plant to the making of doors, sash, mouldings, veneer doors and veneer panels, general millwork and hardwood flooring. A heavy stock of lumber, including hardwoods, pine, spruce, hemlock and B. C. lumber is carried, and the plant is in shape to make up almost anything required in millwork. The plant is splendidly outfitted with machinery and with the addition of one or two machines which they are putting in, will have one of the best equipped mills of its kind in Canada. It is planned to develop the business as much as possible, particularly in the hardwood flooring department.

F. M. Beatty, Midland, Ont.

The capacity of their door plant at the present time is about 250 doors per day, and it is planned to double this before very long. The department for the making up of veneer doors is well equipped with modern veneer machinery and turns out a first class article in every respect. This department uses Perkins' vegetable glue exclusively. The company has one of the finest waterfronts on the Georgian Bay and is able to unload millions of feet direct from the lumber barge to the lumber pile, which gives them a very low lumber cost on stock brought in by water route.

British Columbia box men have been urging their customers to purchase their requirements early and the results achieved will forstall the possibility of serious shortage of fruit containers in the B. C. districts.

Lining Up the Drum Sander

EVERY sander man has his own method of lining up his sander, consequently there are many methods in use. The following method has been employed by an old-timer for years and is claimed to be a quick and sure method of securing the desired results.

First add an extra straight-edge to your usual equipment of one long straight-edge. The time this will save will soon pay for the small extra cost as when two straight-edges are used, the entire line-up can be made without changing the original position of these tools, thus saving the great amount of time and accuracy lost in constantly shifting one straight-edge from side to side.

Now go about your lining-up in the following order—bed plates, drums, bottom feed rolls, top feed rolls and pressure rolls. If machine is set up level, lining-up bed plates should never be necessary. However, if holding screws have worked loose, lower drums below bed level, and lay each straight-edge lengthwise with the bed, edge up, placing cards between each bed plate and straight-edge. Adjust each plate from alternate sides until the cards are all held equally tight. Then draw the screws up and test the cards again to make sure the tightening has not drawn one end of any plate higher than the other.

Next, pull out cards without changing position of straight-edges. Loosen the two set-screws in the stud of each drum box, and turn the screw that the studs rest on until each end of the drum felt firmly touches the straight-edge. Draw up the set screws all around, and your drums are in line. It is better to make line-up with felt rather than with sandpaper, because the paper might be a little loose.

Now insert the eight cards as before. Loosen feed roll wedge screws and turn adjusting screws to the right to raise feed rolls level with the straight-edges. Tighten wedge screws to lock adjustment. Feed rolls are now lined up with drums and plates at a level with the thickness of the cards above them, which is their correct average feeding level.

You are now ready for the upper adjustments. Go about these exactly as on the lower, only placing cards above instead of below straight-edges, and two cards under the pressure rolls, so that when the top is lowered both feed and pressure rolls will touch the cards. Then line up first the feed and then the pressure rolls, exactly as you have the lower adjustments. Put paper and drum belts on and run your machine free for a few minutes to be sure everything is in good shape.

Now make final adjustments according to the stock to be run, lowering drums to level of cuts, as they probably will be too high, having been leveled with the felt.

If, after years of use, correct adjustments do not stick, do not forget that you can take-up thread or bearing wear by means of take-up collars provided, or by substituting thinner oil felt in the split boxes.

Australian Requirements in Wood Turning

Parts for piano-players, rolls for typewriters and skewers for cotton mills are not marketable here. Piano-players are not made here, and spare parts are supplied by the makers of the players. Typewriter rolls are also supplied by the makers of the various machines on the market, as the outside rubber vulcanizing process cannot be done here. There are no cotton mills in Australia and therefore no call for skewers.

Pill boxes are made locally but of poor quality and finish compared with the imported articles, the trade in which is largely confined to the products of one United States house. If Canadian products can compete in quality and factory price with the product of this firm, there is a prospect of good business, but this can only be definitely determined by the production of samples.

Draw pulls, rolling-pins, rake teeth, rack pins, and, to some extent, floats for fish nets, hubs for carts and short handles for tools (not hickory), are made locally. Hickory handles are the most popular and are mostly imported from the United States.

Turnings for baby carriages, croquet mallets and stakes, hickory handles, wood faucets, pill boxes, and hubs for carts are the articles for which there is a market in Australia, provided Canadian quality and price (f.o.b. ocean port) are competitive with those of United States manufacturers.

If Canadian manufacturers will supply particulars of quality and prices of the lines above indicated, the Department of Trade and Commerce, Ottawa, would be in a position to approach dealers and definitely ascertain their selling possibilities.

The present net customs duties on woodenware of the kind described are given below, but are subject to alteration in the impending revision of the tariff:—

	Uuited Kingdom	General
Hubs, elm, with or without metal bands	16½%	16½%
	1s. 3d.($0.31)	1s. 3d.($0.31)
Tool handles of wood, attached to tools	Free	11%
Tool handles of wood unattached	22%	27½%
Felloes of hickory, cut, shaped or bent, plain, in the rough	16½%	16½%
Rims of hickory, bent, squared, plain, in the rough	16½%	16½%
Spokes of hickory, rough-turned but not shouldered or tenoned	5½%	5½%
Spokes of hickory, dressed, 2-inch and under in diameter	16½%	16½%
Spokes, dressed or prepared (not being hickory) same size, per 100.	12s. 6d.($3.04)	12s. 6d.($3.04)
Bars, shaft and whiffletree	27½%	33 %
Poles and shafts, in the rough, bent, undressed or dressed	27½%	33 %
Other articles of wood	33 %	38½%

Keeping Track of Moulding Lengths

The proprietor of a large planing mill has worked out a good scheme for keeping track of the different lengths of moulding in the storage bins. He manufactures a considerable amount of various mouldings and usually has a large stock on hand. This he stores in the ordinary form or rack or bin. He has boarded up the sides of each bin, stating that this not only prevents the shorter lengths from working into other bins but keeps the moulding straighter and cleaner.

The scheme adopted is to paint the ends of the pieces different colors, say the 12 ft. lengths black, 14 ft. green, 16 ft. red and so on. Some of the advantages accruing from this system are: the amount of material in the bin is readily calculated, any lengths desired are easily picked out and a glance at the bin shows how the lengths are running and thus preventing the accumulation of any one length.

Those men who are not troubled with taxes are taxed with troubles.

Uniform Method of Costing Box Lumber

Many Different Ways of Figuring Material Costs—Inventory System Involves Guesswork —Every Advantage Should be Taken of Increased Lumber Values

By J. C. Heath

The subjects of a uniform system of cost-accounting or cost-finding for box factories has been engaging the attention of the more progressive box manufacturers for the last few years. As far as the Canadian industry is concerned, very little, if any, progress has been made along this line. One of the prime essentials of any such system is that a uniform method, of computing the amount and value of the lumber that enters the plant, be employed.

There are five general methods of valuing the lumber used in producing boxes. Some of these are so uncertain that the manufacturer employing them is practically forced to do a lot of guess-work and is not in a position to take full advantage of the fluctuations of the lumber market. These five methods are briefly outlined as follows:

The first plan is where an inventory is taken once or twice a year. Under this scheme the owner does not know, until this inventory is complete, whether he has been making a profit or not; in other words, the manufacturer, who follows this system, works in the dark between inventories. Of course, he has a general idea as to his costs, but his selling price is usually influenced by what the buyer says is fair. He endeavors to secure the market price, but if he thinks the occasion demands it, this manufacturer is prepared to make a drastic cut. The prices are based on what has gone before and the profits that have been made in the past. When conditions are as at present, with lumber values increasing, labor clamoring for higher pay and shorter hours, not to mention reduced efficiency, such a cost-finding method involves a considerable amount of guessing.

Second—Other box manufacturers may have foreseen, to a certain extent, the present increase in lumber values or, as a matter of policy, have secured a supply of standing timber. In this case a sawmill is operated in connection with the box plant. As all lumber manufacturers make a profit on the timber they cut, why should not the box manufacturer do the same? Supposing operating costs and stumpage values are such that the lumber cut costs $30.00 per M, if this stock is worth $35.00 in the open market, why should it not be billed to the box factory at the latter figure? The difference of $5.00 would then be credited to the lumber manufacturing account. If a box factory cannot bill its own lumber at market quotations and make a profit, something is wrong, and under ordinary conditions, where it would be forced to buy in the open market, its operations would be shortlived. Any box maker, who cuts his own stock, should bill the lumber to his plant at market value.

Third—There is a plan whereby the box maker keeps regular lumber accounts but bills into the factory the cheapest lumber in the yard until such stock is exhausted. As an illustration, if 100,000 ft. were purchased at $26.00 and another 100,000 ft. at $30.00 regardless of the fact that the present value of the stock is $30.00, the first lot would be billed in at $26.00 until exhausted, and then assuming that no further purchases had been made, the $30.00 stock would then be charged up. This system eliminates the likelihood of selling below the actual cost of production just as long as lumber values continue to increase, but would not allow the manufacturer to take advantage of his shrewdness in buying and the increase in lumber values. If prices weaken, such a factory would have some trouble disposing of the stock purchased at the higher figures. This could only be accomplished by selling below costs or scaling down the inventory values. The true costs may be known at all times but the criticism is that on a rising market, such a system does not enable the manufacturer to take advantage of the increased values of his stock, while on a declining market he must accept a loss or re-scale his values, which amounts to the same thing.

Fourth—Then again, there are others who know their true costs but bill their lumber to the plant at the average cost. If the factory is one which is purchasing material continuously, this plan will work out very satisfactorily, for the average purchase price will be fairly close to the average replacement value. If, however, this practice is followed by the manufacturer who purchases his lumber only at odd times, it would not allow for increases or decreases in lumber values, and would not encourage that manufacturer to quote market prices, assuming that lumber values had advanced since his last purchase. If the entire year's requirements are bought in one or two lots and the market rises, the average cost of such purchases would not represent the replacement value. The opposite holds true on a declining market, for he would not be able, owing to competition, to take advantage of the average high prices paid, and might be forced to sell at an actual loss to secure business. This is another instance where a manufacturer should take full advantage of market fluctuations and his shrewdness in buying.

Fifth—This is probably the ideal plan and is the one that should be followed by all box manufacturers. If this were done, it would to a large extent, eliminate price-cutting and would prove a good foundation for a uniform cost-accounting system in this industry. This plan consists of billing the lumber into the factory at its present replacement value. If the average cost of lumber in the yard is but $29.00, and the replacement value is $32.00, the lumber should be billed at the latter figures, for if it were necessary to purchase in the open market, the latter price would have to be paid and the lumber charged accordingly. The difference between the price paid for the material and the price at which this stock is charged to the factory, would be taken care of in the profit and loss column.

Someone may say that this plan is all very well as long as values are increasing but if the market were to break and prices decline, replacement values would be less than the prices paid for the material. This would mean a loss to the manufacturer. Undoubtedly this is true, but, assuming that lumber prices decline and replacement values be less than actual cost of production, the manufacturer would still be in direct competition with other box men who had made late purchases and who would thus be in a position to sell at a profit based on lower lumber costs.

This then leads into the question of supply and demand.

If this latter system were followed by all box manufacturers, destructive competition would be supplanted by constructive competition. Competition of service to the customer and competition of quality would be the controlling factor in selling boxes rather than competition of price alone. This may be an ideal condition but it is not impossible of attainment.

Holding Power of Hammer-Driven and Screwdriver-Driven Screws

Special strength is often desirable in the joints of wooden boxes; and one of the ways of securing extra holding power is to put the boxes together with screws instead of nails. It takes longer to put in a screw with a screwdriver than it does to hammer in a nail, but that is part of the price that must be paid for a stronger package. Now it has become rather common practice in box making to try to get the holding strength without paying the price. Screws are used, but they are hammered in nearly all the way and given one or two turns with a screwdriver.

The Forests Products Laboratory has made a series of tests to secure data on the holding power of wood screws when driven their entire length with a screwdriver and when hammered almost all the way in and then given a turn or two with a screwdriver. No. 12 wood screws, 1.75 inches long, were driven one inch into a hole ⅛ inch in diameter bored into the side grain of the wood. This is the distance No. 11, No. 12 and No. 13 wood screws are driven into the side grain of the sides and ends of packing boxes having ¾-inch tops and bottoms. The tests were made by a direct pull on the heads of the screws perpendicular to the surface of the wood until the maximum load was reached and the screws pulled from the wood.

The results of the tests are given in the table below:

Results of Tests

Relatively holding power of wood screws, No. 12, 1.75 inch long, driven one inch in holes ⅛-inch in diameter into side grain of the wood, driven entire length with a screwdriver and driven entire length with a hammer, except last turn, which was made with a screwdriver.

	Pounds per Screw	Average Per Cent
Basswood:		
By screwdriver	478	100
By hammer	281	59
Yellow Pine:		
By screwdriver	1,144	100
By hammer	681	60
Red Gum:		
By screwdriver	687	100
By hammer	403	59
Birch:		
By screwdriver	841	100
By hammer	570	58
Total Average:		
By screwdriver	788	100
By hammer	484	61

Though these tests are not conclusive in themselves and should not be regarded as showing definitely the holding power of wood screws, or their relative holding power in the various species of woods, nevertheless they confirm results obtained from many other tests made at the laboratory on boxes and on the mechanical properties of various woods, which indicate that hammer-driven screws have less holding power than screwdriver-driven screws. The use of hammer-driven screws, therefore, is hardly justified; for if the screwdriver-driven screws give an excess of holding power beyond what is required in a box, it is practical economy to reduce the number of screws used rather than to hammer-drive the same number.

Saws Nine Feet in Diameter

Two large saws were recently manufactured by Henry Disston & Sons, Inc., of Philadelphia, Pa. It is claimed that these are the largest circular saws ever made. They are of the spiral inserted tooth type, and are to be used, by a well-known concern in the west, for cutting shingle blocks from the large trees of that section.

Each of the new saws measures 108 inches (9 feet) in diameter, and in the rim are inserted 190 teeth. One may gain some idea of so tremendous a saw by

Note height of man compared with the saws

comparing it with a 54-inch saw, which is large as we ordinarily think of the term. The 54-inch saw requires for its making an ingot of steel weighing approximately 180 pounds and its weight when finished is about 125 pounds. The 108-inch saw started out as an ingot weighing 1,140 pounds, and after reheating, rolling and trimming, the remaining weight was about 795 pounds. In size, a 54-inch saw is apparently just half that of the 108-inch one, but actually the 108-inch one is four times the size of the former, as a measurement of square inches of surface will show.

In the making of large circular saws, this firm have had a long experience. As long ago as 1876 they made one 100 inches in diameter for exhibition purposes. Some years after they made another 100-inch saw for cutting stone, each tooth of which was studded with a black diamond to give the necessary cutting edge.

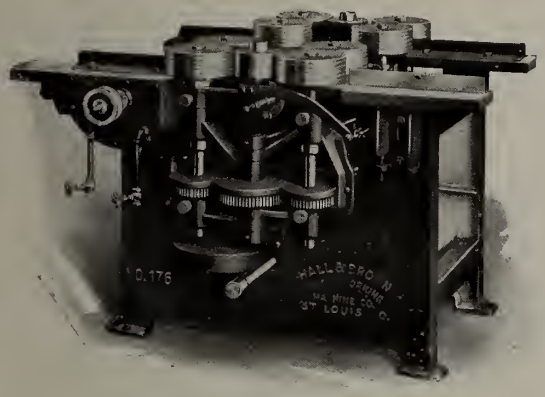
To fully appreciate one of these immense saws, one must see it in action; starting off slowly, the speed gradually increasing, the humming attaining a higher and higher pitch, until full speed is reached, at which time the teeth are travelling about 130 miles an hour. It is then that the forcefulness of this flying mass of toothed steel becomes strikingly impressive, and the sight of this huge saw, resistlessly and quickly cutting an immense log, is one to be long remembered.

A lot of heat goes to waste through the exhaust pipes of steam engines that might be saved and used to advantage.

Machinery & Equipment

Power Feed Box Board Matcher

A simple and efficient box board matcher is found in the Hall & Brown, No. 176. This machine is capable of matching and gluing, if required, box boards at the rate of fifty feet per minute. If specially ordered can be had with two feed speeds, namely 50 and 70 feet. The feed is a new type, being driven from feed shaft by cut steel spiral pinion and cast iron spiral gears. This insures a powerful and positive drive at all times. The rolls, which are 8 in. in diameter, are driven by gears which swing on a common centre and are always in mesh regardless of the thickness of stock being worked. With this arrangement thick boards can follow thin ones without running any risk of breaking the gears. The grooves in the rolls are cut spirally and tend to force the work down on the

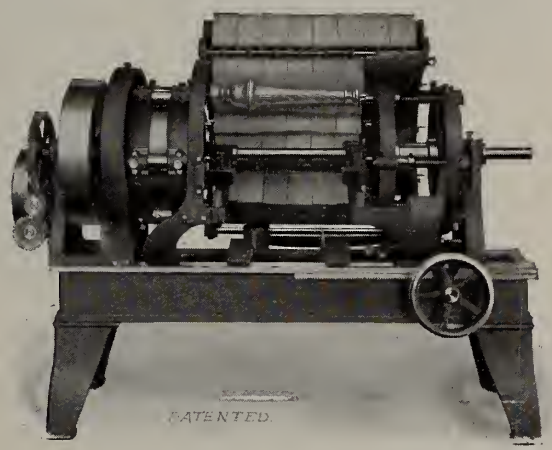


Hall & Brown box board matcher

cutter heads. The tables are 24 in. long and can be adjusted to suit depth of cut. When ordered the rear table is provided with glue pot and brass roller for spreading the glue. The glue pot is fitted for steam heating, but can be arranged for an electric heater. Shimer cutter heads are provided as regular equipment but special sleeves for using saws can be had. Full particulars may be had from the Hall & Brown Wood Working Machine Co., St. Louis, Mo.

Automatic Sander for Turnings

The accompanying illustration shows the Nash No. 10 Automatic Sander for sanding large turnings such as table legs, balusters, and similar articles. A similar machine is made for smaller work. With this machine the turnings, which are placed on supports on the front of the machine, are automatically picked up and centred and then carried into contact with four grades of sand paper, running from a coarse to fine, and afterwards released. Any pattern that can be produced on an automatic or back knife lathe or table leg or baluster machine, can be successfully sanded. All parts of the turnings are reached and all sharp members and shapes are preserved. When the turnings leave the machine they are as perfect in form as when turned out on the lathe. Turnings up to 2½ in. in diameter can be sanded at the rate of 5,000 pieces a day, while 3,000 larger turnings, up to 6 in. in diameter, can be turned out in the same time. A saving of paper, running as high as 50 per cent., may be made,

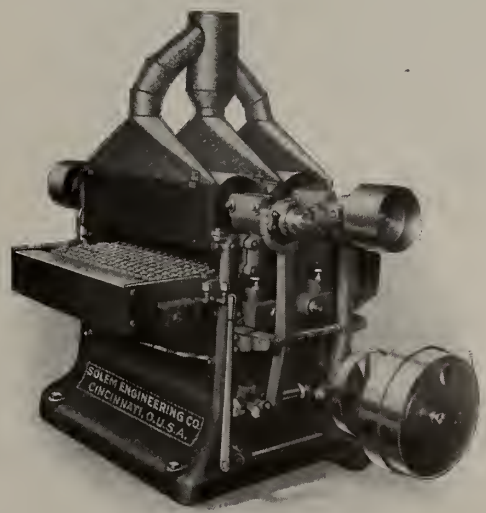


Nash sander for turnings

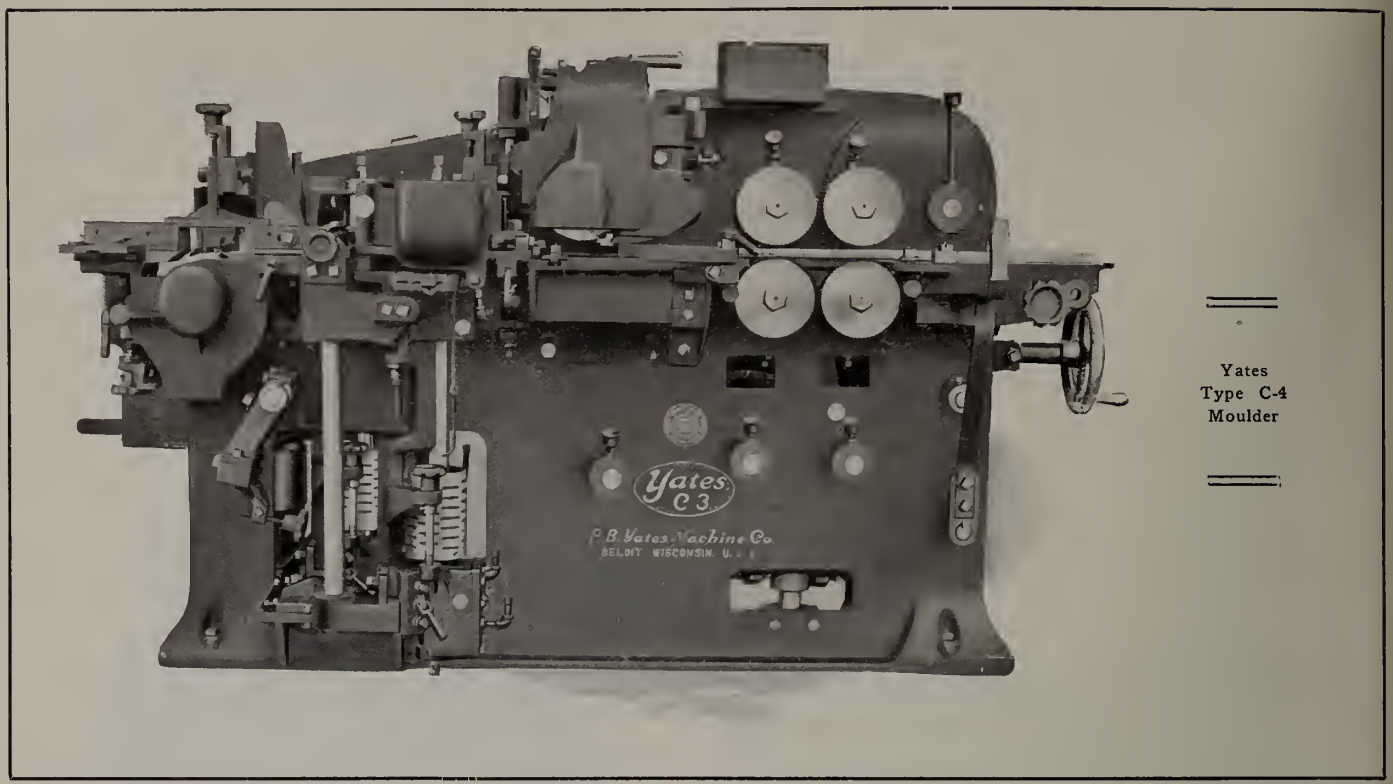
over hand handing, with this machine. J. M. Nash, Milwaukee, Wis., will be glad to furnish further particulars.

Oscillating Endless Bed Sander

Simplicity is the keynote of the design and construction of the Solem Endless Bed Sander. The frame is a heavy single piece casting having a large floor contact. The feed works consists of two steel chains on which are mounted selected steel slats and which are driven by four encased gears through cut sprockets. The ways, on which the bed runs, are removable and are lubricated by compression grease cups. The rubber cushions are of special design, be-



Solem endless bed sander



Yates Type C-4 Moulder

ing rectangular with a steel reinforcement built into them. This shape permits the sanding of the edges of short and narrow stock without special forms being employed, thus greatly increasing the capacity of the machine. Each drum is given a running balance at operating speed. Sectional spring take up fingers are provided to take up any slack in paper that may occur while machine is in operation. Steel grip roller fasteners grip both ends of paper and give initial take up. Each drum has independent adjustments from operating side of machine. The oscillators are driven from feed shaft by bevel gears. A single hood covering the entire machine is usually furnished but a sectional hood as shown in the accompanying illustration may be had if desired. Equipped for belt drive or may be had for direct drive from single 10 or 15 h.p. motor. The capacity of the 37 in. machine is 37 in. by 6 in. thick. Narrow stock may be fed to cover the entire surface of the bed. For further particulars write the Solem Machine Co., Rockford, Ill.

Special High Speed Moulder

The compact looking moulder shown in the accompanying is the Type C-4 Yates moulder. The machine was designed to meet the demand for a sticker that would run the smaller mouldings at fast speeds and still give the necessary smooth finish.

The machine is made entirely "open side" from end to end. All the principal adjustments can be made from the operating side of the machine. All bearings except the cutter head, are lubricated by grease cups on the outside of the machine in plain view, where they are not liable to be overlooked. Feed rolls or cutter heads can be removed without disturbing other parts of the machine. Every needful adjustment is provided, and the makers went to great length to make each adjustment so convenient that operators would not be disinclined to use them, thus all lock screws have handles to avoid the necessity of using a wrench to operate them. Four rates of speed are provided, 25, 50, 75 and 100 feet per minute, giving the operator a choice of feeds from slow to fast. A hopper feed can be attached, if desired, with all the attendant advantages. Special provision is made for jointing bits in the head.

Other features of this moulder are: One belt to drive top and bottom heads, one to drive side spindles, interchangeability of cutter heads, no gear in the feed works does double duty, chain drive feed works, reversible steel work bed and absolute rigidity of shoes opposite side heads. The base is cast in one piece and is flaring at the floor line, thus eliminating vibration which is so disastrous to the production of smooth work. The C-4 will handle stock up to 4 in. x 8 in., while a similar moulder, the C-3, has a capacity of 4 in. x 4 in. Full particulars may be had from the manufacturers, the P. B. Yates Machine Co., Hamilton, Ont.

Massillon Plant Being Enlarged

The Reynolds Manchine Co., Massillon, Ohio, manufacturers of automatic screw driving machinery, were recently granted permission by the Ohio State Commission to increase their capital from $200,000 to $500,000. $50,000 worth of new equipment has been purchased and it is anticipated that an additional quantity of machinery to the value of $50,000 to $100,000 will be installed during the present year. This large expansion is necessary to take care of their rapidly growing business and the ever increasing demand for Reynolds automatic magazine feed screw driving machines.

Motorizing the Factory Truck

If the signs read right, about the next step we are due for is a general motorizing of factory trucks, so that instead of a man pushing or pulling then along they will either move with their own motors or be pulled by a dinky motor. Already we find some of this in the wood-working industry, while in some others, with heavier material to move, the use of motors and motorized trucks is becoming quite general. Little electric dinkies pulling single trucks, or a train of trucks, are becoming a common sight.

Upholstering and Trimming

Upholstered Furniture Manufacturers Meet in Buffalo

The special meeting of the National Association of Upholstered Furniture Manufacturers, held in Buffalo yast month, was unique in many ways. This meeting was called at short notice, out of the season when conventions are usually held, for the special purpose of considering the acute labor situation which exists at many points.

Mr. Maltby, the secretary of the Association, in his report, outlined the activities of the organization for the previous three months. During this period the work of the office was largely centred on the Chicago strike, which has now entered the sixth month. The report made mention of a number of cases of bombing of factories and homes, and the slugging and intimidation of workmen. Some of the latter were seriously hurt by the strikers or their paid agents. The varied experience as to the co-operation with other cities was reported, but most of the larger manufacturing centres supported the Chicago manufacturers in their stand for the open shop, forty hour week and piecework.

Manufacturers from many different points tendered their reports, which showed a wide diversity of working conditions, notwithstanding the statement of the union leaders that the forty hour week was in effect in the majority of plants. On the final examination and checking up it was found that this was not true, except in a few rare instances in Eastern points.

Francis D. Campau, secretary of the Grand Rapids Furniture Manufacturers Association, gave an address, and dwelt largely on the interdependence of the manufacturers. Perhaps the outstanding address of the whole Association was that of S. D. Fennell of Buffalo, a former member of the Industrial Relationship Board for the district of Buffalo. In his address Mr. Fennell laid down some of the fundamental principles that should govern the relationship of the employer with the man in the shop, and also suggested practical methods of preserving the open shop and increasing production.

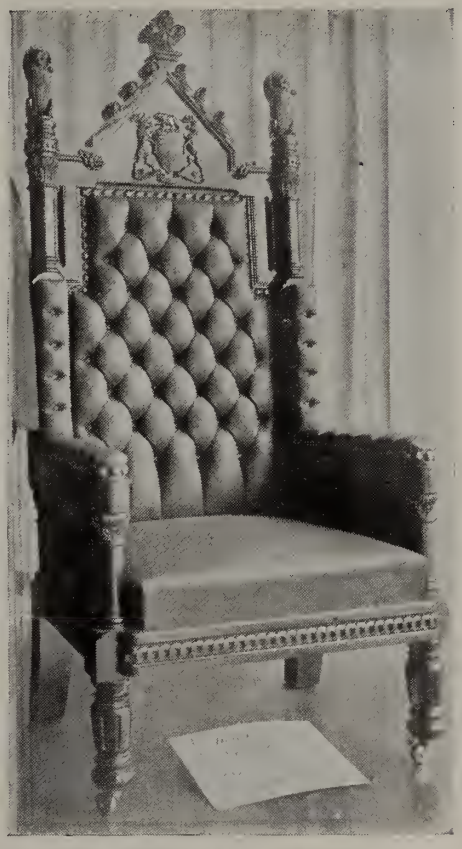
The National Industrial Relations Committee, the members of which came from widely separated sections of the country, held its regular meeting at which was reduced the support which was being given by the Association to the Chicago manufacturers. It was also decided to secure a director for this department.

C. S. Bather, traffic counsel of the American Furniture Manufacturers Association presented the railroad situation, dealing with the early return of the railroads to their owners. He suggested a number of very practical points and answered questions regarding the matter of packing requirements, labor relationship, and description of bills of lading.

Canada was represented by Mr. James E. Ferguson of the Furniture Manufacturers Association. In his address he outlined briefly the work of that Association which is very active and at the present time is largely engaged with cost and labor problems. Altogether it was one of the most helpul meetings held by this Association and those who took the time and trouble to attend were greatly benefited by the many helpful addresses and discussions which took place. The delegates present represented about fifteen different cities.

Mahogany Speaker's Chair

It appears to be the custom for each speaker of the Ontario Parliament to take the speaker's chair with him, probably to hand down to posterity, as he makes way for his successor. Thus each new government is called upon to provide a new chair for its speaker. The accompanying illustration shows the chair that was recently completed for the U. F. O. government by J. Mackle, 6 St. Albans street, Toronto.



Speaker's chair in mahogany

The chair is of heavy construction, standing about 6 feet high and is made of solid Cuban mahogany. Owing to the design the back is screwed onto the rear of the back post, the screw holes being counter bored and plugged. It is ornamentad with a considerable amount of fine carving. The front rail, side rails and

back posts being decorated with a scroll design. On the top of each post is a figure of a lion carrying a shield. The coat of arms of Ontario which make up the central figure in the back carrier the words "Ut Incipit Permanent Fidelis Sic" carved into the scroll underneath.

The upholstering is in genuine Morocco leather with hair filling. Large specially imported tacks are used in attaching the gimps. The finish is the usual mahogany finish.

Mr. Mackle has had a wide experience in producing special furniture of all kinds. Before engaging in business for himself some fourteen years ago he was a member of the firm of Chas. Rogers & Sons, Toronto, and was for thirteen years in charge of their upholstering department. This is the fifth speaker's chair of this design that Mr. Mackle has made for an Ontario government.

Reducing the Leather Shortage

A writer in "Raw Material" estimates the present annual production of leather substitutes at a $50,000-000 valuation. These leather substitutes in turn enter into manufactured products valued at over a billion dollars annually.

Leather substitutes are used most largely in the automobile, furniture and trunk and bag industries; to a smaller extent in the bookbinding, hat and shoe trades.

If ability to withstand constant flexing and bending is not a requisite of the material, leather substitutes compare very favorably with genuine leather. In appearance they suffer no disadvantage. As to utility, they have been proven very durable when used in the manufacture of articles for which they are adapted. They are impervious, cleanable and inherently sanitary.

The use of leather substitutes has greatly relieved the leather market. If they were not available, one would shudder to think of what the price of an ordinary pair of shoes might be in this year 1920,

Necessity is getting people away from the idea that a substitute is necessarily something much inferior, something to be avoided or derided. It is teaching intelligent people that a substitute may be a very useful and a very satisfactory article if used within the reasonable limits of its adaptability.

National Alliance Tackles Labor Problems

At a meeting of the National Alliance of Case Goods Associations, recently held in Atlantic City, various recommendations were made and a great deal of thought was given to the labor problems. Their committee on labor recommends, amongst other things, that they should overcome the shortage of labor by every means available. Some of these may be the installation of better machinery, better layout of equipment and routing of work through factory, the employment of female labor, less waste through excessive turn-over of labor, the training of young men to the needs of the industry.

Was further stated that the furniture industry must pay wages to skilled workmen that will be the equal of any other business requiring the same degree of skill, and that the furniture industry must not lose sight of the fact that the hours of labor are not stabilized and are not likely to be more per day or week.

Imitation Leather Gains in Popularity

From fad to famine was but a short step in the experience of dealers selling tapestry. For over a year tapestry has been in the greatest demand as an upholstery material. It is estimated that this demand is still at least twice the normal. On the other hand, the tapestry mills are running short-handed and not able to supply over 40 per cent. of the normal output.

Cheap, cotton tapestries are now selling at about three times their pre-war value and hard to get at that price. Fine woolen tapestries are practically off the market altogether. This condition has resulted in diverting a great deal of business from tapestry to leather substitutes. Possibly, like many other changes that have in the past been forced on mankind by circumstances, this may resolve itself into another blessing in disguise, for leather substitutes are more economical than tapestry and far more durable and sanitary. These goods are obtainable in good volume and are proving the salvation of the furniture manufacturer, the upholsterer and the dealer in upholstering fabrics.

New Upholstery Firm in Waterloo

A company recently organized to engage in the manufacture of a high class line of upholstered furniture, is the Engel Upholstered Furniture Co., of Waterloo, Ont. The line produced will be known as "Lion" brand and every effort is being made to make this trade name synonymous with quality and value. The furniture produced is confined chiefly to the luxurious chesterfields which are in such strong demand. They have already outgrown their present location and looking for larger premises. At present overtime is being resorted to in an effort to cope with the demand.

How to Retain Bark on Rustic Stock

For preventing the bark from flaking off logs used in rustic structures, the Forest Products Laboratory, Madison, Wis., recommends the following methods of seasoning and preparing the timbers as the most effectual:

(1) Cut timbers late in summer and score on two sides; that is, cut off narrow strips of bark for the entire length. Pile in shade in open pile to allow thorough circulation of air. Allow timbers to season until following spring or summer before using.

(2) Proceed as in (1), and in addition coat ends, stripped portions, and knots, with coal-tar creosote, using one coat a few days after timber is cut and another just before using the timbers.

(3) Proceed as in (1), but do not score bark When timbers are in place, tack bark on with large-headed nails, placing one to every square foot of surface. Paint heads of nails to resemble color of bark.

(4) Tack or nail the bark on without particular attention to time of cutting or other treatment.

The nailing method has been used successfully by one western company which maintains numerous rustic hotels, and also on a large rustic building erected for exhibition purposes.

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Origin of Vegetable Stains

Derived from Various Plants and Trees—Comparative Value of Vegetable and Aniline Stains

By Dixy Wells

Many stains are now being produced from vegetable sources, and finishers are recognizing this brand of material as being very satisfactory. In many cases even more desirable than those stains which are derived from coal tar products, but these vegetable stains are only a little faster in color than the anilines. Perhaps many of you are familiar with the list of vegetable stains, but as stated in a previous article, what we often need is reminding rather than education along certain lines, and the following may serve to refresh the memory.

The vegetable stains include Fustic, Logwood, Madder, Dragons Blood, Alkanet Root, Camwood, Brazil Wood, Bar Wood, Sapanwood, Sandalwood, Beachwood, Limawood and Red Sanders. Some of these materials are produced from roots of various plants, others come from tropical trees. As you will note by the various woods mentioned most of the vegetable stains are derived from that source. From the Woad Plant we get a dye which is almost identical with Indigo, having Indigotin for its essential constituent, and this vegetable product is in a great measure superseding the regular Indigo. It is produced from the fermented and powdered leaves of the Woad plant.

Quercitron Bark From Oak

Another well known vegetable dye is Tumeric, which by the way is largely used as a coloring for butter or any of the popular substitutes, but it is also used for staining woods. It is, of course, harmless to food. Another dye of the same color is produced from Quercitron bark and Persian berries. From the large oak trees in the eastern part of our country, the inner bark of which is yellow, we get Quercitron bark, and the Persian berries, which are imported from both Asia and Europe, when used with tin salts produce a coloring matter which gives a yellow lake. From trees in Central America we get Logwood, which is the heart wood of the tree. It is very hard, and the color produced from the substance drawn therefrom is a brownish red.

Some years ago Indigo was entirely derived from the Indigo plant, but now it is made artificially from Napthaline. The color, of course, was not found in the plant as such, but was produced by decomposition of Indican, which contains various substances besides Indigo, unless especially and properly purified. The best Gamboge comes from Cambodia in Siam, and is a resin of orange red shade, but it becomes bright yellow when powdered. From the Malayan rattan farms we get what is known as Dragons Blood, and from the fruit of this palm exudes the resin.

Various tropical American trees furnish us with many of our dyes. Brazil woods, for instance, yield coloring material such as Sapanwood, Beachwood, Limawood, Sandalwood, Camwood and Barwood, all of these yield red or purple dyes. From the pulp surrounding the seeds of a certain tropical American tree is prepared Annotta, a yellowish red color.

The facts given will tend to show in a general way the source of many of our vegetable stains. As transparency is an important feature of the finished stains the product of these vegetable sources are very satisfactory. These stains have been pressed into use during the war period and their merits should win them a more popular demand. Tests have proven that their colors are more permanent than aniline dye stains. The latter have the advantage of being clearer and richer in tone, and we believe they are also cheaper, a feature to which perhaps can be attributted their more universal use. The various staining substances reach us in a variety of forms, many coming in dry or powdered form. They are also received as solids or in liquids.

The average finisher can secure almost any description of stain, that is, any color or tone, but there are occasions when he must prepare his own, perhaps to match certain samples or to secure a certain exclusive color effect. There is no doubt about the saving secured by producing one's own stains, particularly in small quantities, but one, of course, must thoroughly understand this game if the best results are to be produced.

Advisable to Practice Matching

The operator must know how to manipulate certain materials in order to produce the correct color, and the desired quality of finish. This is of just as much importance as a proper knowledge of application and handling of the finishing materials.

It is very good practice to experiment with stains as it gives the finisher an intimate knowledge of his "tools," particularly, where he has a room suitable for such work. Plenty of light and air are important. The matching of stained woods also increases one's skill.

With aniline stain, in particular, there is practically no limit to color possibilities, and with both the vegetable and aniline stains a very wide margin is afforded for original work, not in the matter of producing "freak" colors or combinations, but in the accurate matching of samples and producing conservative rich and permanent effects, which show skill and contribute to sales.

Thick or Thin Filler?

A good finisher knows that to secure the best results he should vary the consistency of the various fillers for different woods. The more open grained the wood the heavier the filler should be. Oak is a very open-grained species, more so than either walnut or mahogany, therefore it follows that a heavier filler should be applied when finishing oak. This idea should be followed consistently on all kinds of wood.

Overcoming Pitted or Rough Finish

Operators of Spray Machines Often at Fault—Temperature of Room, Stock and Materials Must Not Be Overlooked—Filler and Foundation Sometimes to Blame

Many manufacturers and finishing-room foremen often run up against pitted or rough surfaces on their varnished product and are sometimes at a loss to account for and overcome this trouble. A number of causes might be cited and perhaps not the least of them is temperature. Temperatiure plays a very important part in finishing room results. When speaking of temperature reference is made to the temperature of the finishing room, temperature of the article to be finished and temperature of the varnish that is being applied.

Any two of the above items taken at the correct temperature, together with the third at a temperature much lower than the other two will cause a rough or pitted finish. If the finishing room is kept at 70 deg. F., see that you varnish and your work are at nearly the same temperature. Varying temperature during the setting process will also cause pitting.

Again, a good many spray operators, due to insufficient experience or perhaps to neglect, use too much air to break up the varnish or maybe not enough. No specific pressure can be recommended for different varnishes require different pressures. This must be left entirely to the discretion and good judgment of the operator. A little experimenting, if pitting is due to this reason, will remedy this.

Do not mix varnishes, mixing varnishes of different grades will lead to serious trouble. One can readily see the difficulty resulting from mixing varnishes of different flowing and drying qualities. Each grade should be applied separately. Varnishing over a "sweaty" or still moist surface, will give a pitted result. Should there be moisture, damping down the surface with a chamois skin is recommended.

The filler coat should not be overlooked as it may be the source of trouble. Careful application of the correct filler for the particular wood with proper drying and rubbing will sometimes eliminate trouble from this source. The term "pitting" is quite commonly used for "pinholing." This defect is due to a variety of causes, but the varnisher is never responsible for it. The foundation for the trouble is invariably laid before the varnish coats are applied. The filler may be too thin for the wood on which it is used.

The pores in the wood are not being filled. In the sanding of wood, the pores are completely filled with a fine dust. These must be freed from dust, so as to enable the filler to get to the bottom. Then use a good grade of filler, one that will not dry too fast, or it will get brittle and dust, nor too slow, as it is liable to remain fatty at the bottom of the pore and give you trouble afterwards. Lay the filler on thin and rub the pores full. Should the filler not be dry to the bottom of the pore, the method of cleaning off filler, will many times disturb the filler in the pores, so that as much will be worked out as was worked in.

Too much oil in filler is another prolific cause of pinholes. Too much oil causes a sticky filler which, in the rubbing process, is pulled out of the pores. A wood filler carrying too much oil may also dry in a film over the surface leaving the pore packed with a moist filler, which in the process of evaporation will cause a slight eruption, these eruptions resulting in pinholes.

Pinholes are often caused in oak, direct heat dried, by a cheap golden oak stain made from a grade of Asphaltum carrying too much coal-tar. A stain of this kind will combine with the filler and retard its drying to the extent of causing the generating of gases in the pores. There is only one remedy for this, a better stain.

Do not blame veneer for pinholes. Pinholes are not in the veneer, but in the pores of the veneer. Pinholes are found more frequent in mahogany than in any other wood, the cause in many cases, can be traced to using a drum sanding machine. This packs the pores full of a very fine wood powder which in turn holds the moisture of the water stain and when sealed over with filler and varnish, causes a gas to generate in the pores, which must escape—hence a series of eruptions which leave very small holes like a pin puncture. To overcome this, brush the work thoroughly with a furniture rubbing brush, which will dig the dust out of the pores, then dust with air pressure and let the water stain dry from 12 to 18 hours before filling.

Many cases of pinholes can be laid to the glue used. In the glue that has been drawn up in the pores by too much heat, are your pinholes. They are in the glue in the pores, not in the veneer. In examining a piece of glue that has run over the edge, you will find that it does not dry solid, but is full of pinholes. Should this be drawn up in the pores so far, that enough filler could not be applied to completely cover these holes, and should the filler not stay there during the rubbing process, you will find pinholes.

Some pinholes are due to a poor grade of glue which will soften sufficiently under a water stain to hold moisture. They can result only where the original hole is too deep for the varnish to reach the bottom and fill up. It is more difficult to work varnish to the bottom of the pore, than it is to work filler, owing to the elastic nature of the former.

In summary, all that can be said is that the preparatory and filling stages are the source of trouble. Be certain the pores in the wood are free from dust, the glue of good grade, the filler of correct plasticity properly applied and propertly handled after the application.

Finishing Silver Gray Oak

This is a very nice effect, looking like oxidised silver. Make the surface perfectly smooth, then stain it with a preparation of silver nitrate, one part, in 50 parts of water, both by weight. Apply two coats of this, then a coat of commercial hydrochloric acid; let this dry, then apply a coat of ammonia water of ordinary strength. If the work can be left to dry in the dark it will be better. The finish may be in oil or varnish.

The Drying of Varnish in Quick Time

Dry Kiln Assists Varnish to Flow Out Smoothly—Humidity Controlled Temperature Dries Coat from Bottom—Positive Circulation of Air

By Bert D. Wolf

In most finishing departments at the present time, the question of rapidly drying the varnish coatings is a very important one, and invariably leads to the discussion of conditioning the entire finishing room or of building separate varnish dry rooms.

In my humble way, I am going to try to convince you that while conditioning the entire room is a step in the right direction, that it does not meet all the requirements as successfully as building separate varnish dry rooms.

Heat Gives Better Results

Practically all finishing departments are using air brushes in applying the varnish and in so doing both the air and the varnish used are being heated in one way or another, and the work should immediately after being sprayed be put where the temperature is warm enough to flow the varnish out smoothly, otherwise the varnish having been forced on to the surface with a pressure of about ninety pounds of air, will remain pitted and will take a much greater amount of labor and time to sandpaper between coats or to rub the final coat than when it has flowed out to a smooth surface.

It has been my experience in this connection that varnish applied in this manner will not flow out smoothly unless the temperature in which the work is placed is between ninety and one hundred degrees fahrenheit. This being a fact, how many of your finishers can you get to work in a conditioned room heated to at least ninety degrees during working hours, and if they did remain, how much work would they actually do each day in this temperature.

Operations Should Be Separated

Is it possible to produce clean varnished surfaces in a finishing room that is entirely conditioned when you are filling and sandpapering in the same room, both of which operations cause considerable dust and the circulation of the air continually driving this dust from place to place, when it takes varnish from twenty minutes to one hour to set dust free? Have you ever noticed how the dust in a finishing room travels toward spraying machines and is this not a natural thing to happen, because you are employing a forced draft at each varnish booth to take the fumes of the spray away from the work being done and away from the operator who is doing the work? How much more steam will it require to heat the entire room than to heat the separate dry rooms? Do you want to heat the work continually that you intend to sandpaper or rub? Varnished surfaces when warm are natur-

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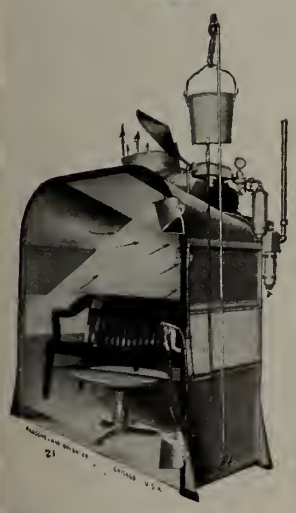

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ally softer than when cool and very easy to scratch or mar. Will you get as positive a change and the same circulation of air in all parts of the finishing room as you can get in the separate dry rooms at so small a cost?

Should one decide to provide separate varnish dry rooms the first necessary step is to select the location for them and this should lead you toward the centre of the building where invariably the light is not strong enough to have work properly done, allowing the space next to the windows all around the room to be used as working space and on one side of the room do all of the dust raising work such as filling, sandpapering, dusting and rubbing and on the other side arrange the spraying booths convenient to the doors of the varnish dry rooms and place any brush or patchers on the same side if there is enough room. If not put them at one end of the room. By this arrangement you will have your dry rooms practically separating the dusty operations from all of the coating and your work will be delightfully clean. The spraying booths being near the doors will allow the varnished work to be put quickly into the dry rooms.

Temperature of From 90 Deg. to 100 Deg.

Varnish dry rooms should be kept at a temperature of between ninety to one hundred degrees fahrenheit during working hours, to allow the varnish to flow out smoothly, keeping the doors closed as much as possible to avoid any dust getting into them and settling on the fresh varnish. After working hours the temperature should reach about one hundred and ten degrees and remain very close to this from five to seven hours when the steam may be turned off and the temperature allowed to come down gradually. From two to three hours after turning off the steam have the doors opened and upon arrival for work in the morning the varnished work so treated will be ready for the next operation provided you have the proper dry rooms and they are in good working order.

Mild Circulation Required

I have frequently heard the statement made that the air in certain dry rooms is changed so many times in five or ten minutes and I would caution any one about creating a cyclone effect—surely no finishing foreman would think of putting freshly varnished goods into a forty-mile-an-hour wind to dry, as this would cause the varnish to dry from the top down instead of drying from the bottom up, and you would have a wrinkled or checked surface when the varnish did really dry at the bottom. Truly varnish requires oxygen from the air to dry it, also a certain amount of moisture to keep the surface pores open and allow the oxygen to penetrate to the bottom of the coat and one should see that both are supplied in sufficient quanity to get the desired result.

The more simply a dry room can be constructed the more positive will be the drying and the less expensive it will be to operate it. The less machinery you can use, the easier it will be to keep the room in good working order. In fact the circulating system of a properly constructed dry room should act on the same principle as the lungs, in that it takes in all the fresh air needed for use in drying varnish and then expels it without creating any dust raising winds or skin drying drafts. This naturally requires intakes so arranged that you will get an equal distribution in all parts and sufficient outlets regularly distributed to allow the used air to be expelled.—"American Furniture Manufacturer."

Choosing a White Enamel

For general work the most necessary good qualities to seek for in a white enamel are good color, fair body, absence of undue stickiness, free flow after spreading with rapid subsequent setting, steady drying and hardening without loss of lustre.

The color should be free from green or pinkishness, and if there be any departure from a clean white, it should only be in the direction of a slightly yellow tint. The body should be such that three coats will show a solid white when used over black.

The viscidity should not be so great that a stream of the enamel will continue to flow in an attenuated and unbroken thread, like treacle nor so little that it can be made to drip in regualr drops. It should be easy to spread it evenly without undue drag on the brush.

The flow must be free enough to eliminate every trace of brushmarks caused in spreading, and may be tested by laying off some of the enamel, with criss-cross irregularity on a pane of plate glass, in which case it should find a perfectly level surface in three minutes or so, by which time it should be so set as not to run down the glass if it be placed on edge.

With regard to drying, it should be dry enough to admit of safely passing a clean, well-wetted leather over it without damage in eight hours, and to lose all tackiness in from 24 to 30 hours.

The Successful Application of Shellac

Shellac should not be applied in a damp, cool atmosphere. It has been clearly demonstrated time and time again that successful results cannot be secured if the humidity is high. If applied in a damp place it is likely to show white streaks and spots, especially where it has been lapped in brushing. These spots will usually disappear as the shellac dries but in many instances a clouded appearance remains. To overcome this high humidity in a finishing room it is necessary to raise the temperature as the higher the temperature the lower the relative humidity, provided the amount of moisture contained in the air is the same. The proper point can be determined by the way the shellac lays. This material should be applied quickly, evenly and with little brushing.

Fine clean cutting sandpaper should be used for sanding shellac. If it clogs in usually follows that the coat is not dry or the shellac has been adulterated. An excellent pad or block may be made from a piece of heavy felt.

Should an edge be sanded through it must be restrained and touched up with shellac before the varnish is appied. The reason for shellacing is that if the stain happened to be lapped on the shellac it would show green under the varnish, unless it was covered with shellac.

A Green Finish for Oak

A very pleasing green finish may be secured on oak by mixing together one pound of chrome green and one-half pound chrome yellow, both of medium shade. In another vessel mix together three pints of turpentine, one pint of raw linseed oil, and a little good white japan. Thin the color mixture with this and apply one coat. When dry apply a coat of white shellac, colored just a little with tumeric and a few chrystals of green aviline. Finish with wax.

MARIETTA WOOD FINISH SPECIALISTS

Beat the High Cost of Shellac

The ever increasing cost of shellac has become a serious problem among manufacturers of furniture.

But hundreds of them are now holding down this cost by using

BUCKEYE SHELLAC

Composed of 50% pure shellac combined with another specially selected hard gum, it is **guaranteed to contain no rosin** and for all practical purposes is serving the place of shellac at a **saving to the user of approximately $1.00 per gallon.**

BUCKEYE ORANGE SHELLAC IS lighter than the pure orange shellac and for that reason is used by some in preference to the White Shellac, adding still more to the economy.

Buckeye Shellac has long since passed the experimental stage. We have sold hundreds of barrels to leading manufacturers during the past year.

Like all MARIETTA PRODUCTS, it is thoroughly practical—a fact which you can prove. Let us send you a sample for testing or give us a trial order.

Tear out and return to us the attached coupon and we will do the rest.

The Marietta Paint & Color Co., Marietta, Ohio

Southern Factory and Office:
HIGH POINT,
N. C.

I'LL TEST IT—SEND SAMPLE

Firm Name .....

Address .....

Person .....

"Good workmen know the difference"

Look for this trade mark on the back of every sheet, belt or disc.

A $25.00 prize—and Joe Pocaro earned it.

"A prize of $25.00 will be given to any employee who can show a means of speeding up the work of his department.

JOHN LANG, *Superintendent.*"

Joe Pocaro, on his way to lunch one noon hour, stopped at the factory bulletin board and read this notice. Joe runs a belt-sander in the Estey Piano Company's big factory in New York City. Under the whirring sandpaper belt of his machine the hardwood panels of the piano cases receive their smooth satiny finish.

That afternoon Joe did some tall thinking as he worked. Most of the time lost in the finishing department was due to belt trouble, he decided. Breaking belt joints, even when the men made their own—grits wearing off in an hour, that should have lasted half a day—and all the other troubles that require a change of belts and eat up time.

Next day he spoke to Mr. Lang, the superintendent, "You've got a lot of sample sanding belts in your office, Mr. Lang," he said. "Will you let me have them to try out on my machine?"

Mr. Lang tells the rest of the story:

"I let Joe have all the sample belts that had accumulated in my office. In a few days he came back, with one of them in his hand. 'Mr. Lang,' he said, with a grin, 'put this belt on all the belt-sanders and I'll win your $25.00.'

"That belt was marked Manning Speed-grits," Mr. Lang continued. "I took Joe's advice and put them on all the belt-sanders. Result—I'm saving hours of time in my finishing department, and Joe Pocaro got his $25.00."

"It pays to talk over your troubles with your workmen," he concluded. *Good workmen know the difference.*"

Send for "The Difference Book." Address the Ritchey Supply Company, 130 West Wellington Street, Toronto, Canada, or write to the Manning Abrasive Company, Troy, N.Y.

Manning Speed-grits

Reg.U.S.Pat.Off.

Don't say Sandpaper— say Speed-grits.

The above photograph shows the Nichols Equipment installed in the works of the Votey Organ Company, Garwood, N.J. These dryers may be used to turn out automobile bodies, furniture, pianos, talking machines, etc., in as many days as it formerly took weeks, and the finish is better, for it is dried scientifically, from the inside out.

If not already Nichols equipped, you owe it to yourself at least to investigate, because:—

1—It will easily triple the output of your finishing rooms.

2—It will decrease congestion in your factory.

3—It will decrease the investment in goods necessarily in process.

4—It will enable you to make more prompt deliveries.

We will analyze your particular conditions and then make you a proposition on an equipment that we know, from our extended experience, will save you time and money, as well as improve your product.

We guarantee fully the efficiency of the equipment as well as its mechanical construction. Every installation has been successful. There are hundreds of concerns to whom we can refer you.

A. S. NICHOLS COMPANY, 33 W. 42nd St. NEW YORK CITY

Manufacturers of Dryers for Lumber, Veneers, Glued Stock, Varnish, Paint and Enamels, for both high and low temperature work. Also sole agents for "Zenitherm" insulating material for the making of rooms for both high and low temperature drying.

Increasing speed and reducing costs while making certain highest quality work, in your finishing room with

Aeron Finishing System
Surpasses Brushing

Spray-finishing Equipment

Whether you manufacture phonograph cabinets or chairs, metal filing cabinets or brass beds; whether you varnish, enamel or lacquer those products, 1 Aeron operator will do at least 4 or 5 times as much work as a brush finisher in the same time.

On every class and grade of work the sprayed-coating will be uniform and free from brush marks, runs, fatty edges and like faults.

Aeron System exhausting equipment will insure a clean, healthful place in which to work; and reduce any fire hazard.

The outfit will be on the job every day, and cost very little to operate and keep up.

These average savings and advantages possible in your finishing room, are taken from the years of economical, and successful operation of the Aeron System in thousands of wood and metal-working plants of every kind.

Let us mail you further particulars that meet your individual requirements—

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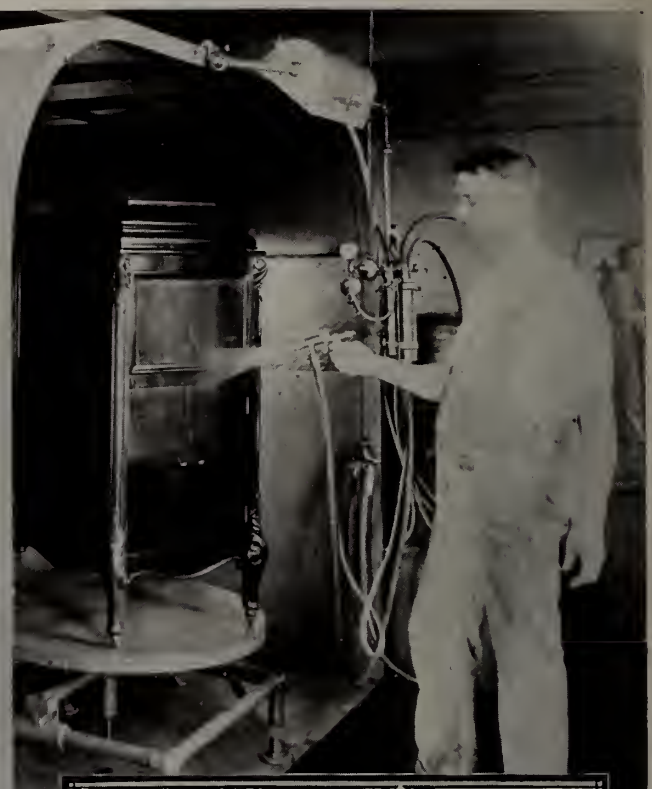

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for spray-painting factory interiors and exteriors at a big saving in time and labor.

High Grade Stains and Fillers

In our Stains you will find the highest possible color values—they are positive—they are permanent. Manufactured in quantities from the best quality raw materials.

Wood Fillers also that have been tested under the most difficult of varying circumstances and found satisfactory.

Eliminate trouble in your finishing department by using these tested materials.

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The
Edward J. Shannon Company
CINCINNATI, OHIO

Veneers and Panels

Buying and Handling Veneers

Suggestions for Judging Value of a Log—Size of Sheets Most Important—Wide Stock Eliminates Excessive Jointing

By A. M. Clark

A good veneer man should be able to size up the value of a log of veneers, in fact that is one of his first and most important duties. When examining samples, even though three are shown one from top, bottom and centre, study the samples and keep a sharp lookout for defects, for it is practically certain that a log will not be any better than the samples exhibited. If wormholes, knots, sap or other defects are noticed try to form an opinion as to how much of the log will be effected and the amount of percentage of waste that will result. All these defects cause a certain amount of waste and in some instances entail extra labor so if a good price is being paid the loss or waste will assume large porportions as the cost of the good material in the log will be increased to a considerable extent.

Another important feature that calls for a certain amount of judgment is the length and width of the stock to be purchased. Needless to say it is advisable to always try and buy a log that will cut to the best advantage. When buying veneers a person usually knows where that particular veneer will be used or in other words veneers are usually bought for a specific purpose. Stock that will work up well on one article if used on some other item may show a large percentage of waste. For instance, if one is buying walnut butts for piano work and the cases is say, four feet, six inches long, the veneers when cut for a butt joint will be two feet, three inches long. One should try and secure stock that will cut with as little waste as possible so if a butt thirty or thirty-two inches long can be secured it will give a sufficient length to get out any part of the case. The nearer one can come to the required sizes the greater value there is in the log secured.

Wide Stock Works Advantageously

The same principle should be followed where buying oak or mahogany or other long stock. However, with the long stock there is this difference, that the material works out to better advantage as four or five lengths may be cut from the one piece thus doing away with a considerable amount of trimming waste. Another point in buying long lengths is to pick the widest stock availabue for the wider the veneer the fewer joints will be needed and thus the work lessened and the waste reduced.

When commencing to cut a log it is a big advantage if one knows how to go about it; where to start and how to secure the best effect from the figure of the veneer. It is advisable to start with the widest part of the case or article to be veneered and cut the veneer for all the widest parts first. In many instances this will avoid the necessity of making any joints. Then by gradually working down to the narrower faces it will be found that practically all the narrow pieces can be utilized to advantage with as little labor and waste as the wider pieces. It would be well to mark each piece of veneer as cut so as to be sure to get the right pieces together and thus secure the best effect and show the figured grain to advantage.

Veneers Must Be Dry

Before jointing it is important to see that the stock is dry. This is an item that must not be neglected. If it should be glued up when it is not thoroughly dry it will surely dry out after it is laid and as it dries it is bound to shrink. As the veneer shrinks it is bound to give somewhere and it is likely that the joints will part slightly and checks appear. Nothing is more unsightly than an open joint in the face veneers, no matter how slight the movement may have been. In view of this one should be sure that none but dry stock is laid up.

When the writer first started at the veneer work we used to make all our joints with a straight edge and knife, cutting the joint by hand. To-day we find that most places have large cutters, similar to paper cutters, or veneer jointing machines. We have a cutter and make all our joints with it. Better results are secured if the stock to be jointed is perfectly flat. Not only does a better joint result but a considerable amount of time can be saved as more sheets may be handled at a time.

When cutting the joints by hand it was only possible to joint one sheet at a time but using the cutter we find that we can handle as high as forty-eight and fifty sheets at one operation. With this machine the knife must be kept sharp and in first class shape. Should it become sprung in any manner poor joints will result. Veneer jointing machines work out very advantageously and enable a large quantity of perfectly jointed veneer to be put through in a day's run.

Gluing Paper and Fabric on Joints

When taping the various joints the first thing is to see that the figure matches. We follow the practice of tacking the veneers on a board, making certain that the joint comes up perfectly tight. Next thing is to glue a strip of paper over the joint. This is allowed to stand while three or four sheets are being jointed and then taken off the board, reversed and a piece of veneer fabric glued over the other side of the joint. This fabric is left on when the veneers are glued on the core and helps keep the joint from opening. I have tried veneering without the fabric on the underside but find that the results are better when it is used. When making a joint in mahogany, oak or any veneer where the joint runs lengthwise of the grain the same procedure is followed only that the fabric is not required on the underside, because if the veneer is thoroughly dry there is not as much danger of the stock shrinking and the joint pulling apart for there is not as much endwood as in a butt joint.

Many shops are employing veneer taping machines and find that these machines make a well taped joint.

bringing the two sheets well together, and increase the output of the department. The machine is certainly a labor saver. The reason we have not installed one is as explained elsewhere in the article, namely that our policy is to buy stock that will need a minimum of jointing.

A New Company in Walnut Field

Well Equipped Plant Operating on Walnut Exclusively—Outline of Operations Performed in Producing Various Veneers—Good Supply of Raw Material Available

One of the newer companies who are at present devoting their attention to the manufacture of walnut veneers is the Pickrel Veneer Company, New Albany, Indiana. This firm, which was recently incorporated, has taken over the plant and business of the John N. Roberts Co., New Albany, and are carrying on at the old stand.

A glance at the personnel of the new organization

Veneer saw in Pickrel plant

would indicate that those in charge are well versed in the veneer manufacturing game. The president, Ray E. Pickrel, who is also president of the Pickrel Walnut Co., St. Louis. Mo., has had twenty years experience in manufacturing and selling hardwood and veneers. B. M. Minigus, secretary and manager, and N. C. Lyon, the plant superintendent, are also men of wide veneer manufacturing experience.

The plant, which has direct rail connections with several lines, is completely equipped with modern veneer cutting machinery. The equipment installed includes an eight foot band mill, for cutting flitches and lumber, veneer saws, one twlve foot Capital slicer, two combination rotary and half round machines, and in addition such equipment as edgers, swing cut-off saws, clippers, etc.

Large vats used for steaming logs

The log buyers of this firm scour the woods and purchase the very choicest walnut logs. These are delivered to the mill either by rail or by auto truck. Upon arriving they are taken to the band mill and cut into suitable flitches. The next operation is steaming. The accompanying illustration shows the vats used for this purpose. The steaming is carried on from twelve to twenty four hours, depending almost entirely on the character of the log being steamed.

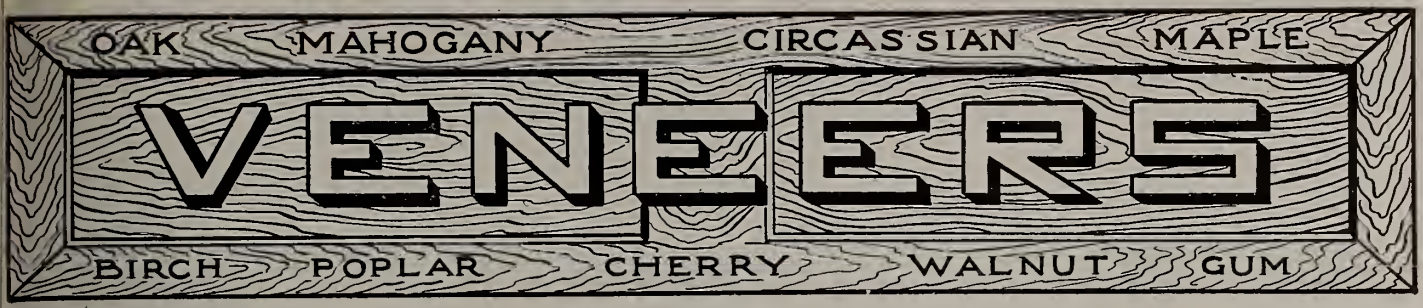
The wood is now ready to be cut into veneers. The flitches for the rotary stock are taken to the rotary or half round lathes while the other material goes to the slicer or veneer saw as specified. After being cut the

The machine used for cutting sliced veneers

veneers are trimmed or clipped and dried in a modern veneer dryer. This machine is capable of handling fifty thousand feet of veneer each day and produces a flat, thoroughly dry product.

The sheets are graded and sampled and then placed in a large warehouse where they are kept until sold. This building provides accommodation for fifty million feet of veneer and contains in addition to the storage facilities a veneer taping department and a crating and shipping room. Each log of veneers is properly tagged with the log number and the number of feet and samples taken which are shown to a buyer so that he may see what he is purchasing. As a log is sold it is promptly crated and shipped out to the customer.

The plant is admirably situated and commands an almost unlimited supply of walnut logs. The veneer manufactured consists of a complete line of walnut in sliced, sawn, rotary cut, half round and fancy butt stock.



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Send us your enquiries and orders. We guarantee good service.

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Mahogany Lumber
Mahogany & Walnut Veneers

Located close to the source of supply down in New Orleans, we have an up-to-date, well-equipped mill, exclusively employed in cutting into Lumber and Veneers the fine Mahogany logs our ships bring in direct from the tropics.

The Freiberg Lumber Company

CINCINNATI, OHIO NEW ORLEANS, LA.

NATIONAL VENEER & LUMBER CO.

AMERICAN WALNUT VENEER

Long Wood and Butts

QUARTERED WHITE OAK VENEER

Sawed and Sliced

1635 West Michigan Street - - INDIANAPOLIS, INDIANA

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

Wood-Mosaic Co., Inc.

Main Office: New Albany, Indiana

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MANUFACTURERS OF

Plain and Quarter Sawed White Oak Poplar, Black Walnut Lumber, Etc.

WE ARE ALSO MANUFACTURERS OF

Both Sliced and Sawed Quartered White Oak Veneer, Sliced Walnut Veneer, and Rotary Cut Poplar Cross Banding

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Plain and Fancy
VENEERS

Mahogany, Walnut
Birch, Ash, Poplar
Rotary, Sliced or Sawed in all Thicknesses

Built up Stock in
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Send for Samples

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PICKREL VENEER COMPANY, Inc.

MANUFACTURERS OF

American Walnut
Exclusively

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FIFTY-TWO YEARS IN OPERATION, BUT -

ahead of the times in equipment. Business institutions of many years standing divide themselves naturally into two classes. One group through too long moving in the same groove eventually dies of dry rot, in many cases behind the times in methods and equipment. The other absorbs and applies knowledge with each year of

Northern Grown Oak

experience and so keeps constantly many paces ahead of the procession. The evidence of our participation in the second group is concretely shown in our plant and reputation.

American Beauty Walnut

Those founding the business originated and operated the first band sawmill used in the United States. Today we are in many things that make for quality and efficiency just as far ahead relatively as that mill was in the days gone by. In short, the experience acquired through fifty-two years of operation has not been left to accumulate dust in the office files. It has been applied by the successive managements, who, all in the same family, have been anxious to maintain, each for his generation, an equal standing with the generation which preceded him. Today the HB brand is recognized nationally as the stamp of quality in the goods and in all the services going into each delivery of the goods to your plant.

HOFFMAN BROS COMPANY

FORT WAYNE INDIANA

Reg.U.S. HB Pat.Off.

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OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

When You Aim for Satisfaction—

—send us your order. We can ship promptly from our large stock of Sawed and Rotary Veneers, Poplar Crossbanding and Sheet Stock, Walnut Butts and Longwood, Quartered Oak, etc., which is always on hand. We would appreciate adding your name to our list of satisfied customers.

W. T. THOMPSON VENEER COMPANY

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Rotary Cut Plain and Figured Woods

AND BE ASSURED OF THE LOWEST MARKET QUOTATIONS

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located on the CHICAGO JUNCTION RAILROAD enable us to receive and ship to and from any part of the world.

Western Office, 516 Lumber Exchange, MINNEAPOLIS, MINN. Mills at GLADSTONE, MICHIGAN

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THE HOME OF "PEERLESS" STANDARD BRAND PRODUCTS

Manufacturers of

"PEERLESS" ROTARY CUT VENEERS

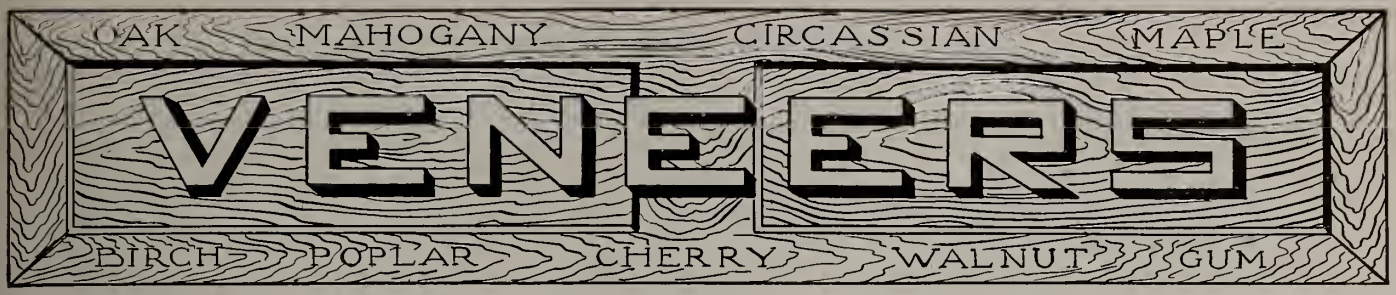
in Birch, Elm, Basswood, Maple, Ash and Beech for all purposes

Also hoops, liners and staves for manufacture of packages

Also "Peerless" Rock Maple, Beech and Birch flooring; Hemlock lumber; Lath, etc.

"Peerless" products are standard everywhere and you are always exercising Safety First in using them. Try us next time.

(When writing mention Canadian Woodworker)



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Veneers

We specialize in large size poplar veneers as we have extra fine poplar logs. We can cut veneer up to 10 feet square.

Our walnut veneer cannot be beat, both in plain and figured wood.

Write us for prices.

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Southern Veneer Manufacturing Co., Inc.
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a large stock of selected Mahogany, Figured and Plain Walnut, Walnut Butts, Sawed and Sliced Quartered Oak and Sycamore and all other native woods.

1,000,000 Feet
QUARTERED RED GUM
to select from

WE Respectfully solicit your inquiries

In the Rush of Increasing Demand for Veneers

The natural tendency is for manufacturers to strive toward a greater output often at the expense of quality.

This is a mistake which the Lawrenceburg mills are carefully guarding against and buyers may be sure that in ordering "BATESVILLE QUALITY" Veneer they are getting goods manufactured in strict accordance with that standard of quality maintained for so many years.

Batesville Lumber and Veneer Co.
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SAWED QUARTERED
White Oak Veneer

is the best buy on the market to-day and we have the following, available for immediate loading.

442,474′ 1/10″ x 6 to 9″.
273,135′ 1/20″ x 10 and 11″
157,594′ 1/20″ x 12 to 14″.
23,150′ 1/20″ x 15″ and up.

Prices on request

Memphis Veneer & Lumber Co.
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OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

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Stock Sizes for Immediate Shipment. All Woods. All Thicknesses. 3 and 5 Ply or made to your specifications

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5 Million feet for Immediate Shipment

Any Kind of Wood Any Thickness

We are Chicago agents for WOCO FIR PANELS, and carry a full and complete line in all stock sizes and all thicknesses at our Chicago warehouse for immediate shipment.

J. J. NARTZIK

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We can supply your wants

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OAK - MAHOGANY - WALNUT

AND

LUMBER

22nd St. and So. Crawford Ave.

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Buyers of Veneers and Panels

will find it to their advantage to purchase from the manufacturers and dealers whose advertisements appear in this publication. They are progressive firms—the leaders in the business, which is a guarantee of good service and prompt attention to orders.

Give your business to the man who will spend his time and money to get in touch with you. He deserves it—if his stock and prices are right.

Laying Ten Ply Grand Piano Rims

All Plies Glued in One Operation—Speed Main Requisite When Glueing Commenced—No Trouble from Warping or Checking—Rims Stand for Months

An interesting veneering operation which is performed in a number of piano factories is the laying up of the bent rims for grand piano cases. These rims are no doubt made to different specifications by different manufacturers and vary in length, running from fourteen to twenty-two feet, according to the style of piano being made. The writer recently had the pleasure of watching this operation being performed. This particular piano maker builds up an eight ply core for the outer rim and lays a face veneer on each side. An inside rim or blocking is made, of twelve or fourteen ply, to fit the outside rim.

The accompanying sketch shows the type of form and clamps used. These are built up of 1½ pine and accurately shaped. The form for the outside rim has the inside section solid and the outside half divided into a number of pieces. The reverse holds true for form used for the blocking. Here the outside is solid and the inner section divided. This ensures that the two rims fit accurately, as the inside of one and the outside of the other are laid against solid forms. These forms are well shellaced to prevent the glue adhering.

Preparing the Core Stock

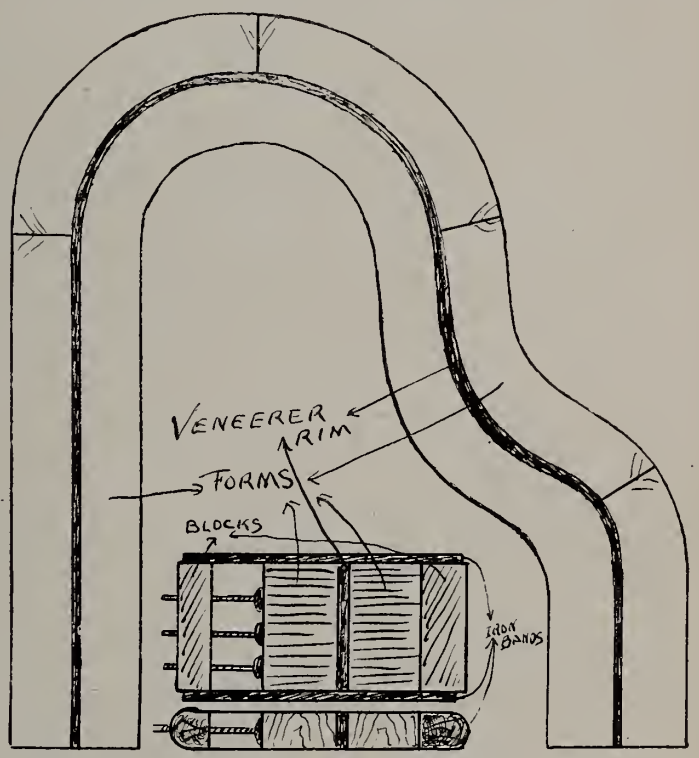
The core stock is first prepared. This consists of ⅛ in. sawn whitewood and ash veneer. As far as possible these woods are laid alternatetly in building up the core. In preparing the veneer for this work all the cracks and checks, if not too large, are carefully taped. Any knots that may occur are cut out and veneer fitted and taped in all holes. The core stock is, as far as possible, purchased in long lengths, but often for the larger cases and where it was found necessary to cut split ends, etc., a square butt joint is made and taped. In laying, these jointts are alternated and kept as far apart as possible. The same applies to a flitch with a knot running through it. Every second piece is turned end for end and the knot cut out and plugged. This ensures that two such places will not come opposite each other. The outside sheets both inner and outer, which must be in one length, are sanded on both sides on a drum sander. This gives a smooth surface for the face veneers. As crossbanding is seldom used this latter operation is very necessary.

As intimated crossbanding is seldom used. The grain of the core all runs lengthwise and when mahogany and plain walnut veneers are laid the grain runs in the same direction as the core. Some times when a fancy burl or blister walnut or other fancy wood is laid where the grain runs at right angles to that of the core a crossbanding of face veneer, not fancy, is laid diagonally between the core and the face.

Matching and jointing fancy veneer for a case is an operation requiring considerable patience and skill. In preparing burl walnut for a grand rim there are, say, twenty pieces fourteen inches long and twelve wide to be jointed side by side. Not only does the grain have to match but unless every piece is absolutely parallel it will be found that when taped together the completed sheet will have a nice curve to it, one end being thrown out perhaps six or eight inches. If this happens the joints will all have to be corrected to straighten the curve.

Material Warmed In Heater

When everything has been prepared the core stock is laid, in order, in a long heater and left there for about three hours. Two thin zinc cauls are also warmed in this heater. While the stock is warming a long bench is set in place, the forms placed and everything made in readiness. All the pieces are laid in one operation and when once the gluing is commenced



Forms and type of clamps used

speed is the main requisite. The glue is all spread by hand and large pots are placed convenient to the long bench.

The first piece of core is removed from the warming box and as it is an outside piece is glued on one side only. The remaining pieces are brought out one by one and glued on both sides and carefully laid in place. When the last piece has been glued on both sides the inside face veneer is laid and a hot zinc caul placed on top and the whole bunch turned over. Glue is spread on outside of the first piece brought out and the outside face veneer laid, then the remaining hot caul.

The rim is now picked up and placed on the form. The outside sections are shoved in place and the clamps put on.

Pressure Worked Around Rim

The pressure is first put on at the outside end of the straight side and carried right around. Then all the clamps are loosened and commencing from the

same end each one is tightened in turn. This ensures that any bulges or kinks are worked out. The same procedure is followed when laying the blocking except that there is not any face veneer to apply. The rims are left in the forms for about three days. When they are removed a number of batons are screwed on the inside to prevent any warping and a baton fastened across the end to prevent spreading. One edge is now cleaned with a draw knife and trued up on a jointer, then it is ripped to width on a saw.

The finished rim is now stored for from two to six months so as to dry out and set before being utilized. With the grain all running in one direction everything shrinks together and practically no trouble is experienced from warping or checking.

When to Heat Wood Before Glueing

Whether a hide glue joint will be strengthened or weakened by heating the wood before gluing depends on the size of the joint. It is assumed, of course, that the work is being done in a glue room that is warm and not draughty, and that the wood itself is at room temperature. Under these conditions, if the joint to be made is of small area, heating the wood is unnecessary. In fact, it may be detrimental, for the warmth of the wood will keep the glue thin; and, when pressure is applied, too much glue may squeeze out, leaving a starved joint. It is very easy to apply too much pressure to a small area.

In making glue joints of large size (several inches each way), heating the wood before gluing is of distinct advantage. Many experiments at the Forest Products Laboratory, Madison, Wis., have proved that when the wood in large joint work is not heated, the joints develop full strength only in spots. Weak spots and even open joints are too frequently discovered.

Uniform high strength in joints of large size may be secured by heating the wood in a hot-box for 10 or 15 minutes at 120 to 130 degrees Fahrenheit just before gluing. The heat from the wood prevents the glue from chilling and keeps it liquid until pressure is applied.

It should be remembered that heating the wood retards the setting of the glue to some extent. In heavy woods, from which the heat escapes slowly, this retarding effect is more marked than in lighter woods. In all species glued cold at the laboratory the time under pressure required to develop full joint strength was less than 8 hours. When heated wood was used, at least 10 hours were required to develop full joint strength in mahogany, and more than 12 hours in red oak and maple.

The Length of Wood Fibres

The current supposition that each species of wood has a characteristic fibre length is not borne out by the many thousand measurements which have been made at the Forest Products Laboratory on wood fibres. These measurements show that a greater differences may be found in one tree than exists between the average fibre lengths of different species.

In one Douglas fir disc, for example, the fibres varied from .8 to 7.65 millimeters (.03 to .3 inches) in length, which is a variation of nearly 7 millimeters. On the other hand, the averages of several thousand measurements on Douglas fir and longleaf pine were less than one millimeter apart, being 4.41 and 3.67 millimeters, respectively.

In the first case, 67 per cent. of the fibre measurements in one tree fell between 4.5 and 6.5 millimeters, which roughly indicates the meaning of the common term "average fibre length" for the tree or species.

Such data obviously can be of little value for identification purposes, because of the overlapping of the ranges of fibre length in the various species.

Some relations have been observed between the length of fibres and their position in the tree. During the first 20-50 years of growth, the increase in fibre length from the centre of a tree outward in any plane is very striking. An approximate maximum having been attained, fibre length, though it may fluctuate somewhat, does not radically change thereafter, even in trees 400 or more years old. Some increase in fibre length occurs also for about two-thirds of the distance from the butt to the top. Within each annual ring the length of the fibres varies, particularly in the conifers, where the early springwood has the longest elements, and the last-formed cells of summerwood the shortest in the ring.

No clearly defined relation has been found between fibre length and the strength of wood. The longer fibres are often found in the weaker material.

Resistance to Decay Now a Factor in Choice of Airplane Wood

Airplanes in the past have been so short-lived that it has mattered little whether the wood in them was resistant to decay or not. Now with better construction and less accidental breakage of airplane parts, instances are coming to the attention of the Forest Products Laboratory of parts needing replacement because of decay.

The fact is being recognized that many woods in common use for airplanes are not resistant to decay and may be destroyed very rapidly when exposed to unfavorable weather conditions.

Fortunately, there are woods whose value in aircraft has been demonstrated which are highly durable. Among these perhaps the most notable is Port Orford cedar. Two others which in tests made by the laboratory have proved very resistant to decay are southern cypress and California redwood. Douglas fir, white oak, and black walnut stand fairly high in durability. Mahogany and Spanish cedar are reputed to be very durable, but no tests have been made on them in the United States. Spruce, which has been the favorite wood for aircraft, is, unfortunately, appreciably less durable than any of the species mentioned. Likewise basswood, beech, birch, and maple may be classed with the less durable species.

The sapwood of practically all species decays readily. Hence in selecting wood for durability, only the heartwood should be accepted.

In cases where it is not practicable to use a naturally durable wood, the life of the wood part may be prolonged by giving it a preservative treatment. Sodium fluoride is a preservative which may be successfully used on parts that are to be glued. Coal-tar creosote, where its color and color would not be objectionable, may be used for parts that are not to be glued. Decay in struts ,propellers, and some other large members can be prevented by applying a coating of aluminum leaf. This keeps the wood dry, and dry wood does not decay.

Heavy patches on a belt throw it out of balance.

A double cut-off saw will save a lot of work and time.

Are You on the Lookout For Quality Veneers?

From our stock of high-grade veneers in Mahogany, American Black Walnut, Quartered Oak, Figured Quartered Gum and plain woods, we can meet your requirements for "something better" in veneers. Our large showrooms are at your service, drop in and make your own selection if you desire, or write, wire, or phone your order. Our quality and service will win your permanent patronage.

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Walnut and Quartered White Oak Veneers and Lumber

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LONG-KNIGHT LUMBER COMPANY

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The Lumber Market

Domestic Woods

There is very little change in the local situation as reported last month. This is the quiet period between seasons. The demand continues fairly strong and available stocks are rapidly approaching the point of depletion. Operations in the woods are proceeding apace and indications point to a slight increase in production over 1919 probably amounting to from 10 to 25 per cent. Weather conditions have hampered operations in certain districts and the labor situation has not been very favorable, but on the other hand the scarcity and high values of lumber have induced a large number of small operators to have a try at the game. The lumberjacks seem unusually restless this season. There is a constant movement from camp to camp. In some instances the visits paid are very brief. If it were not for this feature the amount produced would be greater.

The American buyers are still scouring the field and securing all the stocks they can. To show how wide a demand there is for Canadian woods one local dealer was recently offered an order for 100,000 feet of 4/4 FAS. birch at a good price, from a concern in New Orleans. It is unusual for our lumber to travel so far south.

The building situation will likely have a marked effect on the lumber market during the coming season. There is no doubt about the demand for houses and other construction work but building operations are so costly that there is a marked hesitation on the part of many prospective builders to commit themselves to the high expenditure involved. If conditions are slack in the building field it will have a marked effect on demand. This effect may be far reaching for if houses are not built there will not be such a wide market for furniture. This situation will clarify shortly when the advent of warmer weather permits of building on a large scale. It would appear to be the part of wisdom not to delay purchases hoping for lower prices. Some who have stocks for sale do not appear to be anxious to clean them up. They would hardly act thus if lower values were expected.

Imported Woods

There is very little change reported in the American hardwood situation. While a few manufacturers claim to see indications of a falling off in demand the consensus of opinion seems to point to a continuation of the present strong features of the market. Even though the demand were to ease slightly production and stocks are so low that present prices would still maintain. Quotations remain at the same high level. In fact any changes that have been reported indicate slight advances. Some believe that the limit has been reached, but each time that opinion has been advanced, prices seemed to take another jump.

Conditions in the Southern producing centres have not improved. Wet and stormy weather still prevails. In the event of dry weather it would take many weeks for the swamps and roads to dry and logging conditions return to normal. The situation looks very serious from the production standpoint for unless there is a marked change for the better, southern woods will be scarcer than they were during 1919. At present many buyers are laying stress on the increasing scarcity of available stocks. This is likely to have only one effect on prices, upward. In the northern districts a feature is the compilation of comparative figures on stocks, showing that on February 1 there was less than 50 per cent. the amount of hemlock and hardwoods on hand, as compared with the same date last year. Some items show extraordinary decreases. Taking the situation as a whole indications are lacking which point to any relief or improvement in the existing state of affairs. Production appears to be hampered and low in nearly all producing centres, so with a continuation of the present demand or even a slight easing off in demand the present quotation will prevail and stocks will be scarce for a considerable period to come.

Kiln Drying of Green Hardwoods

Successful kiln drying of hardwood lumber green from the saw necessitates a very even control throughout the kiln at all times. This means that variations in temperature of even a few degrees or variations in relative humidity of 5-10 per cent. are seldom permissible. Such uniformity is possible only when the heating coil is properly drained, is relieved of air, and is distributing heat uniformly along its length.

It is the contention of the Forest Products Laboratory, Madison, Wis., that the return-bend heating coil system, by bringing about more uniform distribution of heat in the kiln, enables the operator to obtain quicker and better drying than is possible with the header-coil system, as it is generally installed.

The return-bend heating coil gives a practically even heat distribution under any steam pressure. The header-coil produces different temperatures at either end of kiln, the extent of variation depending on the steam pressure, length of coils, drainage, traps, etc.

Refractory hardwoods require low temperatures, and the lower the temperatures used, the more evident will be the difference in the results obtained with these two types of heating equipment. Under the same careful operation, green hardwood lumber may be turned out from kilns using the other type checked and over-dried at one end and molded and under-dried at the other end.

Will Call on Canadian Trade

C. W. Peters, vice president and manager of the lumber department of the Mercerau-Hawkins Tie Co., Huntington, W. Va., expects to call on the Ontario trade the week of March 22nd. Mr. Peters is well and favorably known to many of the Canadian hardwood buyers. We understand he has some attractive prices and good stocks of shipping-dry Southern hardwoods to offer, including about half a million feet of oak tie siding.

Hardwood Manufacturer Erects New Mill

Hunt, Washington & Smith, hardwood lumber manufacturers, Nashville, Tenn., are equipping a new mill at Blakley, Georgia. The new plant will consist of a band mill, planing mill and dry kilns. Nothing but long leaf yellow pine will be cut at the new mill, which will be in operation in about three months. W. R. Youmans, Parkview Hotel, Toronto, is the Canadian representative of this firm.

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The service we render in the making of N .B. Quality Veneer is the self-expressed desire to produce Veneer which may be in perfect keeping with its trade-marked name — "NONE BETTER."

A vital factor in the production of N. B. Veneer is our drying equipment We operate three distinct types of dryers; one Philadelphia Textile Dryer, two Coe Roller Dryers and our Vacuum Tunnel Dryer. These unexcelled drying facilities enable us to dry each piece of Veneer by the best possible process. This means Veneer that is flat, practically free from wrinkles and properly dried.

Concentrate Your Purchases and Save Money

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Sliced Figured Red Gum and Rotary Cut Gum Veneer.
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In Cars with Band Sawed Hardwood Lumber

Carload Buyers get Closer Prices, save freight on local shipments and eliminate damaged goods.

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Manufacturers of Waterproof Glue in Powdered Form

Successors to

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As a convenience to Canadian glue users, arrangements have been completed whereby W. H. Cunningham & Company, 183 Church St., Toronto, will act as exclusive Canadian sales representatives for CERTUS Glue.

Veneer manufacturers, furniture manufacturers, mill-work dealers, sash and door manufacturers, cabinet makers, pattern shops, aeroplane and motor car manufacturers—all glue users who are interested in adopting a waterproof and heatproof adhesive, that comes in the form of a powder and has only to be mixed in cold water to be ready for use, are invited to communicate with our Canadian agents and ask for samples, literature and prices. A large stock of CERTUS Glue is carried in Toronto and immediate shipment and expert service are available.

CERTUS VENEER GLUE

Specially suitable for all Veneer Work

CERTUS JOINT GLUE

Specially suitable for Pattern, Joint, and Cabinet Work and all Automobile Work.

Available in large quantities at prices that make these modern waterproof cold glues cheaper in use than other old fashioned adhesives not possessing their advantages.

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Canadian Representatives

183 CHURCH STREET, TORONTO, ONT.

Information and Inquiries

You are cordially invited to make use of this department

Machinery for Spring Clothes Pins

Nelson, B. C., Feb. 27, 1920.

Editor "Canadian Woodworker:"

The machines mentioned in your reply to my enquiry of Jan. 31st, which was published on page 86 of your February issue, are for making the ordinary slotted clothes pin. The equipment we are in the market for is for making spring clothes pins and from the cuts we have seen must be a different type of machine. If you can supply this information we will greatly appreciate it.

Yours truly,
T. H. Waters Co.

From the enquiries we have made it would look as if this equipment is not on the market. One machine manufacturer stated that he has been unsuccessfully trying for some time to find anyone who makes this line and thinks that the manufacturers of the pins make special equipment of their own design. We think that these pieces could be successfully made on a sticker by using special heads with milled cutters that would give a shearing cut and perhaps making some special alterations to the machine itself. The stock would be cut to suitable lengths and fed through edgeways. One manufacturer of slotted pins has adopted this method and there does not seem to be any reason why the same method should not be applicable to spring pins. The springs could either be purchased or a wire forming machine installed to make them on the premises.

Operation of Dry Kiln

Silver Hill, Ont., February 21st, 1920.

Editor "Canadian Woodworker:"

I am going to manufacture oak flooring and am installing a dry kiln to dry the oak. If I use the exhaust steam and only have heat on in the day time will the lumber dry properly? Is it advisable to rip the stock before placing it in the kiln? How long will the dried oak remain dry if allowed to stand in the kiln without the heat being turned on? I figure on putting the pipes along each side. Do you think this will give good results? Awaiting your reply, I am,

Yours truly,
Jas. Gilkes.

Having the heat only during the day time will dry your oak but much better results may be obtained if it is possible to keep the steam on both day and night, thus maintaining an even temperature throughout the 24 hours. It is more economical to keep the heat on all the time; as when this is done the lumber is dried in a much shorter period and in addition the time lost in heating the cold kiln each morning is saved. Again it has been found that when lumber is subjected to heat during the day and allowed to cool at night, it is very hard on the stock. This is specially true if green lumber is being dried. In the old days when all the lumber was well air dried, allowing the heat to drop at night did not have a marked effect on the results.

The ripping of the oak to rough size is a good idea as it means that the drying may be accomplished quicker than if the larger pieces were put in the kiln.

The length of time dry lumber will remain dry can only be determined by experiment. Oak is a wood that absorbs moisture very quickly, and as soon as the stock has cooled, it commences to take up moisture from the air. If you find it necessary to store dry lumber in the kiln for any length of time, it would be a good idea to turn the heat on again for a day or two before removing the lumber to the factory.

Instead of putting the pipes along the wall, you would possibly secure better results by putting them in a pit underneath the car or pile of lumber, and building a fresh-air duct, having an outside connection under the pipes. This should give a good circulation of warm air up through the stock you are drying. If the pipes are placed along the sides, there is a possibility that you may get a circulation around the pile rather than through it.

Wood Graining Equipment

St. Jean Chrysastome, P.Q., Feb. 20, 1920.

Editor "Canadian Woodworker:"

Would you be kind enough to favor us with the names of the manufacturers who make graining machines and plates for use on hardwoods. This information will be very much appreciated.

Yours truly,
Philipe Roberge.

Graining machines and plates for use on all kinds of woods are made by the Hugh Silver & Sons, Prescott, Ont., and the Grand Rapids Panel Co., Grand Rapids, Mich. The plates are made to imitate such woods as plain and quartered oak, walnut and mahogany.

Information Wanted on Small Dry Kiln

A subscriber writes in stating that they operate a small factory on sash, doors and building material, using about 125,000 feet of lumber annually. The kiln they have at present is not giving satisfactory service so they are considering installing a new one. They want to know what size and shape to build, the best arrangement for heating whether steam pipes or coil and hot blast, how to secure an adequate ventilation and other information that will enable them to instal and equip a first-class kiln.

Will you kindly send in to the "Canadian Woodworker" your idea, giving details, of the best kiln for them to instal.

Box Shooks Wanted

A British importer is desirous of securing quotations from Canadian box manufacturers on shooks for 500,000 cases for direct shipment to Greece. The shooks required are of whitewood, planed on one side and having the following specifications: tops and bottoms 19½ in. x 10 in. x ⅜ in.; sides 19½ in. x 8 in. x 7/16 in.; ends 9¼ in. x 8 in. x 9/16 in. The name of this importer may be had by writing the publishers of this journal.

Wood kept permanently dry will last longer than that exposed to climatic conditions.

Cleanliness is essential if you want your band-saw joints to be of real service.

100,000,000 Feet a Year

WITH the completion this month of our double band mill at Vicksburg, Miss., we will have a total yearly production of 100,000,000 feet of Southern Hardwood Lumber. This makes five band mills at Vicksburg—eight band mills in all.

Thus we are doing our utmost to take care of customers' needs with "More Than Service" our outstanding endeavor.

Anderson-Tully Co.

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— Manufacturers —

Southern
Hardwood Lumber
Veneers

News of the Trade

The H. W. Glady Upholstering Company was recently registered at Waterloo, Ont.

The Toronto Dry Art Reed Furniture Works, were recently registered in Toronto.

The plant of Narcisse Blain, carriage maker, Montreal, P. Q., was partially destroyed by fire.

The Brockville Lumber Co., Brockville, Ont., contemplate installing a modern dry kiln in the near future.

The Hill-Clarke-Francis, Limited, New Liskeard, Ont., expect to install a new dry kiln in the near future.

Damage to the extent of $2,000 was done to the plant and stock of H. E. Hunt, cabinet makers, Toronto.

Heintzman & Co., Limited, Toronto, Ont., recently shipped twelve uprights and one player piano to Southport, Eng.

The Muskoka Wood Mfg. Co., Limited, Huntsville, Ont., are considering adding to their dry kilns during the coming season.

The plant of the Ontario Spring Bed & Mattress Co., London, Ont., was recently damaged by fire. The loss was very small.

The McCarthy Aerial Service, Toronto, contemplate erecting an airplane hangar at New Liskeard, Ont., at a cost of $10,000.

The Engel Upholstered Furniture Co., Waterloo, Ont., is the name of a new firm who recently entered into the production of upholstered goods.

Waterloo Furniture Co., Limited, Waterloo, Ont., are making additions to their plant. This is to meet the spring demand for their line of furniture.

The Muskoka Wood Manufacturing Co., Huntsville, Ont., recently purchased the Vernon House, and are remodelling it as a lodging house for their employees.

A company known as Ramsay, Barron & Co., Toronto, Ont., has been formed to take over the cabinet-making business conducted in Toronto by J. W. Ramsay.

The Western Aeroplane Co., Limited, Moose Jaw, Sask., has been incorporated to manufacture and deal in aeroplanes and to conduct commercial flying. Capital $50,000.

The Globe Furniture Co., Limited, Waterloo, Ont., have been authorized by supplementary letters patent to increase their capital stock from $300,000 to the sum of $500,000.

Salter & Co., Edmonton, Alta., who for years have carried on an upholstering and cabinet-making business, have changed their firm name to Thornton, Perkins & Co.

Recent Montreal registrations include Louis Pistono & Co., cabinet makers; Canadian Pattern & Woodworking Co.; and Silver Bell, manufacturer of pianos and gramophones.

The McKinney Lumber Co., Woodstock, Ont., intend to erect a sash and door factory as soon as the weather permits. The expenditure will likely run from $20,000 to $40,000.

The Newall Mfg. Co., Prescott, Ont., manufacturers of curtain poles, bathroom fixtures, and upholstery hardware, have let a contract for alterations and additions to their plant.

The Board of Education of Sault Ste. Marie, Ont., are equipping a manual training department in their new technical school, and are in the market for woodworking equipment.

The Peppler Upholstering Co., Kitchener, Ont., were recently organized to manufacture and deal in furniture and upholstered goods. C. H. Peppler is the head of the new concern.

The carriage makers of Alberta recently met in convention at Calgary, Alta., and elected the following officers: Walter Hobbs, Edmonton, president, and A. Jessiman, Didsbury, secretary.

The Gray Furniture Co., Limited, Winnipeg, Man., was recently incorporated to take over the business of the Gray Furniture Co., and to manufacture and deal in furniture of all kinds. Capital $75,000.

The Columbia Handle Co., London, Ont., whose plant was recently destroyed by fire, contemplete erecting a new factory at a cost of $25,000. They are in the market for the necessary equipment.

Recent British Columbia incorporations include the Robertson & Hackett Sash & Door Co., Limited, Vancouver, B. C., capital $50,000, and the Acme Box Co., Limited, Vancouver, B. C., capital $15,000.

The Porcupine Pulp & Lumber Co., Limited, Hoyle, Ont., contemplate equipping a woodworking plant and are in the market for the following machines:—lathe, tenoner, edger, saw-tables, band saw and re-saw.

The saw and planing mill of Malloy & Brian, Haliburton, Ont., was completely destroyed by fire. The loss amounts to about $40,000. The plant will be rebuilt and new equipment installed as soon as possible.

W. J. Patterson, Newmarket, Ont., is manufacturing a line of phonographs, known as "Harmonola Phonographs." These instruments embody many of the newer features and are being sold at very reasonable prices.

It is expected that a by-law will be submitted to the ratepayers of Cobourg, Ont., in the near future, regarding the establishment of a large furniture factory by the Langslow, Fowler Furniture Co., of Rochester, N.Y.

The Office Specialty Mfg. Co., Limited, Newmarket, Ont., manufacturers of office furniture of all kinds, have acquired a site and are contemplating erecting an addition to their plant. Definite plans have not been formulated.

A. I. Root Co., Medina, Ohio, have decided to locate in Ingersoll, Ont., and have secured suitable premises in the Noxon Building, where they will install all equipment necessary to produce their line of beekeepers' supplies.

The Walter Dean Canoe & Boat Co., Limited, Toronto, Ont., were recently incorporated to manufacture and deal in boats and canoes. Two of the incorporators are W. J. Dean and E. M. Dean, of Toronto. Capital $100,000.

Thibault, Limitee, Montmagny, P. Q., have been incorporated to deal in lumber, furniture, doors, sash, and other wood products. R. Thibault and N. Letourneau, of Montmagny, P. Q., are two of the incorporators. Capital $99,000.

The Montreal Heel Co., Limited, Montreal, P. Q., have been incorporated to carry on business as manufacturers of heels and trunks. Among the incorporators are J. E. Dupre and N. Belair, both of Montreal, P.Q. Capital stock $49,000.

Shaienks Incorporee, Levis, P.Q., have been incorporated to take over the business conducted by Shaienks & Frere, and to manufacture such items as furniture, toys, wooden articles and household goods of all kinds. Capital $99,000.

The Karn Piano Co., Limited, Toronto, Ont., have been incorporated to manufacture and deal in pianos, phonographs, and other musical instruments. Capital $500,000. J. E. Hoare, piano manufacturer, Toronto, Ont., is one of the incorporators.

In an effort to cope with the shortage of houses in Elmira, Ont., the Elmira Planing Mill Co., Limited, accepted a contract from the Elmira housing commission, not only to supply the necessary material, but to erect and turn over six houses complete.

The Phonola Company of Canada, Limited, Elmira and Kitchener, manufacturers of phonographs, have established a repair department at their Elmira plant. This department will take care of the repairs sent in by their customers throughout Canada.

A fire occurred in the plant of the National Cabinet Co., King St., Toronto, manufacturers of phonographs. The damage, which amounts to $5,000, was confined chiefly to cabinets finished and in the course of manufacture. The loss is fully covered by insurance.

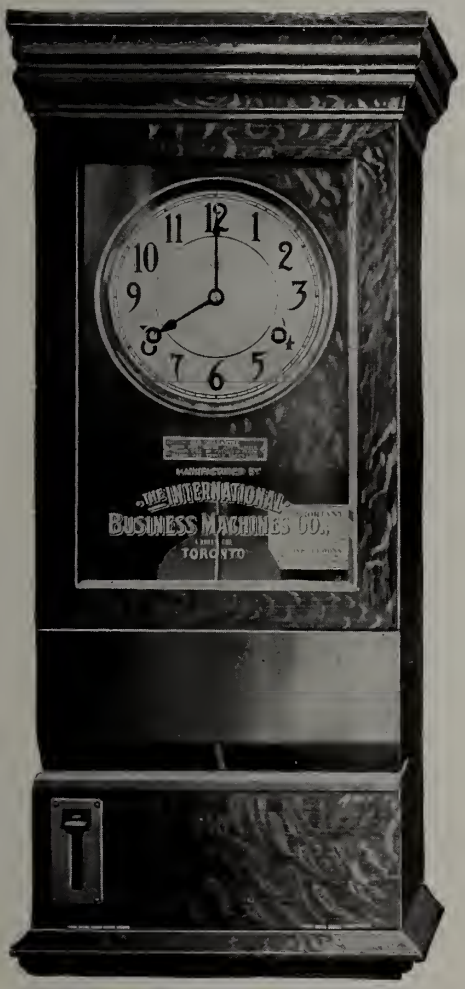
The carriage factory of Coady Bros., Toronto, Ont., was completely destroyed by fire. The loss entailed amounts to about $50,000. When the flames reached the room where the varnish and paints were stored a voilent explosion occurred, wrecking the entire building.

The National Reed and Rattan Co., Limited, Toronto, Ont., have been incorporated to manufacture and deal in furniture in reed, rattan, and cane. Among the incorporators are G. B. Balfour and R. P. Saunders, solicitors, of Toronto, Ont. Capital $100,000.

The operation of the plant of the Wiarton Furniture Co., Wiarton, Ont., is being held up due to delay in the delivery of two planers. About ten men are employed at present, and when the new equipment arrives this number will be increased to thirty-five.

The Windsor Phonograph & Record Co., Limited, Mon-

The Biggest Thing in a Thousand Furniture Plants



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It's an International Job Time Recorder and its bigness is measured by its importance. Thousands of them are in daily use in industries of the world.

It will print an accurate, unalterable and undisputable time record of every job that is done in your factory. It does not beat the worker—neither can it be cheated by the shirker.

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(Also Makers of Dayton Scales and Hollerith Electric Tabulators)

treal, P.Q., have been incorporated to manufacture and deal in phonographs, records, pianos, musical instruments and furniture. Capital $1,000,000. John Kerry and Aimie Bruneau, of Montreal, are among the incorporators.

Taylor Brasco, Limited, Hamilton, Ont., have been incorporated to construct, install and repair store fronts and store, office and showroom equipment of all kinds. Capital $50,000. J. D. Moser, manufacturer, and T. R. Sloan, barrister, of Hamilton, are two of the incorporators.

The upper storey of the E. B. Eddy match factory in Hull, Que., was recently damaged by fire to the extent of several thousand dollars. There was considerable excitement among the three hundred girls employed in the factory at the time of the blaze, but all escaped with safety.

Langstaff, Schurg & Co., Limited, Emo, Ont., manufacturers of boxes and box shooks, have recently installed a Standard wire bundler. They contemplate adding several new machines which will necessitate an entire change of system, but this has not been definitely decided on as yet.

The Belleville Sash & Door Co., Limited, Belleville, Ont., have been incorporated to manufacture and deal in sash, doors, finishing material and wood products of all kinds. R. J. Graham and J. Bone, manufacturers, of Belleville, Ont., are two of the incorporators. Capital $40,000.

The Hartland Lumber Co., Limited, Hartland, N. B., have been incorporated to manufacture and deal in furniture, flooring and building material. A general lumber business will be conducted in connection. Capital $18,000. H. H. Hatfield and R. W. Cameron, of Hartland, N. B., are among the incorporators.

A company known as the Westminster Furniture Mfg. Co. has been organized in New Westminster, B.C., to manufacture a line of furniture. It is the intention to utilize native hardwoods, chiefly maple and birch. British Columbia should present a good field to the manufacturer who produces a first-class line.

Laminated Materials, Limited, Sapperton, B. C., manufacturers of three-ply and veneers, plan on erecting another plant. An option has been secured from the New Westminster council on a suitable site and a site in Prince Rupert, B. C., is also being investigated. In all probability both the old and the new plant will be operated.

The Regina Sash & Door Co., Regina, Sask., contemplate erecting a factory 60 ft. by 265 ft., early this spring. The building, exclusive of equipment, will probably cost about $40,000. A separate dry kiln will likely be constructed. The intention is to install practically all new equipment. When in operation about fifty men will be employed.

The Sterling Bay Lumber Co., Tenby Bay, Ont., at a meeting held recently, decided to purchase machinery and other equipment for the purpose of manufacturing a line of furniture. The following officers were elected at this meeting: President, M. Mickalsen, vice-president, Peter Bergan, secretary, J. O. Johnson, treasurer, Peter Bergan.

The Rhodes Curry Co., Limited, Amherst, N. S., who conduct a large general woodworking business, have been reorganized and will in future be known as the Rhodes, Curry Limited. C. D. Dennis is one of the principals in the new company, and will hold the position of managing director and secretary treasurer. This business was founded in 1877.

The Singer Manufacturing Co., St. Johns, P.Q., have about completed the installation of a battery of modern dry kilns. These kilns, of which there are seven, are 104 feet long and 8 feet 6 inches wide, and will accommodate seven cars containing 4,500 feet of stock, or 31,500 feet per kiln, giving a capacity of 290,500 feet for the full compliment of kilns.

The Victor Woodworking Co., Amherst, N. S., did, according to the manager, A. H. Miner, an unusually good business during 1919. He stated that their business increased from month to month, and he believes that this increase shows that the public realize that the present scale of prices does not represent a temporary increase, but rather indicates the level of permanent values.

At the annual meeting of the Office Furniture & Supplies Co., Limited, Brockville, Ont., which was held recently, it was decided to erect additions and add equipment that would about double the present capacity of the plant. The following officers were elected:—President, H. W. Fleury, Aurora, Ont.; vice-president, Hon. G. W. Fowler, Sussex, N. B.; managing director, H. K. Bowes, Brockville.

W. D. Midmer, Limited, Napanee, Ont., has been incorporated to manufacture hardwood flooring, building material and wood products of all kinds and to take over as a going concern the business and plant of W. D. Midmer. Capital $100,000. W. D. Midmer and Philip Woodcock, of Napanee, are two of the incorporators. A ten acre site has been secured and new factories and additions will be erected as required.

The Canadian Wirebound Boxes, Limited, with headquarters in Toronto, has been granted a charter. Capital stock is $300,000. The company is empowered to carry on the business of manufacturing and dealing in wirebound boxes and other wood products. Other powers are to engage in the planing and dressing of lumber and building materials of various kinds. The incorporators of the company are L. A. DeLaplante, and others, of Toronto.

The Goderich Mercantile Co., who took over the old Wheel Rigs factory at Goderich, are making good progress. At present they are manufacturing a line of baby carriages, rattan furniture, go-carts, toys, etc., the quantity produced being limited only by the raw material attainable and the labor situation. The officers of the company are Thos Pritchard, president, W. T. Miller, vice-president, and A. F. Sturdy, secretary-treasurer.

Modern Wood Products, Limited, have been granted a charter, with a capital stock of $60,000, and head office in Milverton, Ont., to carry on the business of a planing mill, and to purchase, sell and manufacture all classes of building materials, as well as to make and deal in furniture, lumber and all kinds of wood products. The incorporators are John Boshart and Enos Nafziger, manufacturers; A. C. Clemens, merchant; Norman H. Honderich, traveller, and John C. Grosch, all of Milverton.

The plant of the Meaford Furniture Co., Limited, Meaford, Ont., narrowly escaped destruction by fire. The blaze started in one of the dry kilns and spread through the other three kilns. The sprinkler system, together with the town fire brigade, kept the flames from spreading to the main buildings, and also saved the greater part of the 144,000 ft. of lumber which was in the kilns. The dry kilns and lumber were damaged to the extent of several thousand dollars. Then there is the additional cost of re-drying the lumber saved. The loss is fully covered by insurance.

J. N. Archambault, Limited, with a capital stock of $50,000, and headquarters in Montreal, has been granted a federal charter to take over as a going concern the business of J. N. Archambault, wholesale and retail importer and exporter, and to manufacture and deal in furniture of all kinds. The new concern is empowered to carry on business as manufacturers, merchants, importers and exporters of woodenware, furniture, gramophones, toys, etc. The company is composed of J. N. Archambault, Philippe Trottier, Joseph E. Nantel, Henry Prevost, of Montreal, and others.

The Casper Heimbecher Furniture Co., of Elmira, Ont., has been taken over by Messrs. Snyder Bros., of Waterloo. This business, which until October, 1919, was known as Heimbecher & Jung, specialized in the manufacture of frames for upholstered furniture, and Snyder Bros. were one of the largest customers. Messrs. Snyder Bros. plan on continuing the operation of the plant they have just acquired; in fact its output will probably be increased, and the whole output will be utilized by their upholstering plant in Waterloo. In all probability Henry Heimbecher, son of the former proprietor, will be placed in charge.

A company represented by Capt. E. V. Argon is negotiating for the purchase of the shipbuilding yards which were operated by the Foundation Co. of B. C. Limited, at Victoria, B. C. While the identity of the company or the interests behind the deal have not been disclosed, the plans of the new concern call for the construction of forty or more wooden steamships. The vessels will be larger than those constructed by the Foundation Company for the French Government, being all from 4,000 to 4,500 tons register. The construction of these steamers will provide work for the yards for several years, and might develop into a permanent industry, including the possibility of the construction of steel ships.

The employees of the Meaford branch of the Seaman, Kent Company, manufacturers of hardwood flooring, who were out on strike, have returned to work. Owing to the large number of orders on the books, the men were notified that it would be necessary for them to work ten hours a day and Saturday afternoons until the company had caught up with its work. They were offered time and a quarter for

HARDWOOD LUMBER

General Offices
GREENWOOD, MISSISSIPPI,
U.S.A.

We are short on quantity, but long on QUALITY and SERVICE.

This brand is your GUARANTEE and our mutual PROTECTION.

Manufacturers Exclusively

BAND MILLS:

GREENWOOD, MISS. MOORHEAD, MISS.

Kraetzer-Cured Gum is guaranteed to be practically *flat, straight and bright.*

all overtime. This was refused, the men demanding time and a half. Following this, the men, on going to work one morning, found a notice which stated that if they were not prepared to accept the company's offer and work the ten hours, they could look for other employment. As a result all the men walked out. After being out a few days, the men agreed to accept time and a quarter for overtime for five days a week, and time and a half for Saturday afternoons for a period of one month, during which time arrangements will be made for operating a night shift so that all overtime will be eliminated. The bonus which the company has been paying has been discontinued, and in its place a straight advance of 10 per cent. has been made in wages.

Personal

W. P. McClung, cabinet maker, recently passed away in Toronto.

Jas. Morrison, of Morrison & Co., carriage manufacturers, Ingersoll, Ont., recently passed away.

E. Ziegler, who recently acquired an interest in the Harriston Furniture Co., Harriston, Ont., has moved his family from Kitchener to Harriston.

The death occurred recently of Mr. J. D. A. Senecal, manager of the Willis piano plant at Ste. Therese, Quebec. The late Mr. Senecal has been connected with that firm for the last fifteen years.

Jas. Christie recently passed away in St. John, N.B. Mr. Christie was president and manager of the Christie Woodworking Co., Limited, of that city, manufacturers of store and office fixtures and general woodworking.

J. F. Thompson, who holds a responsible position with the National Table Co., Owen Sound, Ont., was elected by acclamation to the position of first deputy reeve of Owen Sound. Mr. Thompson has been a member of the Town Council for many years.

J. E. Gagnon, of Ottawa, recently passed away while on a visit to Montreal. During the past twenty years Mr. Gagnon had been in the employ of the Ottawa Car Mfg. Co. For the greater part of this period he held the position of foreman of the cabinet department.

Major James Brechin, former B. C. Lumber Commissioner in Eastern Canada, who resigned some time ago and left Toronto for the west, has been appointed private secretary to Hon. Dr. King, Minister of Public Works, Victoria, and has entered upon his new duties.

Angus Morrison, Sr., recently passed away at his home in Ingersoll, Ont. He was well and favorably known, having conducted a carriage-making business for many years, and in addition he took a great interest in public affairs, serving as member of the council for a number of years.

The many friends of J. B. Jarvis, of the Elgie & Jarvis Lumber Co., Limited, Toronto, are extending sympathy to him on the death of his wife, who passed away recently from pneumonia. Previous to her own illness she had been nursing her children, who were down with influenza. Mrs. Jarvis is survived by her husband and two children.

Harry E. Turnbull, manager of Turnbull & McManus Ltd., sash and door, and general woodworking wholesalers of Winnipeg, left recently for the Pacific Coast on an extended business trip. Mr. Turnbull does not believe that lower prices for lumber and building supplies will prevail during 1920, owing to heavy domestic and foreign demand.

James G. Kent, President of Kent, McClain, Limited, recently passed away at his home in Toronto. Mr. Kent was born at Selkirk, Ont., about 63 years ago, moving from there to Hamilton and later to Toronto. Some fifteen years ago he became president of the Kent, McClain show case business, and had been actively connected with this firm ever since. His death was rather unexpected, for while he had been sick for some time, he had improved and was preparing to pay a visit to the office. John G. Kent, general manager of the Canadian National Exhibition, is a brother.

PRESSES
For Veneer and Veneer Drying
Made in Canada
William R. Perrin
Limited
Toronto

Olson Units for Ford Trucks

The majority of the lumber dealers, furniture dealers and box and barrel manufacturers should be interested in the new Olson equipments for Ford chassis, which allow the mounting of bodies of special length for use in handling lengthy or bulky products.

Somewhat more than a year ago the Swedish Crucible Steel Co. of Canada, Limited, Windsor, Ont., began manufacturing frame extension units for the Ford Truck. At first this business was only to supply the local demand, but to-day Olson equipments are in use in every province of the Dominion. With recent additions to this line it is now possible to secure an extended frame and drive shaft giving any length wheel base desired for use on a light truck of this type.

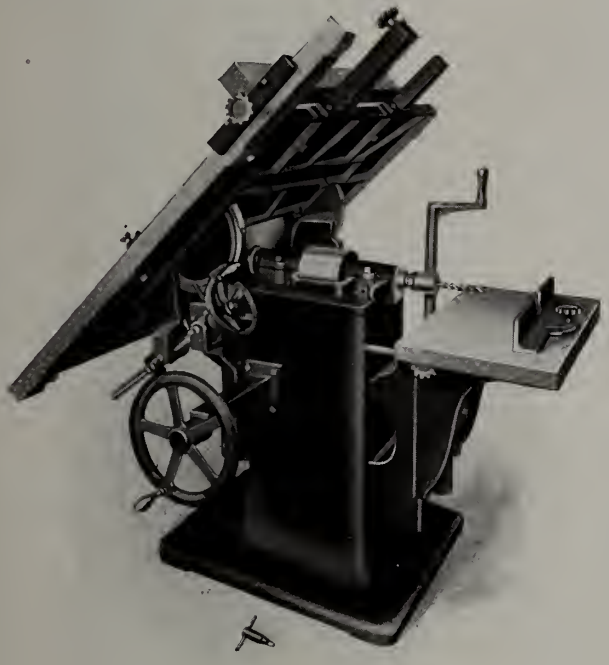
There are very few concerns in the woodworking industry, to-day, who have not work for at least one truck with a carrying capacity of around one and one-half tons, which is the rating of these trucks under ordinary road conditions. Heretofore it has been necessary to invest several thousand dollars in a large heavy duty truck, in order to obtain sufficient wheel base to be of any value and real service for hauling lumber and other bulky products. This investment has deterred many from purchasing truck equipment, but to-day with the proper type Olson equipment it is possible to use the standard Ford truck for this class of work and secure the advantage of its well-known economy of operation and exceptionally low initial cost.

Four types of Olson extensions are now manufactured and it is an easy matter to secure the proper body type for particular requirements. Truck bodies may be built any width ordinarily required, but the difficulty has been to get sufficient length. The Olson equipment overcomes this trouble. It is made in different lengths to accommodate bodies up to 15 feet in length. In addition, there is supplied the No. 12 equipment, which does not require a body, but is equipped with three special rollers of the proper size. These greatly facilitate the unloading of lumber in that the load may be rolled off in a couple of minutes in place of the slow and costly method of unloading by hand.

Elect Officers for Current Year

At a meeting of the stockholders of the Buffalo Forge Co., Buffalo, N. Y., the following gentlemen were elected to office:—Henry W. Wendt, president; Edgar F. Wendt, vice-president and treasurer; Henry W. Wendt, Jr., Vice-president and secretary; C. A. Booth, vice-president and sales manager. The directors for the ensuing year included the above named officers, and in addition H. S. Whiting.

An Excellent Machine for Furniture and Cabinet Work



The "Famous" No. 16 Variety Saw Bench with boring and mortising attachment will do much to increase your output in your furniture and cabinet shops. Accuracy is a main factor in its operation, while the roughest class of work is handled with the same degree of efficiency.

Write us for further information regarding the "Famous" No. 16 Variety Saw Bench and many other machines that you may need and are included in our complete line of woodworking machinery.

The Sidney Machine Tool Company

SIDNEY, OHIO U. S. A.

Ontario Agent--H. W. Petrie, Ltd., Toronto

"Quick Action"

is necessary to secure these

Dry Hardwoods

45 M' 4/4" No. 3 Com. Birch.

1 Car 4/4" No. 3 Com. and Btr. Beech

½ " 6/4" No. 2 Com. and Btr. Beech

½ " 8/4" No. 2 Com. and Btr. Beech

23 M' 4/4" No. 3 C. & B. Winter-cut Basswood

26 M' 6/4" No. 2 C. & B. Winter-cut Basswood

6/4" Largely No. 1 Com. and Btr.

All White Stock.

½ Car 5/4" No. 1 Com. and Btr. Maple

1½ " 6/4" No. 1 Com. and Btr. Maple

It's Selling Like Hot Cakes!

Canadian General Lumber Company, Limited

712 Bank of Hamilton Bldg.
TORONTO

MONTREAL OFFICE: 203 McGill Bldg.

Selling

Graves, Bigwood & Co.'s

Lumber, Lath and Box Shooks

FOR SALE

Single Surfacer, 28 inch, Whitney pattern, in good condition. Will sell cheap. Box 67, Canadian Woodworker. t.f.

FOR SALE

43" Berlin Triple Drum Sander, Spiral Drums, excellent. Also Mershon Band Rip Saw. Also 400 H. P. Polson Cross Compound Brown Engine. Box 77, Canadian Woodworker, Toronto. 3-4

FOR SALE

Spraying equipment, consisting of Paasche Air Compressor Unit, No. 32, complete. For full particulars apply

T. S. SIMMS & CO., LTD.,
3-5 Fairville, St. John, N.B.

Wood Working Machinery For Sale

1—24" Pony Planer.
1—12" Jointer.
1—Iron frame, wood top Rip Saw.
1—Iron table, combination Rip and Cross-Cut Trim Saw.
1—15" Inside Moulder.
1—22" x 9' Veneer Press.
1—14" x 12' Veneer Press.
All in good condition, and may be seen in operation.
Apply Box 78, Canadian Woodworker, Toronto. 3

FOR SALE

1—Second Hand

Jackson Cochrane Double End Tenoner

Can be inspected in operation in Western Ontario furniture factory. Machine in good condition. Price and details on application.

Canada Machinery Corporation, Ltd.,
3 Galt, Ontario.

Want To Buy

Veneer Slicer

either 12, 14 or 16 ft. machine.

Prefer machine manufactured by Capital Machine Co.

Also can use an eight foot

Capital Rotary Machine

and eight foot clipper.

Advise as to lowest cash price and length of time machines have been operated and present location.

Address, 11-200, c/o Canadian Woodworker, Toronto, Ont. 2-3

WANTED

One Second Hand Doig Corrugating Machine, either single or double—double preferred.

Wilson Box Company, Ltd.,
3 St. John, N.B.

WANTED

Correspondense with furniture manufacturers desiring practical designs and details of furniture in all the prevailing periods. Address C. Theodore Eichelsdoerfer, 56 West Mechanic St., Shelbyville, Ind. 3-6

Mechanics Wanted

Sticker and planer hands for planing mill. First class, steady job for capable men.

THE EVANS CO., LIMITED,
3 Sudbury, Ont.

WANTED

Competent Sander Man, to operate Drum and Stroke Sanders. Must be able to take care of machines and produce fine work. Good pay and steady position to the right man.

Apply—THE J. C. SCOTT CO.,
3 108 River Street, Toronto.

WANTED

Veneer Man, capable of taking charge of veneer room in a factory manufacturing phonograph cabinets. One who guarantees to turn out the highest grade work. Apply, stating experience and wages required, to

Gold Medal Furniture Co.,
3-5 Uxbridge, Ont.

WANTED

A CARRIAGE WOODWORKER. Must understand auto woodwork, such as building commercial bodies, and general woodwork. Not particular about any special nationality. Job guaranteed year round to the right party. Apply at once.

W. Landa Carriage Works,
3 Saskatoon, Sask.

Accidents to Railroad Employees Decrease

Records compiled by the Safety Section of the Division of operation, United States Railroad Administration, recently made public by the Director General, show that during the first ten months of 1919, 1,107 fewer employees were killed in accidents and 25,930 fewer employees were injured during the corresponding period of 1918. Since the Safety Section had only begun to function in January, 1919, these figures are considered evidence of the application of safety practices.

PETRIE'S LIST

of NEW and USED

WOOD TOOLS

FOR IMMEDIATE DELIVERY

Wood Lathes

16" x 12' American, patternmakers.

Wood Planers

26" Double surfacer, divided rolls.
24" Champion planer and matcher.
24" MacGregor-Gourlay.
24" Pony planer.
24" Crescent, single surfacer.
12" Petrie buzz planers, with safety heads (4).

Band Saws

36" Famous, pedestal.
36" Jackson-Cochrane, pedestal.
32" Famous, pedestal.
30" Ideal, pedestal.
60" Fay & Egan, band re-saw.

Saw Tables

No. 16 Famous, variety.
MacGregor Gourlay railway cut-off.
No. 1 Greenlee automatic cross-cut.
Galt, iron frame, cut-off.
Iron frame, power feed, rip.
7' Williams, swing saw.

Mortisers

No. 2 Osborne-Baker, foot power.

Moulders

13" Clark-Demill four-side.
12" Woods four-side, inside.
10" Goldie & McCulloch, three side.
10" Houston, four-side.
8" Dundas four-side.
6" McGregor-Gourlay, three side.
6" Dundas sash sticker.

Boring Machines

No. 7 Sidney, Famous, belt driven.
Gear driven, post borer.
Fay, single spindle, horizontal.

Sawmill Machinery

2 Block portable sawmill.
Boss, automatic, shingle machine.
Vaughan, gasoline driven, drag saw.
Champion, friction, drag saw.

Miscellaneous

No. 1 Ballantine power feed dowel machine.
Fay & Egan 12 spindle dovetailer.
MacGregor Gourlay 12 spindle dovetailer.
M 120 Cowan, panel raiser.
20" American, wood scraper.
6" British-American, hand floor scraper.
Dundas, wood frame tenon machine.
Fay, iron frame, double head, tenon machine
No. 3 Defiance, rim & felloe rounder.
No. 1 Defiance, axle shaper.
No. 1 Defiance, spoke driver.
No. 21 Covel bandsaw filing clamp.
3" x 7" universal wood trimmer.
4" x 8" bench, wood trimmer.
Cowan veneer press screw.

Ask to see our large stock of used supplies—belting, pulleys, machine shop equipment, mill supplies, pipe and fittings., etc. Most of this material is as good as new, and can be bought at greatly reduced prices.

H. W. PETRIE, LTD.

Front St. W., Toronto, Ont.

No. 3 Self Contained Scroll Saw

Colladay Machine Works

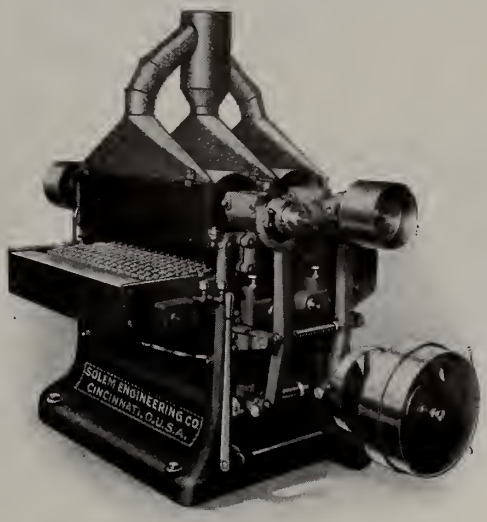
Successors to

Jos. O. Colladay Co., Inc.

Manufacturers of a complete line of woodworking machinery

Since 1867 Philadelphia, Pa.

Greater Production with Less Experienced Help



The No. 370 Drum Sander is so simple and accident proof that any boy or girl can feed and take away with absolute safety.

Write for descriptive bulletin.

Patented May 6, 1919

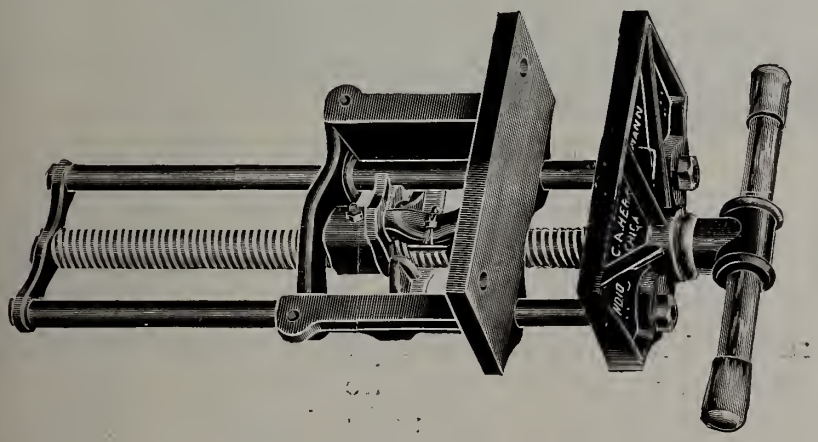
The patented RUBBER PADS used for the bed of this sander are decidedly an improvement and are used in large quantities on every make of Endless Bed Sander. Ask for sample.

Solem Machine Company

ROCKFORD, ILL., U. S. A.

A simple twist of the wrist locks or unlocks this master vise

The Herriman Master Vise



Unparallelled in the rapid action and grip. Unmatchable in the performance of its work.

Time and Labor Cut ½ or Better.

SAVE YOURS

One feature alone is worth more to you than its entire cost in the saving in operating time over any other vise made.

The fact that this vice need not be "screw set" or "screw loosened" is the reason of its adoption in all efficiently operated plants.

Exclusive Distributors for the Herriman Master Vises

The O. E. JOHNSON COMPANY

1223 W. Washington Boulevard, - CHICAGO, Illinois.

HOW DO YOU DRIVE WOOD SCREWS?

This Automatic Electric Screw Driver weighs five pounds. Runs 250 r.p.m., and will drive in or take out any size screw from the smallest size up to the very largest that can be driven with hand or ratchet brace.

Used in over one thousand factories for the economical production of furniture, refrigerators, pianos, auto bodies, boxes, wood patterns, etc.

Send for Bulletin H—Now

GEO. C. McKAY COMPANY

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When you want GOOD Boilers

Just remember there's a Plant in St. Catharines that has been "making good" for 35 years—with the will and the facilities to make Quality Goods, including Boilers (all types), Tanks, and plate work—and we are that Plant.

ENGINEERING & MACHINE WORKS OF CANADA LIMITED

EASTERN SALES OFFICE
HALL MACHINERY CO., SHERBROOKE.

ST. CATHARINES, ONT.

NAPCO WATERPROOF GLUE

No wastage

Applied cold—and mixed cold

Profitable in its saving

Consistent in all grades of work

Odorless in the glue room

NAPCO is absolutely uniform. It eliminates waste, is easily applied, is impervious to water, and never lets go.

NAPCO joints are as strong as the wood.

H. LEFEBER

Lewis Building, Montreal, Que.

SOLE AGENT FOR CANADA

Vegetable Glue

We desire to enter into correspondence with parties now using, or those contemplating using, VEGETABLE GLUE in the Woodworking Industries of Canada.

IF YOU ARE NOW USING ANIMAL GLUE IN YOUR WORK WE CAN SHOW YOU CONCLUSIVELY THAT YOU CAN MAKE A LARGE ANNUAL SAVING, BESIDES TURNING OUT SUPERIOR WORK BY SUBSTITUTING VEGETABLE GLUE.

We make VEGETABLE GLUE in a number of grades to meet every and all requirements FROM THE FINEST PIANO OR CABINET WORK TO THE CHEAPEST FORM OF BOX SHOOKS, and where the consumption will warrant this, are prepared to furnish the entire equipment of machinery necessary to apply the Glue.

We especially solicit your enquiries and correspondence.

Do not be coerced into entering into contracts with anyone claiming a basic Patent on the use of Vegetable Glue. THERE ISN'T ANY SUCH THING. We operate under our own Patents and guarantee you protection against any and all suits for infringement that may be threatened or brought against you.

FURTHERMORE, WE CAN GIVE YOU REFERENCES TO SOME OF THE LARGEST AND MOST SUCCESSFUL WOODWORKING ESTABLISHMENTS IN THE UNITED STATES WHO HAVE USED OUR PRODUCT FOR YEARS AND WILL TELL YOU THAT OUR GLUE GIVES UNIFORMLY PERFECT RESULTS AND IS BETTER THAN ANY OTHER PRODUCT MADE.

That is a strong claim but we will prove it to be true.

In order to meet the present abnormal conditions in the matter of exchange, WE HAVE MADE ARRANGEMENTS WITH CANADIAN BANKERS TO HAVE YOU PAY ALL OF OUR BILLS IN CANADA IN YOUR OWN CURRENCY AT PAR, which at present rates of exchange ruling, will mean a SAVING OF FROM EIGHTEEN TO TWENTY PER CENT. on your requirements.

WE BELIEVE IN THE FUTURE OF YOUR GREAT COUNTRY and are ready to back our faith by putting her manufacturers on an equal footing with our own by meeting the temporary handicap of abnormal exchange, and investing your payments in CANADIAN VICTORY BONDS and hold them ourselves until the restoration of normal conditions permits a realization without loss to either you or ourselves.

We send expert demonstrators to your plant at our expense to properly start you in the use of OUR UNEQUALED VEGETABLE GLUE.

Write us for particulars.

Victor G. Bloede Co.

BALTIMORE, M.D., U.S.A.

Perkins Vegetable Glue

The Glue of No Regrets

Process and Product Patents covering Perkins Glue were granted July 2nd and March 19th, 1912, and have been held valid and infringed by the United States Circuit Court of Appeals. Patents have also been granted in Canada, England, France, Austria and Germany.

Perkins Glue Company

Factory and General Offices:
LANSDALE, Pennsylvania.

Sales Office:
SOUTH BEND, Indiana

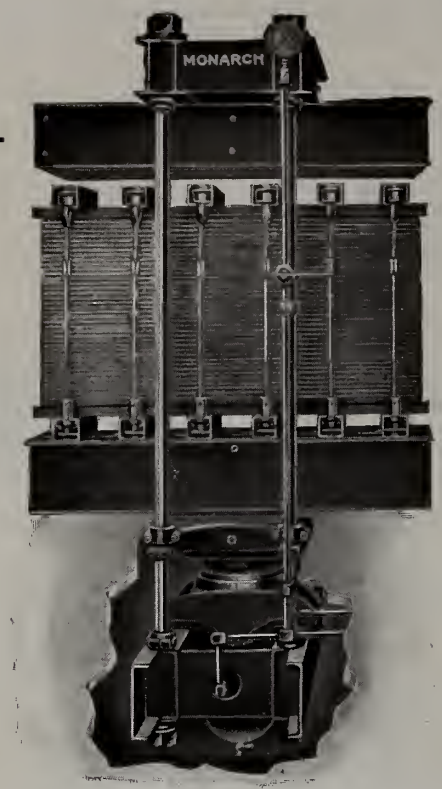
MAKERS AND DISTRIBUTORS OF

PERKINS 183

TRADE MARK (Reg. U.S. Pat. Office).

ITS FIRST COST IS ITS LAST COST.

FARQUHAR



HYDRAULIC PRESSES

This is our Standard Monarch Hydraulic Veneer Press built in six sizes, all designed for 100-lbs. working pressure. We also manufacture an up-to-date line of Pumps, Accumulators, Valves, and other equipment, as well as Special Presses of all types to suit individual requirements.

Write for new Catalogue No. 19, which illustrates a number of recent installations, and explains the efficiency and economy of Farquhar construction.

A. B. FARQUHAR CO., Ltd., Box 171 YORK, PA.

Cut Miles without Grinding

A Characteristic Experience

Richmond, Indiana.

G. M. Diehl Machine Works,
Wabash, Ind.

Gentlemen:—

You may possibly be interested in an experience which we had recently in our factory with your Diehl Heads and Cutters.

Our Sticker man recently made a run of 10,000 stiles, each piece being 73 inches long, of hardwood, in which we cut a groove ¼ inch wide by 9/16 inch deep, and we made the entire run without taking the Heads or Bits off the machine and without re-sharpening, which makes a total run of a little more than 11½ miles. The Bits would, no doubt, have run quite an additional number of feet before it would have been absolutely necessary to sharpen them. We consider this a very good performance, especially in view of the fact that these stiles were all run from the rough wood and the Heads being used on a four-sided Sticker

Very truly yours,

RICHMOND FURNITURE MFG. CO.,
Per O. H. BRUBAKER, Manager.

Send for Catalogue

The G. M. Diehl Machine Works

WABASH, INDIANA - U. S. A.

On the Banks of the Wabash

BOOKS FOR SALE

The following books are offered at special prices subject to previous sale:

Saw Fitting Manual, a treatise on the care of saws and knives. Deals with everything in the saw and knife alphabet, from adjustments to widths. Price $4.25.

Common-Sense Handrailing, by Fred T. Hodgson. Published by Frederick J. Drake & Company, Chicago. 114 pages, illustrated. Price 50c.

"Boy Activity Projects," by Samuel A. Blackburn, published by the Manual Arts Press, Peoria, Ill. 144 pages, including 64 illustration plates. Price $1.25.

Handrailing Simplified, by An Experienced Architect. Published by William T. Comstock, New York. 52 pages, illustrated. Price 50c.

"Woodwork Joints," by Evans Bros., London England; 214 pages, with 430 illustrations and a complete index of eleven hundred references. Price $1.25.

"Carpentry," by Ira S. Griffith. Published in 1916 by The Manual Arts Press. 188 pages, illustrated. Price $1.00.

"Details of Cabinet Construction," by Evans Bros., London, England; 203 pages, fully illustrated. Price $1.25.

Utilization of Wood-Waste (Second Revised Edition), by Ernst Hubbard. Published in 1915 by Scott, Greenwood & Sons, 192 pages, illustrated. Price $2.00.

Seasoning of Wood; A Treatise of the Natural and Artificial Processes Employed in the Preparation of Lumber for Manufacture, with Detailed Explanations of its Uses, Characteristics and Properties, by Joseph Wagner. Published by D. Van Nostrand Co., in 1917. 274 pages, illustrated. Price $3.00.

"The Kiln Drying of Lumber," a Practical and Theoretical Treatise, by Harry Donald Tiemann, M.E., M.F. Just published, by J. B. Lippincott Co. 316 pages, illustrated. Price $4.50.

The Woodworker Publishing Co., Limited

345 Adelaide Street West, Toronto, Ont.

An Efemco Product

Gives Furniture Greatest Utility

Equip your furniture with Efemco Acme Ball Bearing Casters for greatest utility. They add positive portability and good looks at the same time. Made to swivel readily and easily, and rugged enough for all demands.

Efemco Acme Ball Bearing Casters are made with the same conscientious attention to detail that Foster, Merriam & Co. observe in the making of all Efemco Casters.

The new flat top prevents balls binding or falling out.

Sizes three, four, five, six and seven. Write for complete catalogue and "special" folder of newest Efemco Casters.

Period trimming for all styles and grades of furniture.

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Meriden, Conn. Hamilton, Ontario New York City

Efemco PRODUCTS

Grip Neck Casters
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Furniture Trimmings
Automobile Accessories

Piston Rings
Cast Aluminum Ware
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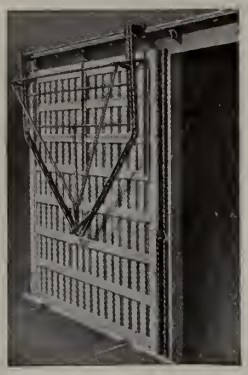
Standardized by 85 years of service

The Door Carrier System



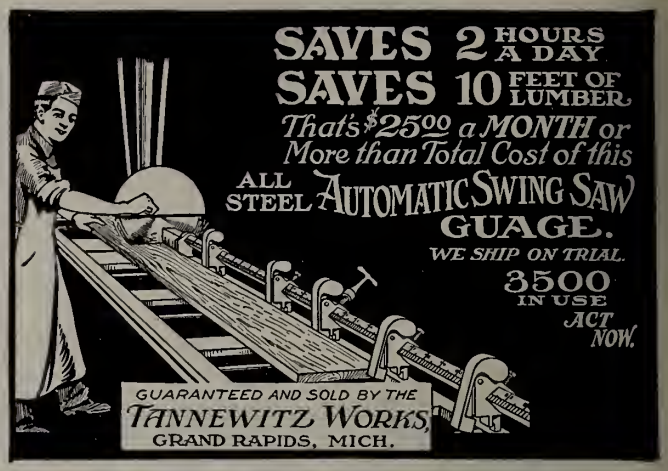
Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

Ask for catalogue.

DRY KILN DOOR CARRIER CO.

1117 Cornell Ave.
INDIANAPOLIS, IND.


SAVES 2 HOURS A DAY
SAVES 10 FEET OF LUMBER
That's $25.00 a MONTH or More than Total Cost of this
ALL STEEL AUTOMATIC SWING SAW GUAGE.
WE SHIP ON TRIAL.
3500 IN USE
ACT NOW.
GUARANTEED AND SOLD BY THE
TANNEWITZ WORKS,
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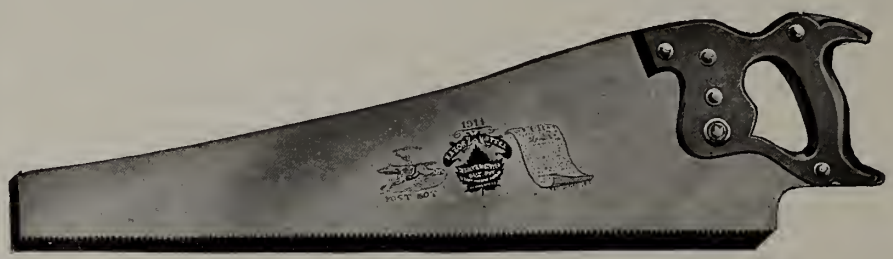
The Same Dependability

Another of the Famous

MAPLE LEAF SAWS



For almost half a century Maple Leaf Saws have been establishing a greater reputation for reliability in quality and service. From the heavy saws for heavy work to the light saws for the finest work Maple Leaf Saws are daily giving the utmost of satisfaction. The illustration shows the Maple Leaf Hand Saw, a sturdy, well built saw with the saw steel continuing through the handle as an assurance against the breakage of the handle. Made with the care and skill characteristic of all Maple Leaf saws—you'll appreciate the merits of this saw.

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OF ALL DESCRIPTION

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For Every Need in the Woodworking Industry

Bale ties, Nails and Wire of every description are manufactured by us. We manufacture to your order.

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In The World

The Imperial Furniture Co.
Grand Rapids

are replacing their Dry Kilns
by a battery of up-to-date

GRAND RAPIDS VAPOR KILNS

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BIG CANADIAN USERS OF
National Humidity Controlled Dry Kilns
Chevrolet Motor Company of Canada, Ltd.,
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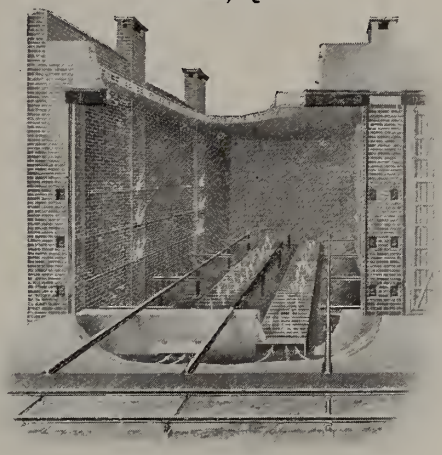

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INVESTIGATE
THE NATIONAL DRY KILN CO.
1117 East Maryland St., INDIANAPOLIS, Indiana

If you want to know the difference between "Boy and a Barn", ask the Teacher

BUT,

THE SIDMANS L.C.K.
Reg. Trade Mark
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If you wish to know the difference between a DRY KILN and a LUMBER CURING KILN, ask ANY user of our system, or write us, and we will be pleased to not only tell you, but if desired SHOW you.

THE SIDMANS

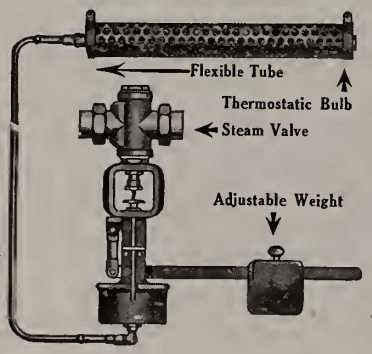
LONDON, ONTARIO
Heating and Ventilating Engineers and Lumber Curing Specialists

The Better Way of Controlling Kiln Temperature

The world wants finished products now. All costs are rising and your problem is to produce more. Begin by insuring your wood as it goes into the kiln. Every inch of green wood has cost you real money and represents two values—raw value and finished value. Don't allow fluctuating kiln temperature to tamper with these values. Prevent fluctuating temperatures by equipping your kilns with

Powers Heat Regulators

As long as steam pressure is maintained Powers Regulators operate. Their operation insures correct kiln temperatures, saving of fuel by using only necessary heat, saving of labor by releasing men from watching thermometers and



The Powers Regulator No. 15

Specially designed to control temperature in dry kilns, ovens, varnish and dry rooms, etc. Requires no outside power for its operation.

valves, saving of material by cutting down the loss from case hardening, warping, and checking. They also speed up the drying by fully 25 per cent.

During our more than thirty years of experience in automatic temperature control we have gathered some very profitable information for the woodworking industry. Let us show you how to save money on your kilns or other apparatus where heat is a factor. We are cheerfully at your service. Write us today.

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Limited
Specialists in Automatic Heat Control
82 Chestnut Street - Toronto, Ont.

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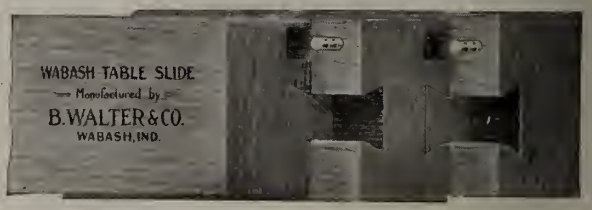
THE SLIDE IS THE HEART OF YOUR EXTENSION TABLE



If the Slide Does Not Work Properly Your Whole Table is Condemned

Wabash Slides insure Satisfied Customers

SLIDE MAKING is a SPECIALTY BUSINESS

We can Furnish Better Slides for Less Cost

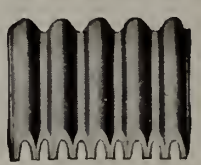
Eliminate Slide Troubles by using WABASH SLIDES

MADE BY

B. Walter & Company

Edsall St., Wabash, Ind.

Cary's SUPERIOR QUALITY Corrugated Fasteners



SAW EDGE

PLAIN EDGE

According to final decision, after long litigation, we have been granted the SOLE RIGHT to manufacture a Saw Tooth Corrugated Fastener with a continuous cutting edge. Our fastener is beveled evenly on both sides, which enables fasteners to be driven in straight, and much easier than any other fastener made. Our Corrugated Fastener is made in various widths and corrugations, also in coils wound right and left. Try our products and you will use no other.

Samples and prices on request.

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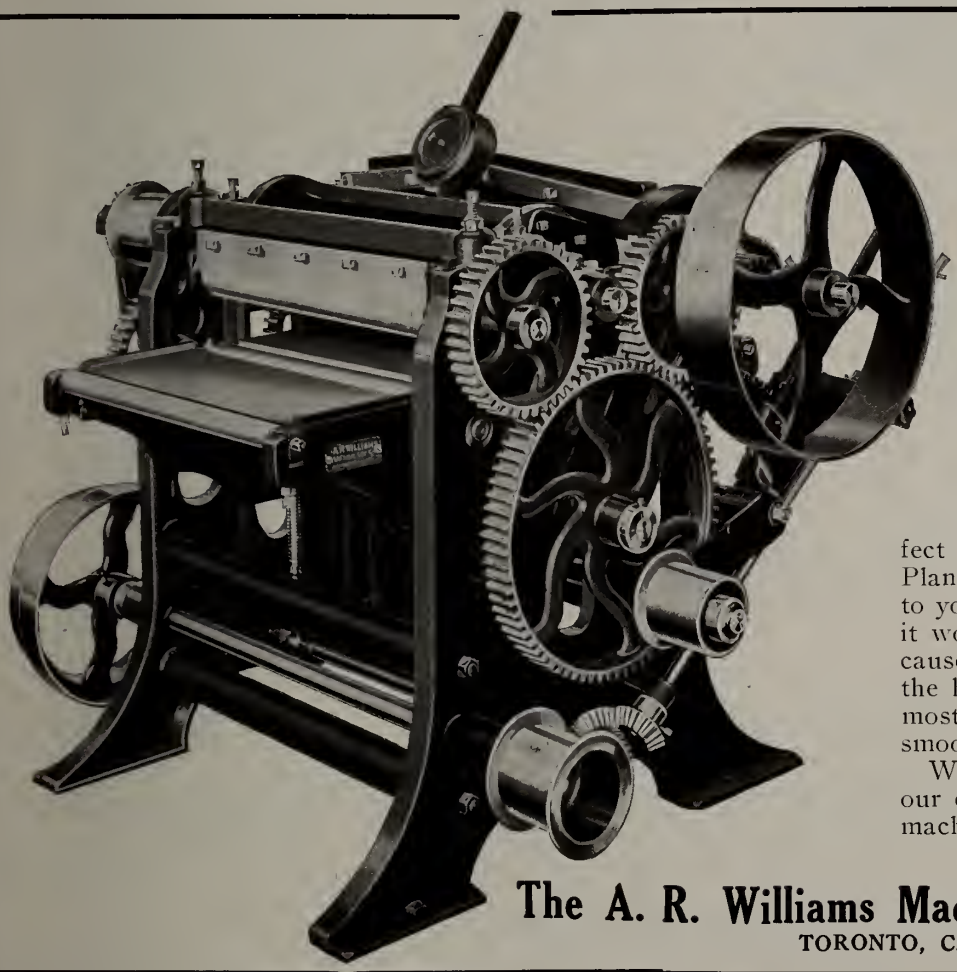
We don't claim a lot of things,

we guarantee the high-grade quality of all our material—tell you that in this big demand for new kilns our old customers come first, but we can handle a limited number of new orders—AND—we refer you to the actual users for facts instead of claims. Our circular for your files interests anyone interested in kilns. Address:

The Standard Dry Kiln Co.
1542 McCarty Street - Indianapolis, Ind.



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SURFACE PLANER

With a record of over 2,000 in actual use and giving full satisfaction and perfect results the "Eclipse" Surface Planer is bound to be of interest to you. For the furniture factory it would be an ideal machine because of its ability to produce the highest grade of planing and most suitable where very thin, smooth work is required.

Write us for full particulars on our entire line of woodworking machinery of all descriptions.

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TORONTO, CANADA

OVER 10,500 PLANTS

including woodworking plants, pattern shops, as well as cabinet and carpenter shops, housing projects, etc., have adopted the "Wallace Idea"; they take the machines to the work instead of the work to the machines. They have thereby eliminated foot work, saved hand work and have made a tremendous cut in their costs, and have greatly speeded production. It would pay you to investigate this idea thoroughly."

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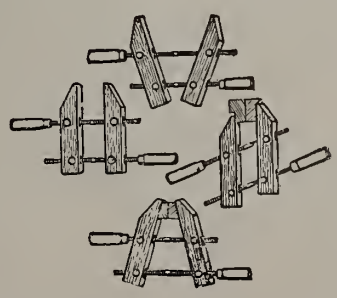
Manufacturers of the



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the Original
Adjustable Steel
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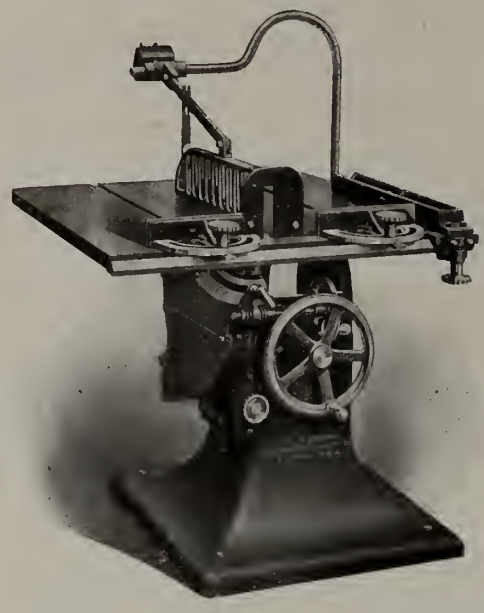
Adjustable to any position. Well made to give the service. Efficient in every way they are bound to win your approval.

If you cannot buy them from your Jobber write us direct.



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A general purpose saw adapted to a wide variety of work such as ripping, cross-cutting, dadoing and mire cutting. Furnished when desired with Hollow Chisel, Mortising and Boring attachment.. Table is of ample size and tilts by means of worm wheel. Saw is fully enclosed on lower side. Can be arranged for belt or direct connected motor drive.

Write for a large circular which gives complete details.

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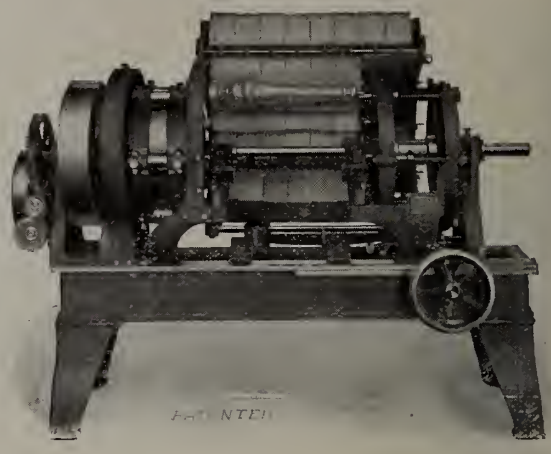

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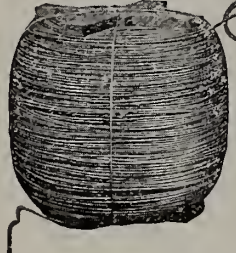
Let the Nash Sander Help.

"The Sander is giving us perfect satisfaction. In fact it is doing a great deal more than we expected, as we are able to sand as many table legs in **one hour** as we formerly did in **one day** by hand."
—From a prominent manufacturer.

J. M. NASH, Milwaukee, Wis.



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In selecting your Fibre Cord and stakes for Fibre Furniture you can secure no better material than that which we produce. Our Cord is carefully watched throughout the entire process of manufacture and kept uniform in strength. It is giving perfect satisfaction.

Our Uniflax Seaming Cord for Upholstered furniture is unexcelled. It serves the purpose perfectly and lasts indefinitely. Prices for these materials are commensurate with the quality and are withal very reasonable.

GRAND RAPIDS FIBRE CORD COMPANY

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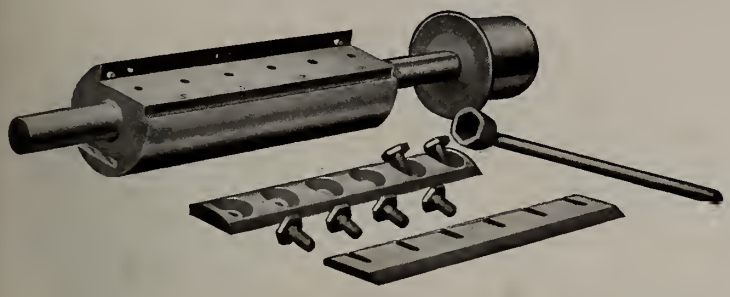

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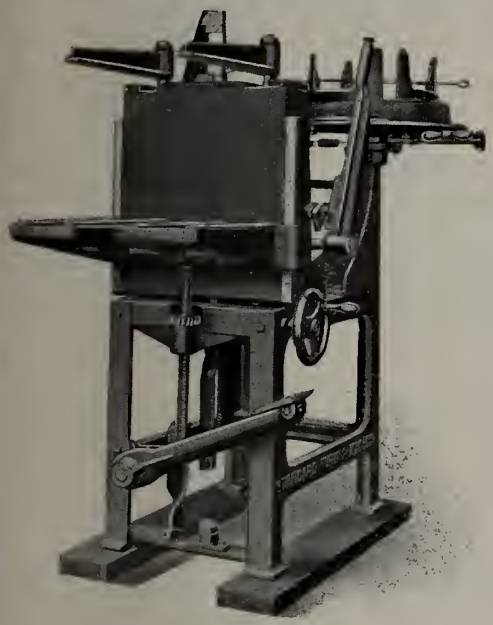
Safety First! How often have we heard or seen this phrase, yet daily, yes, and oftener, accidents are occurring. Silver's Round Safety Cylinder will protect the operators of any of our new jointers from needless injury. They are greatly appreciated by the operators of these machines and they help wonderfully to increase production. Write us for descriptive matter regarding our complete line of machinery that will interest you.

The Silver Mfg. Co. Box 370 **Salem, Ohio, U.S.A.**



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Let us prove the claim that our equipment will save its cost in three months

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Machine Molder Practice

The new and only book in existence on molder work, operation and superintendence of the molder machine.

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Flexible Leather Binding
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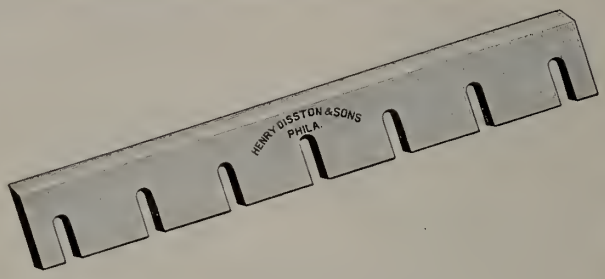

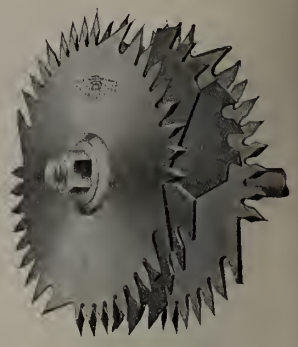

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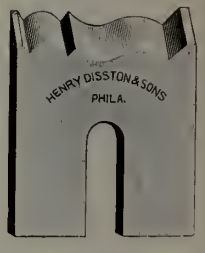
SAWS AND KNIVES

The installation of Disston Saws and Knives—made from the famous Disston Crucible Steel—means more and better work. In the shops where cutting cost and output are carefully checked and counterchecked you will usually find Disston equipment.



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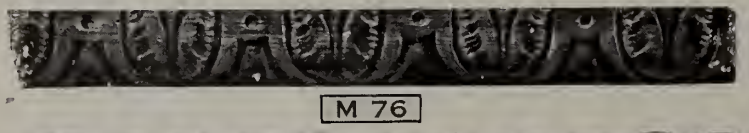
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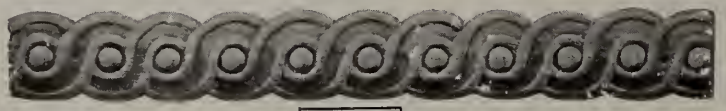
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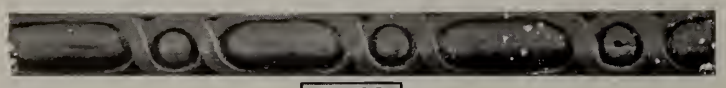
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KNOBS The Period Knobs we placed on the market a few months ago are proving very popular. If you have not received samples ask for them now.

ROSETTES A new Period item to accompany the knobs.

OP8 OP5 OP6

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Coldbrook and Taylor, N. W. **Grand Rapids, Mich.**

The Magazine Feed Does It!

Simply dump a gross of screws (either wood or machine) into the hopper. The machine does the rest.

Speed and accuracy combined is the result of driving screws by **Magazine Fed** Automatic Screw Driving Machines. They drive screws the entire length revolvingly which gives an increased holding power of 49 per cent. over screws driven by hammer. Think what this would mean to your plant and product. Greater production through lightning swiftness, due to the magazine feed, accuracy and security in every screw driven. Reynolds' Automatic Magazine Fed Screw Driving Machines will drive from 1,000 to 2,000 ordinary screws in one hour and under the operation of your newest hand. Simplicity in construction yet thoroughly efficient in operation. Investigate the possibilities of these machines in your plant.

Write us today

THE REYNOLDS MACHINE CO.

Department C

MASSILLON, OHIO - U. S. A.

Hey, Bill! when 'yer goin' t'unload that truck?

"Fred's waiting for a bunch of stuff upstairs and the "Sup's" raising "cain" because it wasn't at the sanding machines an hour ago. I can't move it by hand, and it won't move itself.

"Well, if you've got to have this truck you'll have to unload it yourself; I haven't got time."

"Nothing doin'—that's your job!"

. . . . . .

If there's much inter-department trucking in your plant, you know that sort of back talk is no exaggeration.

Result: Time of skilled mechanics and machines wasted, because of the truckman's idea of where his job ends, and because of old-style trucks that have to be unloaded piecemeal, before they can be used again.

Away with it. Install one or two Tranco Trucks and a battery of platforms. With

A TRANCO ELEVATING TRUCK

a man can easily move loads up to 3,000 pounds, dump them without piecemeal unloading, and be free for the next job at once.

The principle of their construction and operation will appeal to all reasonable men. Write now and get full particulars.

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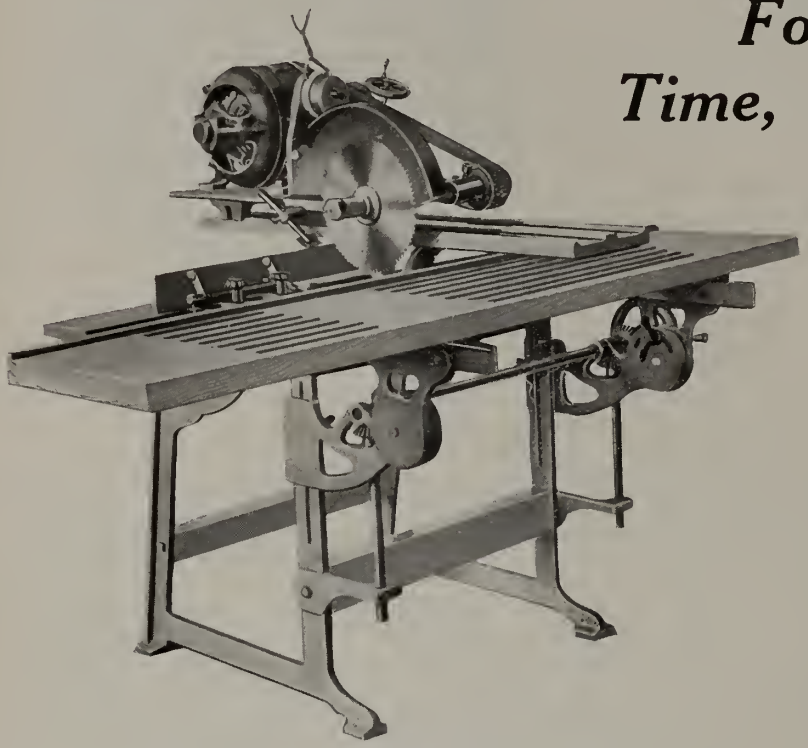
THE ELLIOT WOODWORKER

For a Saving in Time, Labor and Money



Pat. 1910-1914.

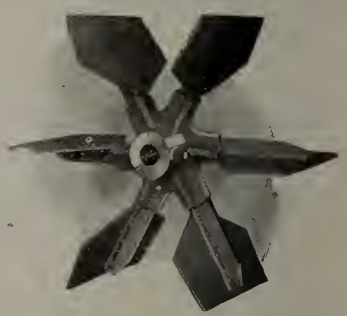
In these days of efficiency, where time, labor and money constitute the three important assets of production, Elliot Woodworkers will be most appreciated. The installation of these machines in your plant will enable you to do all cutting and trimming, fitting, housing, stair stringers, dadoing for shelving, etc., right in your bench room. This will eliminate the loss of valuable time, labor and money.

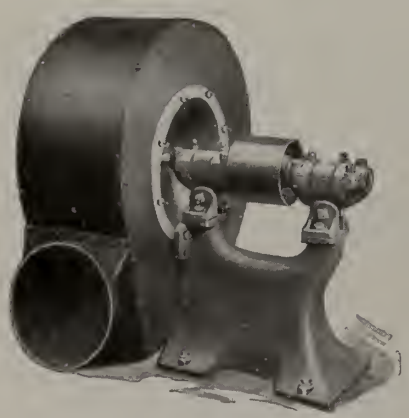
Elliot Woodworkers operate from the ordinary lighting circuit, 110 or 220 volts.

Let us send you a copy of our catalog—it will interest you.

ELLIOT MACHINERY
Company, Limited
BELLEVILLE · ONTARIO

Keep Your Shop Clean





Standard P. M. X.

Remove your sawdust, shavings, or other loose material with a Canadian Standard Reversible Mill Exhauster.

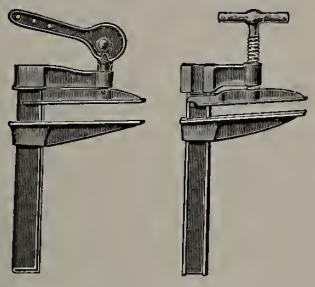
A clean shop with machines free from shavings, chips, or sawdust, makes for greater efficiency.

Let our engineering department help you plan your refuse exhauster system.

Write for Catalogue 410-13.

Canadian Blower & Forge Co., Ltd.
KITCHENER, ONT.

Colt's Clamps
for the
Woodworker



Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

For further information write for Catalogue No. 294.

Batavia Clamp Co.

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We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co. Limited

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"INTERNATIONAL" Electric Glue Heaters

Fireless cooker principle conserves and utilizes every bit of heat generated. Holds glue at correct working temperatures without guesswork. Average cost of operation about one cent per day. Keeps glue at correct temperature for greater tensile strength. Properly glued joints never fail. This heater has a place in every shop and factory. Sizes, one pint to 50 gallons. Heavy spun copper construction. No seams or soldered joints. Three heats. No water bath. Clean, safe, economical. Portable. Fits any lamp socket. Used by prominent concerns everywhere.

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Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.

BAND SAW FILING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Preston Woodworking Machinery Company Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

BAND SAWS
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Dominion Machinery Company, Toronto.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

BAND SAW MACHINERY
Silver Mfg. Co., Salem, Ohio.
Williams Machinery Co., A. R., Toronto, Ont.

BAND SAW STRETCHERS
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

BELTING
Goodyear Tire & Rubber Co., Toronto, Ont.

BENCH PLANER
Wallace, J. D. & Company, Chicago, Ill.

BENCH SAW
Wallace, J. D. & Company, Chicago, Ill.

BENDING MACHINES
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Perfection Wood Steaming Retort Company, Parkersburg, W. Va.
Williams Machinery Co., A. R., Toronto, Ont.

BLOWERS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

BLOW PIPING
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

BOILERS
Engineering & Machine Works, St. Catharines, Ont.

BOOKS
Practical Books Co., Indianapolis, Ind.

BORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Elliot Machinery Co., Toronto, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Reynolds Machine Co., Massillon, Ohio.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

BOX BANDS
Cary Mfg. Company, Brooklyn, N.Y.
Laidlaw Bale-Tie Co., Hamilton, Ont.

BOX MAKERS' MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Morgan Machine Co., Rochester, N.Y.
Neilson & Company, J. L. Winnipeg, Man.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CABINET PLANERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamitlon, Ont.

CARVING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.

CASTERS
Faultless Caster Co., Evansville, Ind.
Foster, Merriam Co., Merriden, Conn.

CIRCULAR SAWS
Wallace & Co., J. D., Chicago, Ill.

CLAMPS
Adjustable Clamp Co., Chicago, Ill.
Batavia Clamp Company, Batavia, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

CLAMP CARRIERS
Taylor Mfg. Co., Poughkeepsie, N.Y.

CORRUGATED FASTENERS
Cary Mfg. Company, Brooklyn, N.Y.

CUT-OFF SAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

CUTTER HEADS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Diehl Machine Works, G. M., Wabash, Ind.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Fischer Mfg. Co., Williamsport, Pa.
Garlock-Walker Machinery Co., Toronto, Ont.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Shimer Cutter Head Co., Galt, Ont.
Yates Machine Co., P. B. Hamilton, Ont.

CYLINDER HEADS
Cowan & Company, Galt, Ont.

DOOR CARRIERS FOR DRY KILNS
Dry Kiln Door Carrier Co., Indianapolis, Ind.

DOVETAILING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

DOWEL MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Williams Machinery Co., A. R., Toronto, Ont.

DOWELS
Canada Wood Specialty Co., Ltd., Orillia, Ont.

DRY KILNS
Canadian Blower & Forge Co., Kitchener, Ont.
Grand Rapids Veneer Works, Grand Rapids, Mich.
National Dry Kiln Co., Indianapolis, Ind.
Sidmans, London, Ont.
Standard Dry Kiln Co., Indianapolis, Ind.

DUST COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

DUST SEPARATORS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

EDGERS (Single Saw)
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

EDGERS (Gang)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

END MATCHING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

EXHAUST FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Toronto Blower Company, Toronto, Ont.

EXHAUST SYSTEMS
Canadian Blower & Forge Co.
Toronto Blower Company, Toronto.

FIBRE CORD
Grand Rapids Fibre Cord Co., Grand Rapids.

FLOORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

FLUTING HEADS
Fay & Egan Co., J. A., Cincinnati, Ohio.

FURNITURE DESIGNERS
Otto A. Jiranek, Grand Rapids, Mich.

FURNITURE LEATHER
Eagle-Ottawa Leather Co., Grand Haven, Mich.

FURNITURE TRIMMINGS
Faultless Caster Co., Evansville, Ind.
Foster, Merriam Co., Meriden, Conn.

GARNET PAPER AND CLOTH
Carborundum Co., Niagara Falls, N.Y.
Macdonald, Norman, Toronto, Ont.
Oakey & Sons, Limited, John, London, S.E.I. (Wellington Emery & Black Lead Mills).

GRAINING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N.Y.

GLUE
Bloede Company, Victor G., Baltimore, Md.
Casein Mfg. Company, New York, N.Y.
Lefeber, H., Montreal, Que.
Perkins Glue Company, South Bend, Ind.

GLUE CLAMPS
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane, & Company, Kitchener.

GLUE HEATERS
Cincinnati Glue Heater Co., Cincinnati, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
International Electric Co., Indianapolis, Ind.
Jackson, Cochrane, & Company, Kitchener.
Pringle, R. E. T., Toronto, Ont.

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Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GLUE SPREADERS
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane, & Company, Kitchener.

GLUE ROOM EQUIPMENT
Perrin & Company, W. R., Toronto, Ont.

GRINDERS (Cutter)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

GRINDERS (Knife)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane, & Company, Kitchener, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N.Y.

GROOVING HEADS
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.

GUM LUMBER
Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
Anderson-Tully Co., Memphis, Tenn.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Brown & Co., George C., Memphis, Tenn.
Churchill-Milton Lumber Co., Louisville, Ky.
Cornelius Lumber Co., St. Louis, Mo.
Gum Lumber Association, Memphis, Tenn.
Hyde Lumber Company, South Bend, Ind.
Merceau-Hawkins Tie Co., Huntington, W.Va.
Nickey Bros, Memphis, Tenn.
Paepcke-Leicht Lumber Co., Chicago, Ill.
Probst Lumber Co., Cincinnati, Ohio.
Sondheimer Co., E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Thomas & Proetz Lumber Co., St. Louis, Mo.

HAND SCREWS
Fay & Egan Co., J. A., Cincinnati, Ohio.

HANDLE & SPOKE MACHINERY
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.

HARDWARE
Laidlaw Bale-Tie Co., Hamilton, Ont.

HARDWOOD LUMBER
Aberdeen Lumber Co., Pittsburgh, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
American Oak Mfrs.' Assn., Memphis, Tenn.
American Walnut Association, Washington, D.C.
Anderson-Tully Co., Memphis, Tenn.
Astoria Mahogany Co., New York, N.Y.
Atlantic Lumber Company, Toronto, Ont.
Barr- Holaday Lumber Co., Greenfield, Ohio.
Boland Lumber Co., Grand Rapids, Mich.
Bonner & Sons, J. H., Memphis, Tenn.
Brown & Company, Geo. C.
Bury & Company, Robert, Toronto, Ont.
Buskirk Rutledge Lumber Co., Cincinnati, O.
Cornelius Lumber Co., St. Louis, Mo.
Canadian General Lumber Co., Toronto, Ont.
Churchill-Milton Lumber Co., Louisville, Ky.
Clark & Sons, Edward, Toronto.
Darby Hardwood Lumber Co., Memphis, Tenn.
Des Moines Sawmill Co., Des Moines, Iowa.
Dooley Lumber Co., F. T., Memphis, Tenn.
Evansville Band Mill Co., Evansville, Ind.
Felger Lumber & Timber Co., Memphis, Tenn.
Gayoso Lumber Co., Memphis, Tenn.
Hart & McDonagh, Toronto. Ont.
Heeney, Percy E., Kitchener, Ont.
Hunt, Wellington & Smith, Nashville, Tenn.
Hyde Lumber Co., South Bend, Ind.
Kersley, Geo., Montreal, Que.
Korn-Conkling Co., Cincinnati, Ohio.
Kosse, Shoe & Schleyer Co., Cincinnati, O.
Kraetzer Cured Lumber Co., Greenwood, Miss.
Lawrence & Co., P. J., St. Louis, Mo.
Long-Knight Mfg. Co., Indianapolis, Ind.
McLennan Lumber Co., Montreal, Que.
Memphis Band Mill Co., Memphis, Tenn.
Merceau-Hawkins Tie Co., Huntington, W.Va.
Mowbray & Robinson, Cincinnati, Ohio.
Paepcke Leicht Lumber Co., Chicago, Ill.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City.
Pickrel Walnut Co., St. Louis, Mo.
Probst Lumber Co., Cincinnati, Ohio.
Reese Sherriff Lumber Co., Williamsport, Pa.
Shafer Hardwood Co., John I., South Bend, Ind.
Sondheimer Co., E., Memphis, Tenn.
Spencer, C. A., Montreal, Que.
Stark & Co., Jas. E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Stimson & Co., J. V., Owensboro, N.Y.
Thompson, Katz Lumber Co., Memphis, Tenn.

HYDRAULIC VENEER PRESSES
Perrin & Company, Wm. R., Toronto, Ont.

KNOBS
Waddell Mfg. Co., Grand Rapids, Mich.

JOINTERS
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Onio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochane & Company. Kitchener. Ont.
Mattison Machine Works, Rockford, Ill.
Petrie. H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Smith, C. W., Grand Rapids, Mich.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

LEATHER (Artificial)
Fibro Mfg. Company, Beverly, N. J.

MACHINE KNIVES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

METALINE NAILS
Canada Tack & Nail Co., Hamilton, Ont.

MIRRORS
Hart Mirror Plate Co., Grand Rapids, Mich.

MITRE SAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

MOTOR TRUCK EXTENSIONS
Swedish Crucible Steel Co., Windsor, Ont.

MOULDERS
Hall & Brown Woodworking Machine Co., St. Louis, Mo.

MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.

MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

NAILS
Laidlaw Bale-Tie Co., Hamilton, Ont.

NAILING MACHINES
Morgan Machine Co., Rochester, N.Y.

OIL STONE GRINDERS
Mummert-Dixon Co., Hanover, Pa.

PANELS
Rutherford & Sons, Montreal, Que.
Waetjin & Co., L., Milwaukee, Wis.

PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago. Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont
Yates Machine Co., P. B., Hamilton, Ont.

PERIOD MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.

PERIOD TURNINGS
Walter & Sons, J., Kitchener, Ont.

PLANERS
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PORTABLE DRILLS
Wisconsin Electric Co., Wisconsin, U.S.A.

PRESSES (Veneer)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

RESAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto. Ont
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A. Cincinnati, Ohio.

RIP SAWING MACHINES
American Woodworking Machinery Company Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company. Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Waddell Mfg. Co., Grand Rapids, Mich.

RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill
Paasche Air Brush Co., Chicago, Ill.

SAFETY DEVICES
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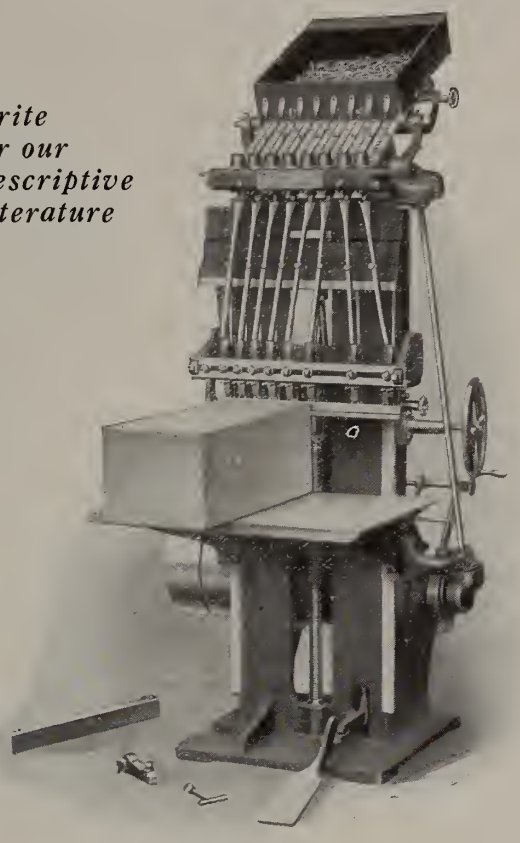

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"Canadian Woodworker" Buyers' Directory—Continued

SANDERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Solem Engineering Co., Sheboygan, Wis.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAND PAPER
Manning Abrasive Company

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Elliot Machinery Co., Belleville, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R,, Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS
Atkins & Co., E. C., Indianapolis, Ind.
Elliot Machinery Co., Belleville, Ont.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Silver Mfg. Company, Salem, Ohio.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.

SAW BENCH
Sidney Machine Tool Co., Sidney, O.

SAW FITTING TOOLS
Crowell, D. J., Buffalo, N. Y.

SAW SWAGES
Cowan & Company, Galt, Ont.
Crowell, J. D., Buffalo, N.Y.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES
Canada Machinery Corporation, Galt, Ont. ..
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Company, Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont. ..
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY
Reynolds Machine Co., Massillon Ohio.

SCREW HOLES
Stine Screw Holes Co., Waterbury, Conn.

SCROLL SAWS
Canada Machinery Corporation, Galt, Ont. ..
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane, & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamiltonñ Ont.

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Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Osborne Sexton Machinery Co., Columbus, O.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co, P. B., Hamilton, Ont.

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Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

STAINS
Ault & Wiborg, Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ohio.
Shannon Co., Ed. J., Cincinnati, Ohio.
Standard Paint & Varnish Co., Windsor, Ont.

SINGLE SPINDLE BOXING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE
Whitney & Son, Baxter D., Winchendon, Mass.

STEEL DOOR MATS
Cary Mfg. Company, Brooklyn, N.Y.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Colladay Machine Works, Indianapolis, Ind.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Tannewitz Works, Grand Rapids, Mich.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohoa.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES
Walter & Company, B., Wabash, Ind.

TEMPERATURE REGULATORS
Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Compan, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS
International Business Machines Co., Toronto, Ont.

TRIMMERS
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Preston Woodworking Machinery Company, Pretson, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS
National Dry Kiln Co., Indianapolis, Ind.

TWINES & WEBBING
Doon Twines, Ltd., Kitchener, Ont.

UPHOLSTERERS' TACKS & NAILS
Canada Tack & Nail Co., Hamilton, Ont.

VARNISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto. Ont.
Penfound Varnish Co., Toronto, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N.Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS
Astoria Mahogany Co., New York, N.Y.
Batesville Lumber & Veneer Co., Lawrenceburg, Ind.
Bury & Compny, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christmann Veneer & Lumber Co., St. Louis, Mo.
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Evansville Veneer Co., Evansville, Ind.
Freiberg Lumber Co., Cincinnati, Ohio
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Geo. Kersley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Litton Veneer Co., Rockford, Ill.
Memphis Vencer & Lumber Co., Memphis, Tenn.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Veneer Co., New Albany, Ind.
Southern Veneer Mfg. Co., Louisville, Ky.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Underwood Veneer Co., Wausau, Wis.
Veneer Manufacturers Co., Chicago, Ill.
Waetjen & Co., George L., Milwaukee, Wis.

VENEER TAPE
Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.

VENEER JOINTERS
Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY
Garlock-Walker Machinery Co., Toronto. Ont.

VENEER PRESSES (Hand and Power)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont
Perrin & Company, Wm. R., Toronto, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Johnson Co., O. E., Chicago, Ill.

WOOD FINISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Penfound Varnish Co., Toronto, Ont.

WALNUT LUMBER
Des Moines Saw Mill Co., Des Moines, Iowa.
Pickrel Walnut Company, St. Louis.
Purcell Walnut Lumber Co., Frank, Kansas City.

WIRE
Laidlaw Bale-Tie Co., Hamilton, Ont.
Pakanship Company, Brooklyn, N.Y.

WIRE BOX STRAPPING
Cary Mfg. Company, Brooklyn, N.Y.

WOOD SCREWS
Robertson Mfg. Co., P. L., Milton, Ont.

WOOD TURPENTINE
Brown Corporation, Quebec, Que.

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Garlock-Walker Machincry Co., Toronto, Ont.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WODD LATHES
Colladay Machine Works, Indianapolis, Ind.

44 Yates No. 275
30 and 60-in. Automatic
Knife Grinders,
Brand New, at
One-half Price

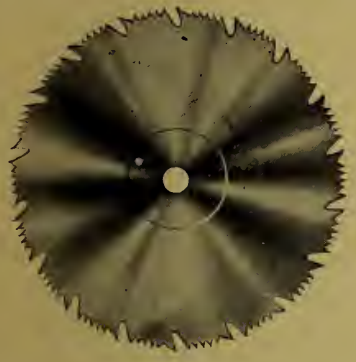
Machines arranged for Motor Application as per cut, or regular belt drive, if wanted.

8 New Andrew Mutiple Vertical Borers, 20, 30, 42 and 60-in., any number of heads.

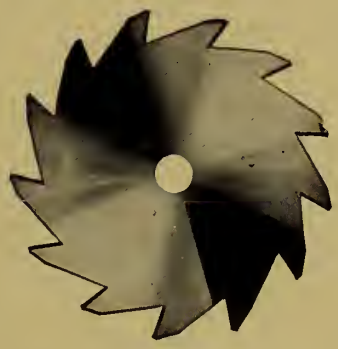
7 New Hermance Molders, 8, 10 and 12-in., stationary and slip-on heads.

Band rip saw, Fay & Egan, 42-in.
Band saws, 32, 36 and 38-in.
Borer, Andrew, 10-ft., 13-spindle, power table.
Borers, Andrew mult. vert., 20, 42 and 60-in., new.
Carver, 5-spindle, Moore.
Door clamp, Fay-Egan, heavy.
Edgers, two, three and four saws.
Glue cookers and retainers. Glue spreaders.
Hogs, two, Mitts & Merrill.
Jointers, 8, 12, 16, 20, 24 and 30-in.
Knife grinders, two 32-in., F. & E.
Lathe, Ober spoke and handle, almost new.
Lathes, Mattison, No. 8 auto; No. 6 block mach.
Lathes, speed, eight, mounted on iron bed.
Lock-corner machine, Morgan No. 8, full set.
Matcher, American Northwest, 24x8-in., 3 sides.
Matcher, end, Sherman, fine condition.
Matcher, 24x6-in., 3 and 4 sides.
Automobile spoke machines, Defiance, complete set.
Band resaw, 50-in., Fay & Egan, tilting rolls, full set of filing room tools.
Molder, Smith 14-in. outside, latest style, practically new.
Molders, 4-side, 9, 10 and 12-in. American.
Molder, Fay & Egan No. 184, 12-in. outside.
Molders, inside, 13-in. American and Woods.
Mortiser and router, Fay & Egan No. 124.
Mortiser, chain saw, New Britain No. 1, 25 chains.
Mortiser, chain saw, New Britain No. 7, new.
Mortisers, F. & E. vertical, hollow-chisel; also plunger type.
Nailers, two, Morgan No. 8, used three months.
Nailing machines, 2 closed back, 4-track, 4d, 15-in. spread.
Pony planers, 16, 20 and 24-in.
Relisher and mortiser, Greenlee.
Rip saws, self-feed, Hoosier, F. & E., Greenlee.
Router for stair stringers, H. B. Smith, flexible arm with adjustable table and forms.
Sand belt, closet seat and similar work.
Sander, H. B. Smith, spindle and disc, practically new.
Sanders, 30 and 42-in. Columbia; 30, 42 and 48-in. Invincible; 30-in. double Invincible.
Saw, 8-ft. double cut-off, roller table.
Saws, combination and variety, single and double arbor, also tilting arbor, stationary and tilting table, 24 and 30-in. circular resaw.
Saw, circular re-slab, 40-in. blade, power feed rolls.
Shapers, Fay single-spindle reversible, also Shimer single with overhead routing attachment.
Surfacer, 30-in. double, cabinet, B. & M., practically new.
Surfacer, Whitney 30-in. double, sectional roll and sectional chipbreaker; American No. 4½, 36-in. sectional and solid; Fay & Egan No. 140, 27 and 30-in. double divided rolls; also 18, 20, 24 and 30-in. single cylinder panel planers.
Tenoners, B. & M. double-end, also several single-end tenoners with and without copes.
Timber sizer, Fay-Egan s4s, 17x12-in.
Window frame machines, Smith & Phillips combination.
Wood-worker, universal, Fay & Egan and Bentel & Margedant. One lot of glue room machinery.

The Osborne & Sexton Machinery Co.
Re-manufacturers **COLUMBUS, OHIO**

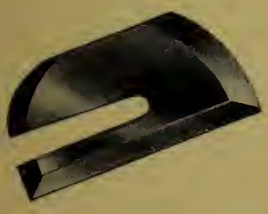


ATKINS
STERLING QUALITY
SAWS and KNIVES



The best steel—the most careful and accurate workmanship—the equipment that will eventually save you money.

Atkins Sterling Quality Saws and Knives are proving their superiority by competitive tests in the largest plants of the country. We welcome your most careful investigation, as we know the satisfaction that will result.



Write to-day for our Knife Booklet "C W" and Pattern Template Paper.

E. C. ATKINS & CO.
Makers of Sterling Saws

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

MATTISON "automatic"

The Standard Shaping-Lathe

Over 3000 in Use

NEARLY every Furniture Manufacturer knows the **Mattison Lathe**—that it will efficiently perform its duties.

The latest Model "Mattison" is constructed heavier, carries a new cutterhead and other improvements, insuring greater capacity, more accurate and smoother work.

Complete information in detail on request.

Mattison
Mach. Works
Rockford, Illinois, U.S.A.

Volume Twenty TORONTO, APRIL, 1920 Number Four

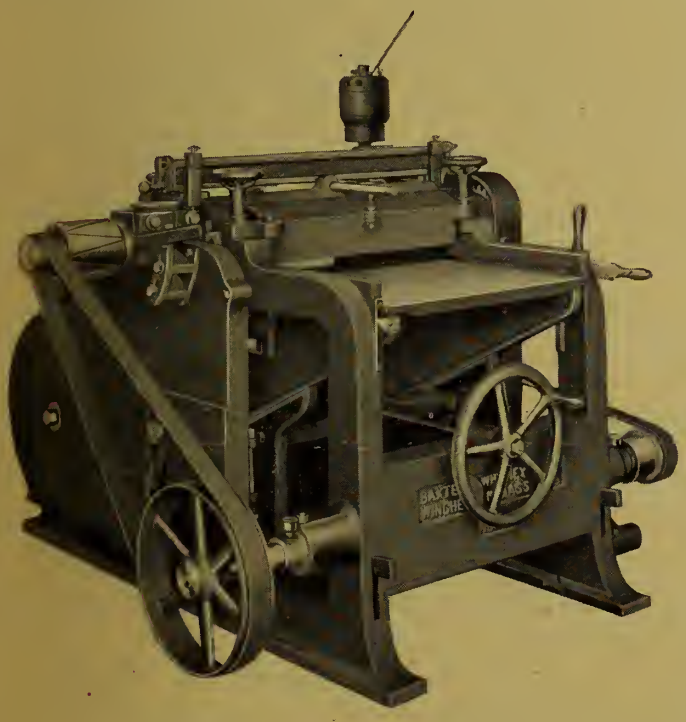
CANADIAN
WOODWORKER
and
Furniture Manufacturer

THE WHITNEY

30" No. 32 Single Planer

with Round Cutter Head and Electric Grinder

has special features that appeal to every woodworker, such as the



30" No. 32 Single Planer—Round Cutter Head and Motor Grinder

RIGID FRAME with ample weight of metal.

BED raised and lowered on Solid Wedges operating on wide tracks.

HARDENED CENTRE TABLE made extra thick.

AUTOMATIC CHIPBREAKER working concentric with the cutter head.

SIDE CLAMP CUTTER HEAD BOXES easily detached.

CUTTER HEAD with long bearings of large diameter.

REMOVABLE BABBITTED FEED SHAFT BOXES.

SECTIONAL FEED ROLLS to handle narrow and uneven stock.

MACHINE CUT GEARS.

Whitney Planers are equipped with motors coupled direct to the cutter heads when desired.

These machines can be furnished with two or four-knife Square Cutter Heads or four-knife Round Cutter Heads, Flexible or Sectional Chipbreaker and Motor-driven Grinders and Devices.

Write us for further information about this machine.

BAXTER D. WHITNEY & SON, Inc., Winchendon, Mass.

H. H. Plummer & Co.
451-453 Monadnock Bldg.,
San Francisco, Cal.

New York Office:
World's Tower Building,
110 West 40th Street.
C. L. Babcock, Manager.

Canadian Representatives:
H. W. Petrie, Limited
Toronto, Ontario.

Alphabetical Index to Advertisers, Page 12

Model 1-D Portable Drill

HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—4¾ pounds.

Capacity—Steel, 0 to $\frac{3}{16}$". Wood and alloys, 0 to $\frac{1}{2}$".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3⅜ inches.

Spindle—Offset from center $\frac{23}{32}$".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

Jacob's Chucks used as a regular equipment.

FOR speed in drilling and countersinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

Wisconsin Electric Company
7122 Sixteenth Street, Racine, Wisconsin, U. S. A.

DUMORE GEARED ELECTRIC DRILLS

Garlock-Walker's List of Woodworking Machinery in Stock

(Balance of Equipment of Toronto Furniture Company's Plant)

Manufactured by

American Wood Working Machinery Co.

1—AMERICAN FIG. 640, FOUR SIDES BOSS TIMBER SIZER, capacity 30" wide, 20" thick, 8 feed rolls, straight knives on all heads, only three years old, as good as new.

1—AMERICAN No. 229, FIG. 660 15 x 6 HARDWOOD FLOORING MACHINE, equipped with six knife top and bottom heads, knife setting and jointing attachments, thoroughly overhauled, in first class condition.

1—AMERICAN No. 229, FIG. 660, 15 x 6 HARDWOOD FLOORING MACHINE, same as above.

1—AMERICAN FIG. 8442, No. 26, 10" x 4" FOUR SIDED FAST FEED OUTSIDE MOULDER, with slip on and off top and bottom heads, latest type machine, complete, overhauled and in A1 condition.

1—AMERICAN FIG. 8442, No. 26, 10" x 4" FOUR SIDED FAST FEED OUTSIDE MOULDER, same as above.

1—AMERICAN FIG. 8412, No. 22, 10" x 4" FOUR SIDED OUTSIDE MOULDER, in first class condition.

1—AMERICAN FIG. 8521, No. 5, 8" x 4" HOUSTON FOUR SIDED OUTSIDE MOULDER, overhauled and in A1 condition.

1—AMERICAN FIG. 8601, 6" x 4", FOUR SIDED OUTSIDE MOULDER, new.

1—AMERICAN FIG. 5014 No. 111, 54" BALL BEARING BAND RESAW, carrying blades up to 7" wide, capacity 30" vertically, using extended rolls, 22" without extended rolls; from ⅛" to 20" horizontally, will centre split a 16" timber; cut a veneer from 12" stock, rates of feed from 32 to 192 feet per minute, only three years old, in first class condition.

1—AMERICAN FIG. 5859 No. 3 DOUBLE CUT-OFF SAW, capacity between saws 8" to 6' 9", 4" thick, 30" wide, equipped with two 16" saws and power adjustment to movable table; new machine.

1—AMERICAN FIG. 5610 No. 25 EDGING AND RIPPING SAW, complete with countershaft; new machine.

1—AMERICAN FIG. 541, No. 4 CIRCULAR RESAW, with 24" saw, in good working order.

1—AMERICAN FIG. 5701, No. 2 SELF-FEED CIRCULAR RIP SAW, capacity 25" wide, 6" thick, equipped with 14" saw and countershaft.

1—AMERICAN FIG. 604, HEAVY SWING SAW, right hand to hang from ceiling, equipped with 48" saw and shield; almost new
84 feet of ROLLER TABLE for use with above SWING SAW.

1—AMERICAN FIG. 616, No. 7½ COMBINATION SAW BENCH, with full set of gauges, without dado head; in first class condition.

1—AMERICAN FIG. 6390, No. 1 DOUBLE ARBOR UNIVERSAL SAW BENCH, with tilting table, full set of rip, cross-cut and mitre gauges, including one 16" rip saw and one 16" cut-off saw, countershaft; in A1 condition.

1—AMERICAN FIG. 6390, No. 1 DOUBLE ARBOR UNIVERSAL SAW BENCH, same as above.

1—AMERICAN FIG. 575, No. 2 HAND FEED RIP SAW, with countershaft.

1—AMERICAN FIG. 6312, CROSS-CUT SAW BENCH, movable saw operated by foot treadle, capacity 10½" x 2½", particularly adapted for cutting off crating stock; in A1 condition.

1—AMERICAN FIG. 824, 24" BUZZ PLANER, fitted with square cylinder, power feed attachment and countershaft; in A1 condition.

1—AMERICAN FIG. 937, No. 1 SINGLE SPINDLE SHAPER, with plain countershaft; in first class condition.

1—AMERICAN FIG. 1110, No. 6 DOUBLE DISC SANDER, 36" dia. discs; in first class condition.

1—AMERICAN FIG. 1126, No. 9 UNIVERSAL KNIFE GRINDER, capacity for knives 31" long, two sided knife bar, one side fitted with clamps for holding thin high speed knives, one side slotted and fitted with bolts for holding ordinary thick knives; in A1 condition.

1—AMERICAN FIG. 1127, No. 9 UNIVERSAL KNIFE GRINDER, same as above.

1—AMERICAN FIG. 1145, No. 2 DOUBLE END EMERY GRINDER, bench type, complete with countershaft; in A1 condition.

In addition to the machines listed above, we have a complete line of high grade new and used machinery for any and all purposes.

We solicit your enquiries

GARLOCK-WALKER MACHINERY CO. LIMITED

334 St. James St. MONTREAL | 32 Front St. West TORONTO | 567 Banning St. WINNIPEG

Everything in Wood Working and Metal Working Machinery

The Jenkins-Falls Veneer Jointing Machine

The only Veneer Jointer that will effectively joint buckled veneer.

Stock is held flat by patented clamping device while the carriage travels past cutter and returns automatically according to length of stock worked. Many Canadian manufacturers are buying this jointer. It will prove a cost-cutter in your veneer room.

The Jenkins Machine Company make a specialty of the following high grade woodworking machines:—

Double End Geared Tenoners (Light and Heavy Type)
Single End Tenoners
Double End Gear Driven Cut-Off Saws
Special Veneer and Panel Sizing Saws
Veneer Jointer
Chain Feed Rip and Jointing Saw
Automatic Feed Attachment for Hand Jointers
Automatic Multiple Mortising Machine—2, 4, 6, 8 or 10 Bits

Full particulars and illustrations of any of these machines gladly sent on request

The

Jenkins - Falls Veneer Jointer

A Few Satisfied Users and Recent Purchasers:—

Geo. McLagan Furniture Co. Ltd., Stratford
Knechtel Furniture Co. Ltd., Hanover
Canada Furniture Mfs. Ltd., Woodstock
Anthes Furniture Co. Ltd., Kitchener
Midland Woodworkers Ltd., Midland
Preston Furniture Co., Preston
Panels Limited, Southampton
St. Thomas Cabinets Ltd., St. Thomas
Williams Piano Co. Ltd., Oshawa
The Office Specialty Manufacturing Co. of Newmarket
The North American Furniture Co. of Owen Sound

JENKINS VENEER JOINTER IN USE
in the Midland Woodworkers' plant at Midland, Ont.
(See article in this issue).

The Jenkins Machine Company

(Successors to Hayes Machine Co. and Falls Machine Co.)

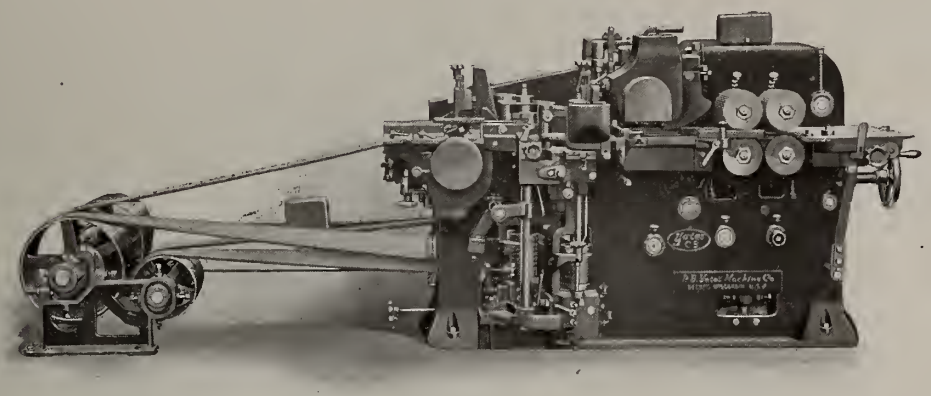
SHEBOYGAN FALLS, - WIS., U.S.A.

Canadian Sales Agents

Garlock-Walker Machinery Company, Limited

MONTREAL TORONTO WINNIPEG

More Help!



The invariable choice of the man who knows

Type C-3 Moulder

combines strength, accessibility and speed to a remarkable degree. The capacity of this machine for handling the smaller mouldings is unequalled.

Feedworks have many unique features which add greatly to their strength. Entirely open side so that the utmost accessibility is secured. Reversible steel plate on working bed gives four ground surfaces and many times the wear of the ordinary bed. It is the last word in moulders.

Send for free, detailed, illustrated circular.

P. B. Yates Machine Company Ltd.

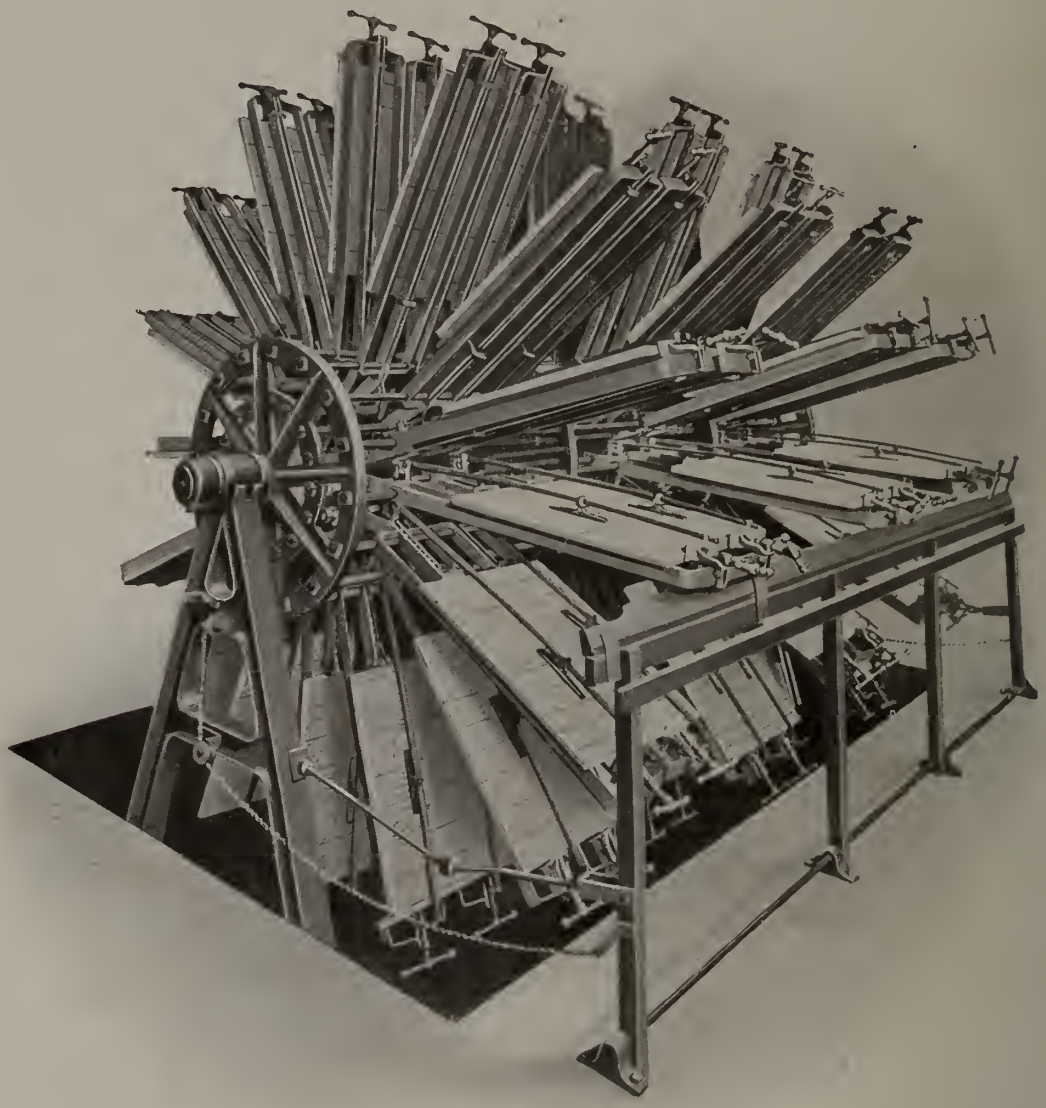
HAMILTON, ONT. CANADA

U. S. Plant, Beloit, Wisconsin

The

No. 200 Perpetual Revolving Clamp

for Simplicity of Operation



Wonderfully simple in operation is the No. 200 Perpetual Revolving Clamp. Its efficiency marks its use as practically indispensable for increased output of the better kind of work. For chair seats, furniture, dimension stock, school desks, refrigerator ends, special shapes, etc., it is without equal. It takes in 2½" in thickness up to 40" wide and 14' long. Many features of this machine will interest and please you. Write us for further particulars regarding this and many other machines that will assist for greater output.

Jackson, Cochrane & Company

KITCHENER - CANADA

The "Shimer Limited" Expansion Head

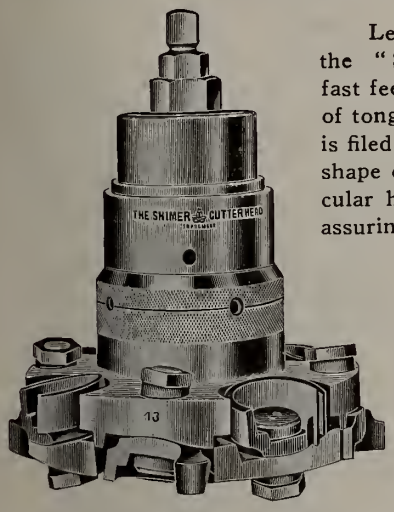


Fig. 627

Let us draw your attention to the advantages of using the "SHIMER CUTTER HEAD" for general Mill and fast feed Planer work. The Cutter is turned to cut the shape of tongue and groove desired, so that to sharpen the cutter it is filed or ground on its face, guaranteeing the user the same shape of cut during the life of the cutter. The bit being circular has from 3½ in. to 5 in. cutting length to the cutter, assuring long wearing life to the cutters.

Note that the cutter, being fastened to a concave seat on a compound angle, assures the user of the proper clearance of cutters, consequently they never burn.

These heads are fitted with or without the Self-Centering Sleeve, and made Expansion or Solid, to suit the customer's wishes.

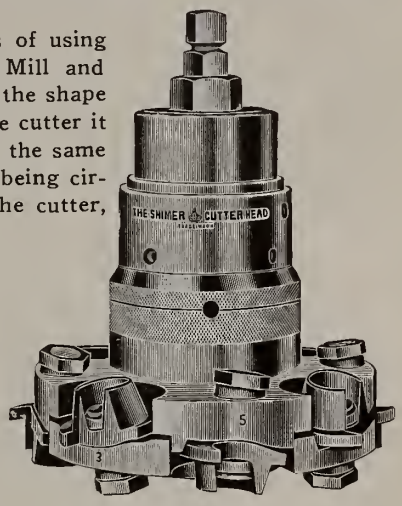


Fig. 268

Shimer Heads have been in use for sixty years, and their reliability and reputation have spoken for them in the past. Let us know your wants and we will guarantee their reliability at the present.

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

Successors to Samuel J. Shimer & Sons, Inc.

GALT, ONTARIO

Subscribers' Information Form

Many letters reach us from subscribers enquiring where a certain machine, a certain kind of lumber or veneer, or some other class of goods, can be obtained. We can usually supply the information. We want to be of service to our subscribers in this way, and we desire to encourage requests for such information. Make use of this form for the purpose.

Date.....19

CANADIAN WOODWORKER
AND FURNITURE MANUFACTURER,
345 Adelaide Street West, Toronto.

Please tell us where we can procure .....

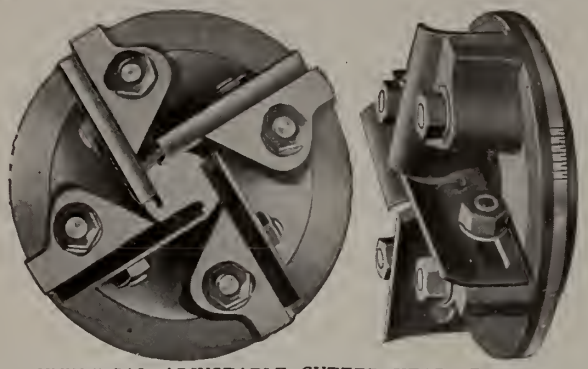
.....

.....

.....

Name .....

Address .....

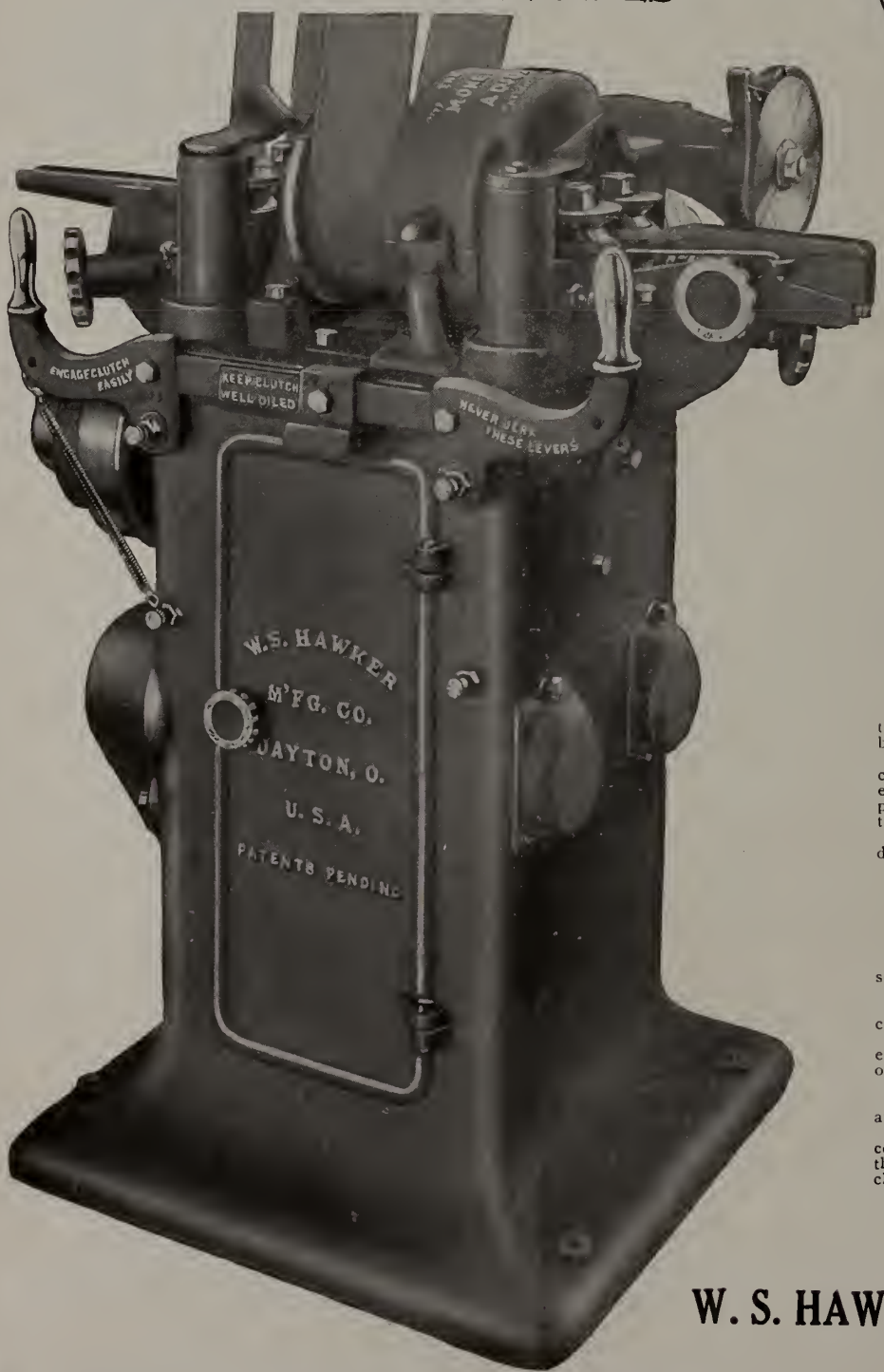


UNIVERSAL ADJUSTABLE CUTTER HEAD Patented.
Infringements (maker or user) will be vigorously prosecuted.

Two Heads

that have put 100% more profit in the production of Dowel Stock.

FOR SHIP TREENAILS



W. S. HAWKER.

Inventor and Designer of the World's most efficient Tubular Turning Machinery

THE

Money Maker Adjustable Rod

and

Dowel Machine

The machine that is sent under a guarantee to show you a gain of from 100 to 400 per cent. before you buy it.

The improved dowel machine that 90 per cent. of the largest and oldest machinery builders and dealers now endorse and recommend in preference to the solid chuck machines they themselves previously built.

One cutter head turns from 1/4 in. to 2 in. diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

Works stock as short as five inches.

Rolls automatically centre variations in squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid chuck dowel machine.

We can save you from one dollar out of every two, to four out of every five, that the operation of solid chuck machines costs you.

Engagements for competitive test solicited.

Formal orders not solicited. All sales made after demonstration.

The only question is, are you willing to cut cost of your dowel turning to one-half or one-third of what it costs with any make of solid chuck machine?

Machine delivers the goods before you buy.

State conditions of stock closely.

Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY

DAYTON, OHIO.

Efficiency Counts

IN

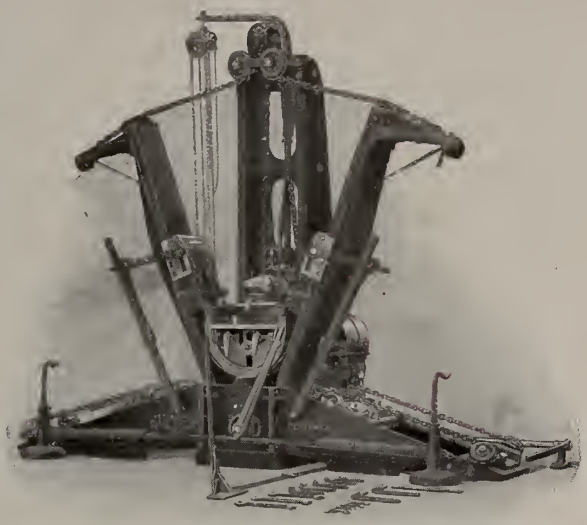
Wood Bending Methods

The Defiance Bending Machines

will increase your present output and reduce your losses in breakage to a minimum. Wood Benders throughout the world are using Defiance Bending Machines.

The Defiance High Productive Wood Bending Machinery

is built in various designs and sizes, and is particularly adapted to bending rims for artillery wheels, automobile, auto-truck, wagon and carriage wheels, table rims, plow and truck handles, hames, bows for vehicle tops and steering wheel rims.



12" Patent Rim, Felloe and Hound Bending Machine

Write for illustrated and descriptive circular on this machine

THE DEFIANCE MACHINE WORKS

New York City ***DEFIANCE, OHIO, U.S.A.*** *London, England*

HART MIRROR PLATE CO.

IMPORTERS AND MANUFACTURERS OF

MIRRORS

GRAND RAPIDS QUALITY

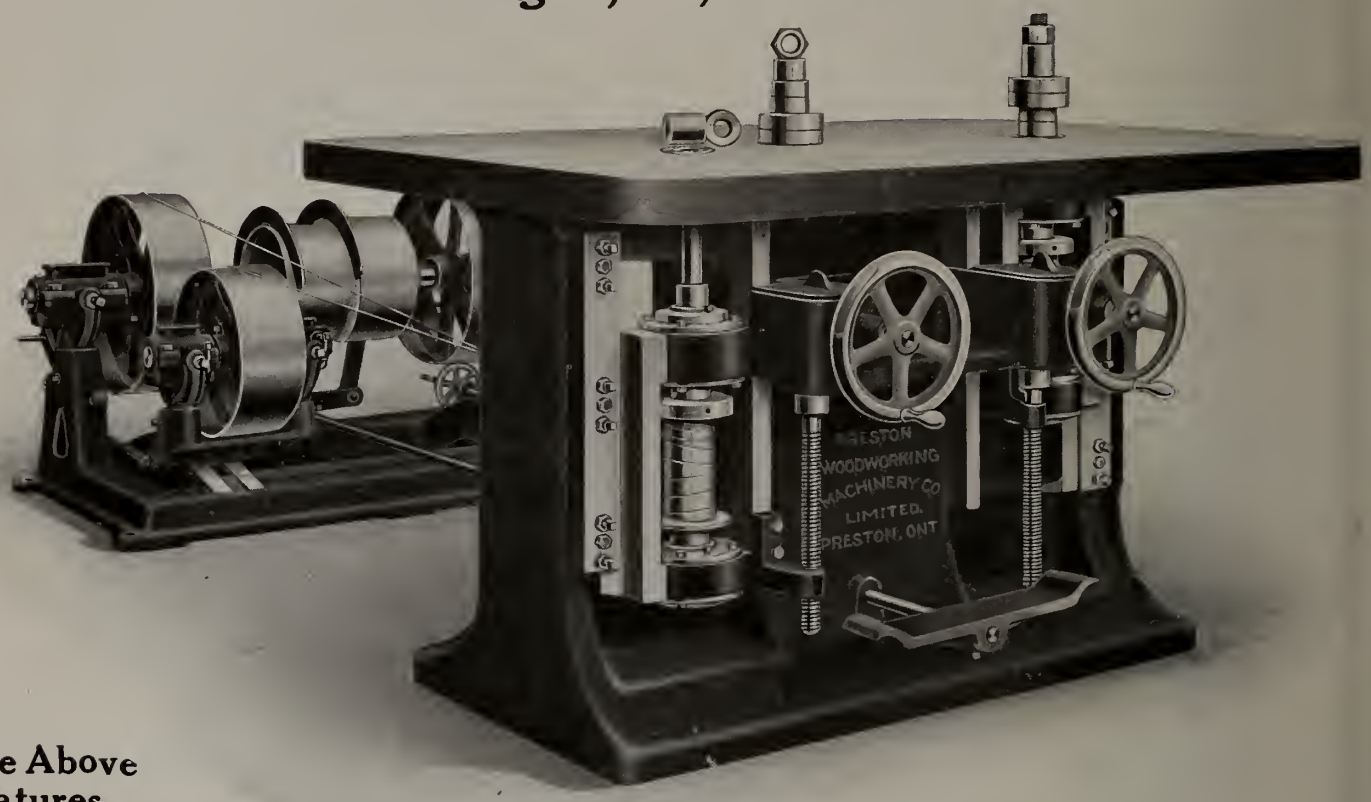
Grand Rapids, Mich.

Largest manufacturers of high grade mirrors in America serving the furniture trade exclusively.

7,000 to 8,000 R. P. M.

S K F BALL BEARINGS

Weight, 2,750 lbs.



The Above Features on a PRESTON" No. 162

Heavy High Speed Ball Bearing Shaper

Guarantee

100% More Production

MADE EITHER AS A SINGLE SPINDLE OR DOUBLE SPINDLE MACHINE to meet the particular needs of the customer.
We will be glad to go into the matter with you from every angle and help you figure what will be most suitable for your particular line of work.

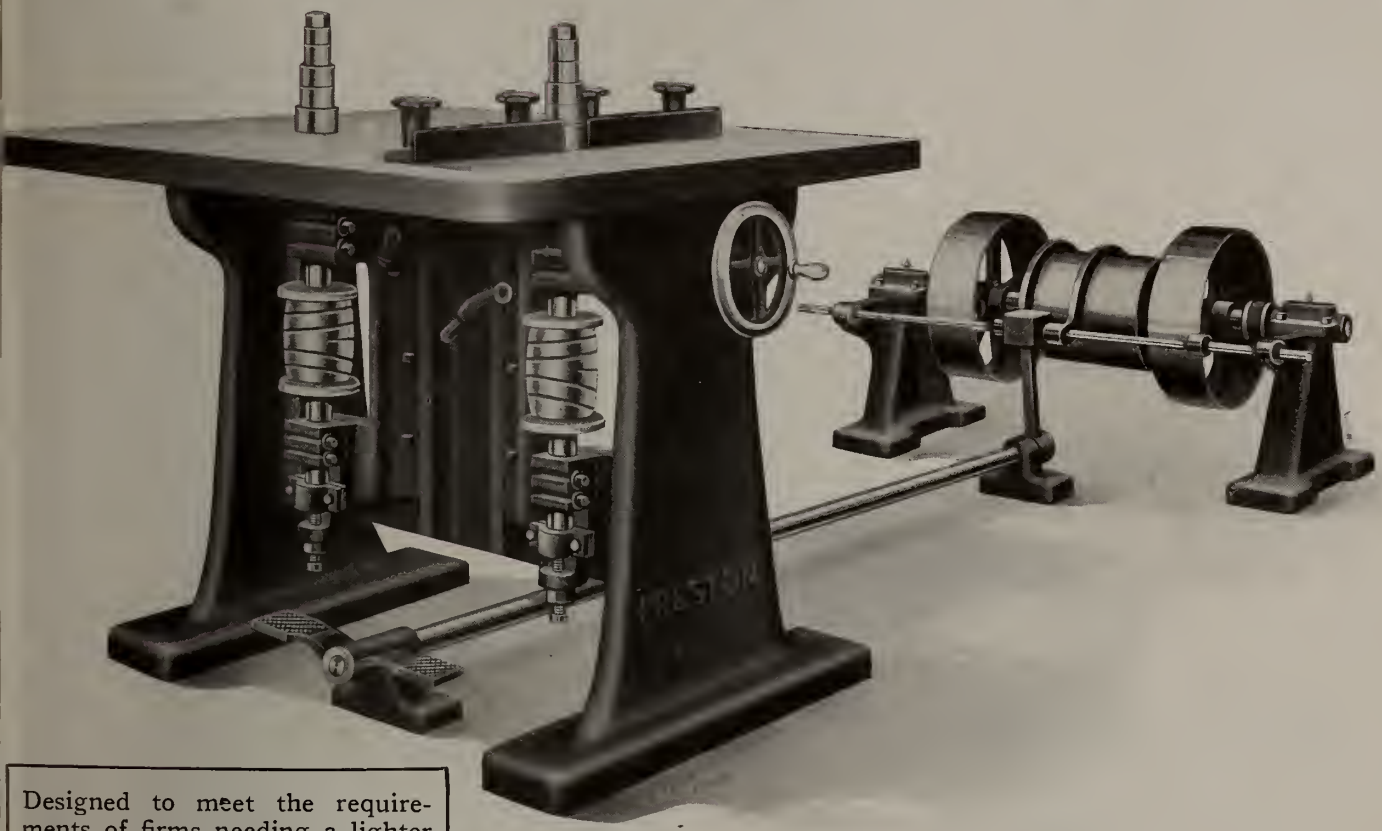
The Preston Woodworking

PRESTON

BALL BEARING SHAPER

A NEW SHAPER

"Preston" No. 164 Ball Bearing



Designed to meet the requirements of firms needing a lighter and less expensive Shaper than our No. 162.

Made with

Babbitt Bearings, Plain Countershaft
S K F Ball Bearings, Plain Countershaft
S K F Ball Bearings, Special Countershaft

This machine, equipped with BALL BEARINGS, will be found particularly suitable for the needs of many firms. Don't hesitate to ask for information.
WE ARE SHAPER PEOPLE and make Shapers for every purpose. Ten years of careful study and research have placed us in the enviable position of being able to supply information and advice not easily gained elsewhere.

Machinery Company Ltd.

ONTARIO

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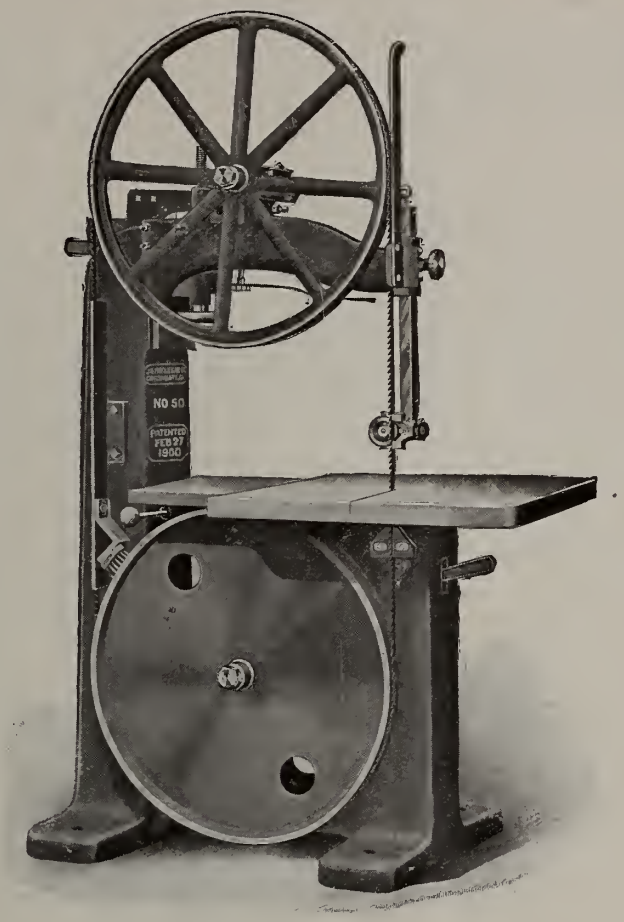
Wood Working Machinery

BELT SANDER 319

CONVENIENT, SIMPLE, SUBSTANTIAL, EFFICIENT. TABLE 5½′ or 8′.

COWAN & COMPANY OF GALT, LIMITED, Galt, Canada



Save 25% to 50% of Blade Upkeep and Power Cost

Get Two, Even Three Times As Much Work

It's not the blades that wear out that cost, it's those that break.

It's the broken blades that cut down productive time and cost to repair and to replace.

Blade breakage is reduced to a minimum on Fay-Egan No. 50—36" **Square Column "Lightning Line" Band Scroll Saws.**

The Fay-Egan "Knife Edge" Blade Tension, made on the principle of a fine laboratory balance scale, is so sensitive that it compensates for changes in atmospheric conditions—yet, so flexible, you can pass a block between blade and wheel, while running, without breaking the blade. Folks tell us blade expense on "No. 50" averages 50 to 75 per cent. less than on the old timers.

The solid lower wheel acts like the fly wheel on your engine, its momentum carrying the load, so that the power consumption is reduced fully one-half, while at the same time it controls the light-spoked upper one, preventing over-running and choking down on a heavy cut.

The heavy square column eliminates vibration and permits the wheels to be revolved at 50 to 100 per cent higher speed, increasing the cutting capacity to double, and in some cases, triple that of the ordinary band saw.

As a user of saws, you cannot afford to ignore what Fay-Egan Square Column Band Saws are doing for others and can do for you. An investigation does not obligate you.

Write for Bulletin M-4

J. A. FAY & EGAN CO.

153-163 W. Front St. **CINCINNATI, O.**

What Does SKF Mean?

To say that SKF denotes a standard of quality in a ball bearing is to recount that which has been proven and obvious for years.

To even say that SKF is a mark denoting a kind of bearing is to omit its more important significance.

For years this SKF mark has been the device of a business, pioneering in all fields of industry, championing the application of the ball bearing to mechanical design.

So that to the extent that it has overcome precedent in machine design, or upset traditions in bearing practice, SKF means more than a kind or type of bearing; it is a brand of service—working in the cause of better machine practice.

CANADIAN SKF COMPANY, LIMITED

412 St. James St.
MONTREAL

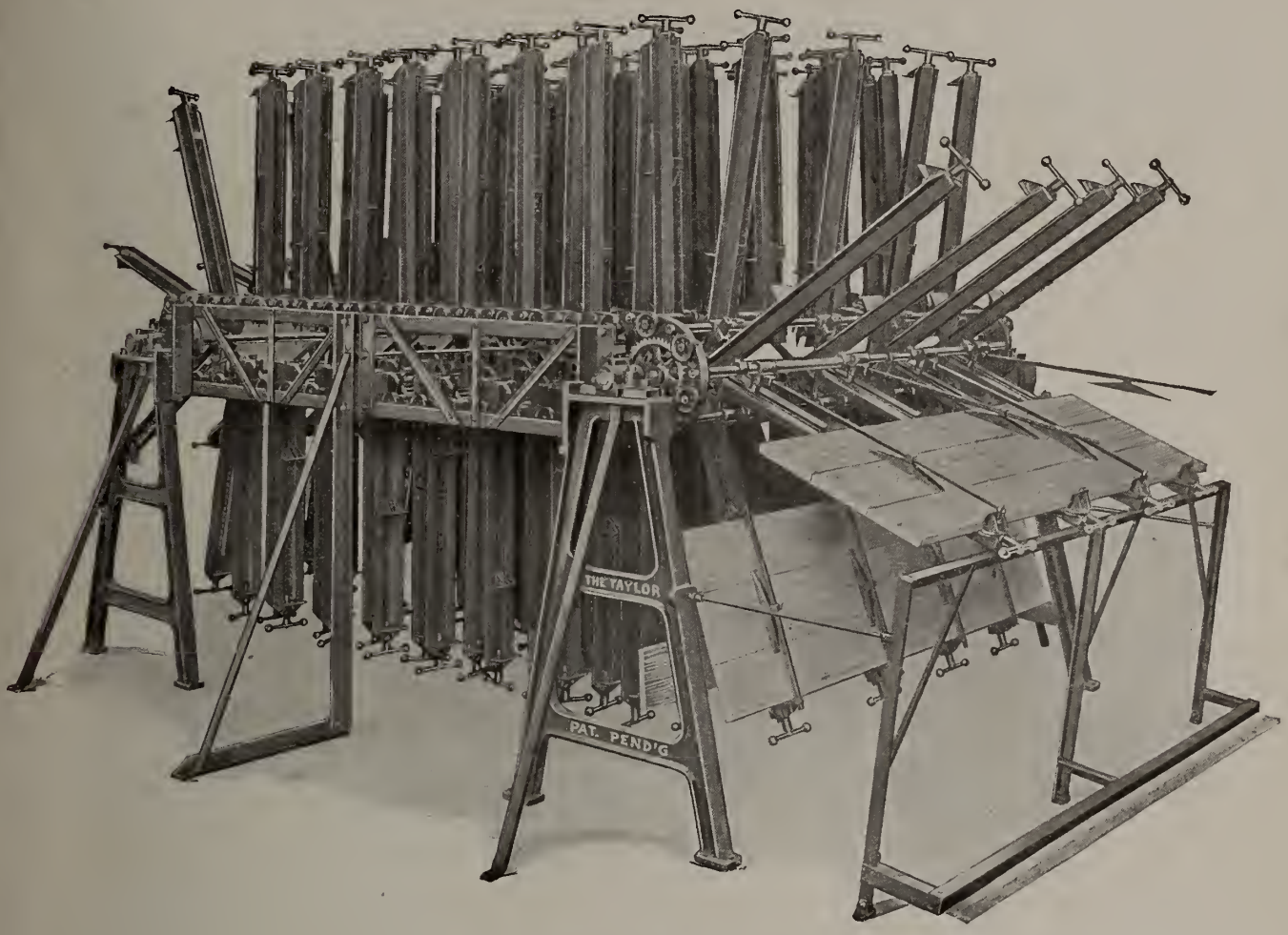
83 King Street W.
TORONTO

SKF INDUSTRIES

Hess-Bright Ball Bearings
S K F Ball Bearings
Atlas Steel Balls
Gronkvist Chucks
Transmission
Hangers

CLAMP The Taylor CARRIER

REG. U.S. PAT. OFF. TRADE MARK



Forty section machine carrying 160 clamps, measuring 8 ft. 2½ in. between shaft centers.

The clamp is one of the most interesting features of the clamp carrier. A remarkable strain can be applied with greatest ease; the work it turns out—both thick and thin stock—is 100 per cent. perfect.

An Engineering concern recently wrote:

"I am recommending Taylor clamps to the Germain Mfg. Co. because I have proven the clamps more efficient through scientific time studies on both and all existing types of gluing-up machines and devices."

As a result of the above recommendations, The Germain Mfg. Co. referred to bought two Taylor carriers. They installed them, and tested them and have since purchased two more. We can tell you numerous instances where customers are using from two to nine Taylor carriers each as a result of similar experiences.

Let us prove the truth of these claims by showing you one of these carriers in operation, or you can try the clamps out on your own work. Ask for C. C. Folder and further information.

A. R. Williams Machinery Co., Toronto, Canada — Representatives

James L. Taylor Manufacturing Co.

POUGHKEEPSIE, N. Y.

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DRY AND PARTLY DRY STOCK

Ready for Shipment

GUM

74,468 ft. 6/4 1sts and 2nds Red
160,125 " 6/4 No. 1 Com. and Sel. Red
72,360 " 6/4 No. 2 Common Red
11,978 " 5/4 No. 2 Common Red
39,793 " 4/4 No. 2 Com. and Btr. Red
30,609 " 4/4 1sts and 2nds Red
41,859 " 4/4 No. 1 Com. and Sel. Red
29,010 " 4/4 No. 2 Common Red
11,428 " 1 x 13-17" FAS
12,486 " 1 x 9-12 Box Boards
85,615 " 4/4 1sts and 2nds Sap
150,246 " 4/4 No. 1 Com. and Sel. Sap
201,246 " 4/4 No. 2 Common Sap
27,655 " 5/4 1sts and 2nds Sap
32,395 " 5/4 No. 1 Com. and Sel. Sap
42,500 " 5/4 No. 2 Common Sap
6,729 " 5/4 No. 3 Common Sap
184,465 " 6/4 1sts and 2nds Pl. Sap
154,112 " 6/4 No. 1 Common Sap
39,080 " 6/4 No. 2 Common Sap

LA. CYPRESS

13,097 ft. 4/4 Select
40,655 " 4/4 No. 1 Shop
98,745 " 4/4 No. 1 Common
34,122 " 4/4 No. 2 Common
45,590 " 4/4 Peckie
20,175 " 4/4 Log Run
1,200 " 5/4 Select
1,350 " 5/4 No. 1 Shop
250 " 5/4 No. 1 Common
5,696 " 5/4 Peckie
55,765 " 6/4 1sts and 2nds
58,070 " 6/4 Select
65,315 " 6/4 No. 1 Shop

LA. CYPRESS—Continued

17,735 " 6/4 No. 1 Common
7,263 " 6/4 Peckie
12,430 " 8/4 No. 1 Shop
17,380 " 8/4 No. 2 Common
2,250 " 8/4 Peckie
11,972 " 4/4 Log Run

ELM—GREEN

2 Cars 10/4 L/R, 20% No. 2 Com.
2 " 12/4 L/R, 20% No. 2 Com.
10,466 ft. 4/4, 5/4, 6/4, 8/4 L/R.
7,820 " 4/4 Log Run, Green

HICKORY—GREEN

Can cut 2 cars

OAK

3,150 ft. 8/4 No. 1 Com. & Btr. Mixed R & W
5,400 " 6/4 1sts and 2nds Pl. Red
253,865 " 4/4 No. 1 Com. Red Oak
37,440 " 4/4 No. 2 Com. Red Oak
31,010 " 4/4 No. 3 Com. Red Oak
32,486 " 4/4 1sts and 2nds Pl. R & W
61,527 " 4/4 No. 1 Com. and Sel. R & W
42,896 " 4/4 No. 2 Com. Red and White
11,118 " 4/4 No. 2 Com. and Btr. Qtd. Red
15,000 " 4/4 No. 3 Com. Plain Mixed
4,480 " 4/4 1sts and 2nds Qtd. White
24,129 " 4/4 No. 1 Com. and Sel. Qtd. White
7,247 " 4/4 No. 3 Com. Qtd. White
11,429 " 4/4 8' Tie Siding, Mixed
13,290 " 4/4 No. 1 Com. and Btr., largely Red

OAK—Continued

1,600 " 10/4 FAS Red
8,201 " 10/4 No. 1 Com. and Sel. Red
4,310 " 10/4 No. 2 Common Red

LA. WHITE ASH

11,924 ft. 4/4 No. 2 Com.
12,041 " 4/4 No. 3 Com.
3,841 " 5/4 1sts and 2nds
8,242 " 6/4 No. 2 Common
11,164 " 5/4 No. 2 Common
12,400 " 8/4 No. 2 Common
17,584 " 5/4 No. 3 Common Wormy
Can cut
1 Car 16/4 L/R, 15% No. 2 Com.
2 Cars 12/4 Log Run, 15% No. 2 Com.

PECAN—GREEN

24,286 ft. 8/4 Log Run, 30 drys dry
Can cut several cars 6/4, 8/4, 10/4 Log Run, 20% No. 2 Com.
5,724 ft. 8/4 No. 3 Common

ARKANSAS YELLOW PINE

31,296 ft. 20% 1 x 6", 50% 8", 20% 10", 10% 12", No. 1 Com.
Air Dried—Rough or Dressed.

COTTONWOOD

1 Car 4/4 Log Run
1 " 4/4 No. 1 Common

ABERDEEN LUMBER COMPANY, Pittsburgh, Pa.

Tennessee Aromatic Red Cedar

STRAIGHT CARS OR MIXED WITH HARDWOODS

Quartered Sap Gum

4 cars 4/4" Common & Better
3 " 6/4" Common & Better

Plain Sap Gum

3 cars 4/4" 1st and 2d, 13/17" w.
10 " 4/4" No. 2 Common
5 " 4/4" No. 3 Common
5 " 4/4" No. 2 & 3 Common
2 " 6/4" Common & Better
1 " 6/4" No. 1 Common
10 " 6/4" No. 2 Common
5 " 6/4" No. 2 & 3 Common
5 " 6/4" No. 3 Common
1 " 4/4" 9/12" Box Boards

Plain Red Gum

3 cars 4/4" 1st and 2nd
3 " 4/4" No. 1 Common
2 " 4/4" No. 2 Common
1 " 6/4" No. 2 Com. & Btr.
1 " 8/4" No. 2 Com. & Btr.
2 " 8/4 No. 3 Common

Quartered Red Gum

2 cars 4/4" 1st and 2nd.
2 " 4/4" No. 1 Common
2 " 6/4" Common & Better
2 " 6/4" No. 2 Com. & Btr.
1 " 8/4" 1st and 2nd
1 " 8/4" No. 1 Common

Red Gum Figured Wood

2 cars 4/4" Com. & Btr. Plain
2 " 4/4" 1st and 2nd—Qtd.
2 " 4/4" No. 1 Common Qtd.
1 " 8/4" Com. & Btr. Qtd.
1 " 10/12/4 Com. & Btr. Qtd.

Plain Red Oak

2 cars 4/4" Common & Better
3 " 4/4" No. 1 Common
1 " 6/4" No. 2 Com. & Btr.

Quartered Red Oak

1 car 4/4" No. 1 & 2 Common

Plain White Oak

2 cars 4/4" 1st & 2nd
5 " 4/4" No. 1 Com. & Btr.
5 " 4/4" No. 2 Common

Quartered White Oak

1 car 4/4" Common & Better
1 " 4/4" No. 1 & 2 Common
1 " 4/4" 2" to 5½" Clear Strips Snd.

Miscellaneous

5 cars 4/4" No. 3 Com. Mixed Oak
1 " 8/4 & 10/4 No. 3 Com. & Btr. Mixed Oak
1 " 4/4" L. R. Pl. Black Gum
1 " 4/4" L. R. Qtd. Black Gum
1 " 8/4" L. R. Elm
1 " 10/4" L. R. Elm
2 " 6/4" No. 3 Common Elm
1 " 8/4" No. 3 Common Elm
1 " 10/4" No. 3 Common Elm
1 " 4/4, 5/4 & 6/4 No. 3 Com. Ash
1 " Shop & Better Cypress

St. Francis Basin Hardwoods

GEO. C. BROWN & COMPANY

Mills — PROCTOR, Ark., COSGROVE, Ark., GRENADA, Miss.

Main Office — MEMPHIS, Tenn.

Canadian Representative: M. E. Cummings, 814 Richmond Ave., Buffalo, N. Y.

The Service You Desire-

—is meted out in full measure when we meet your requirements. Hardwoods of quality, cut from our selected tracts, are shipped promptly and exactly as you desire.

Our modern mills and equipment enable us to turn out hardwoods that will please you in every way.

LET US FILL YOUR NEXT ORDER

Memphis Bandmill Co.

Memphis, Tenn., U.S.A.

Boland Lumber Company

Murray Bldg., Grand Rapids, Mich.

Manufacturers Northern and Southern Hardwoods

Northern Woods:

Ash, Basswood, Beech,
Birch, Hard Maple,
Quartered Maple,
White Maple, Soft Maple,
Soft Elm, Rock Elm.

Southern Woods:

Cherry, Chestnut,
Cottonwood, Cypress, Gum,
Hickory, Magnolia,
Oak, Poplar, Sycamore,
Walnut, Willow.

Please send us your inquiries and it will be a pleasure to quote you and describe our stocks

Band Mill and Yards, Memphis Plant.

WE ARE SPECIALISTS IN

Q. S. R. G. S. N. D.

QUARTER SAWN RED GUM, SAP NO DEFECT

We are a dependable source of supply for this stock in thicknesses of 1½", 2", 2½" and 3", and will take pleasure in making you delivered prices at all times.

If you are not familiar with the merits of Quarter Sawn Red Gum, Sap no Defect, ask us to tell you about it.

We manufacture all the lumber we ship, and operate two band mills on our own timber, which enables us to ship stock of even grade, color and texture.

Manufacturers of all kinds of high grade Southern Hardwoods.

"DIRECT FROM PRODUCER TO CONSUMER"

GAYOSO LUMBER COMPANY

P.O. Box 1097 MEMPHIS, TENNESSEE U.S.A.

Reese Sheriff Lumber Co.

WILLIAMSPORT, PENNSYLVANIA

Manufacturers of

Northern and Southern Hardwoods White Pine, Spruce and Hemlock

With special attention to **Oak, Chestnut, Poplar, Cherry, Walnut, Gum and Basswood.**

OUR MOTTO

REASONABLE PRICES—that you can afford to pay.
EFFICIENT SERVICE — that you have a right to expect
FAIR TREATMENT — that you can depend on getting

We would appreciate an opportunity of furnishing a portion of your lumber requirements.

"AMERICA'S FINEST CABINET WOOD"

RED GUM

furniture "has come into its own at last." Whereas a few short years ago the alert furniture manufacturer (and dealer), with a finger on the public pulse, showed RED GUM only when it was insisted upon, and then with a half-apologetic manner, HE NOW SAYS: "COME RIGHT UP HERE IN FRONT —I WANT TO SHOW YOU MY RED GUM LINES." (Proud of it—and well he may be.)

WHY DON'T **YOU**, MR. FURNITURE MAKER, GET YOUR **RED GUM** LINE INTO THE SPOTLIGHT OF POPULAR FAVOR?

There's a lot of honorable profit in meeting public taste. Do you realize what our advertising to the general public (the real market) is doing for manufacturers who feature GUM? "Come on in—the selling's fine" with "America's Finest Cabinet Wood."

WRITE US FOR SAMPLES, PARTICULARS AND GENERAL INFORMATION. OUR REPLY WILL BE PROMPT, PERSONAL AND DEPENDABLE.

ADDRESS: RED GUM DIVISION.

AMERICAN HARDWOOD MANUFACTURERS' ASS'N
1314 Bank of Commerce Building, Memphis, Tennessee

I offer the following West Virginia stock for immediate shipment:

100,000 Ft. 4/4 Sound Wormy Chestnut.
100,000 " 5/4 " " "
75,000 " 6/4 " " "
70,000 " 8/4 " " "

No. 1 Common and Better Chestnut

100,000 Ft. 4/4
100,000 " 6/4
100,000 " 8/4 60% 14 and 16 feet long, 50 to 60% 10" and wider.
15,000 " 4/4 FAS Plain White Oak.
75,000 " 4/4 No. 1 Com. Pln. Wh. Oak.
100,000 " 6/4 No. 1 Com. Pln. Wh. Oak.

I have also a car of 4/4 No. 1 C & B Tennessee Red Cedar in transit.

I can make immediate shipment of Crating Lumber, Excelsior and Wood Wool.

Write, Wire or Phone for Prices.

PERCY E. HEENEY
202 Weber Chambers, KITCHENER, ONT.

H. W. Darby Hardwood Lumber Company

Manufacturers of

Hardwood Lumber

Red and Sap Gum a Specialty

Gum, Oak, Tupelo, Poplar
Ash, Elm, Cypress

Rooms 1531-33 Bank of Commerce & Trust Bldg
MEMPHIS, TENN.

Mills at:
Sidon, Miss Money, Miss.
Greenwood Miss.

HERE AGAIN

is the proof that we are not only PULLING FOR GOOD OLD

OAK

but also pulling *for those who SELL IT*—

THIS MEANS *YOU.*

Month by month we shall prove to the CONSUMER (*Your Customer*) that *OAK FURNITURE*—is due for a very heavy "COME-BACK."

Does your line meet the issue? If not, it can by next season.

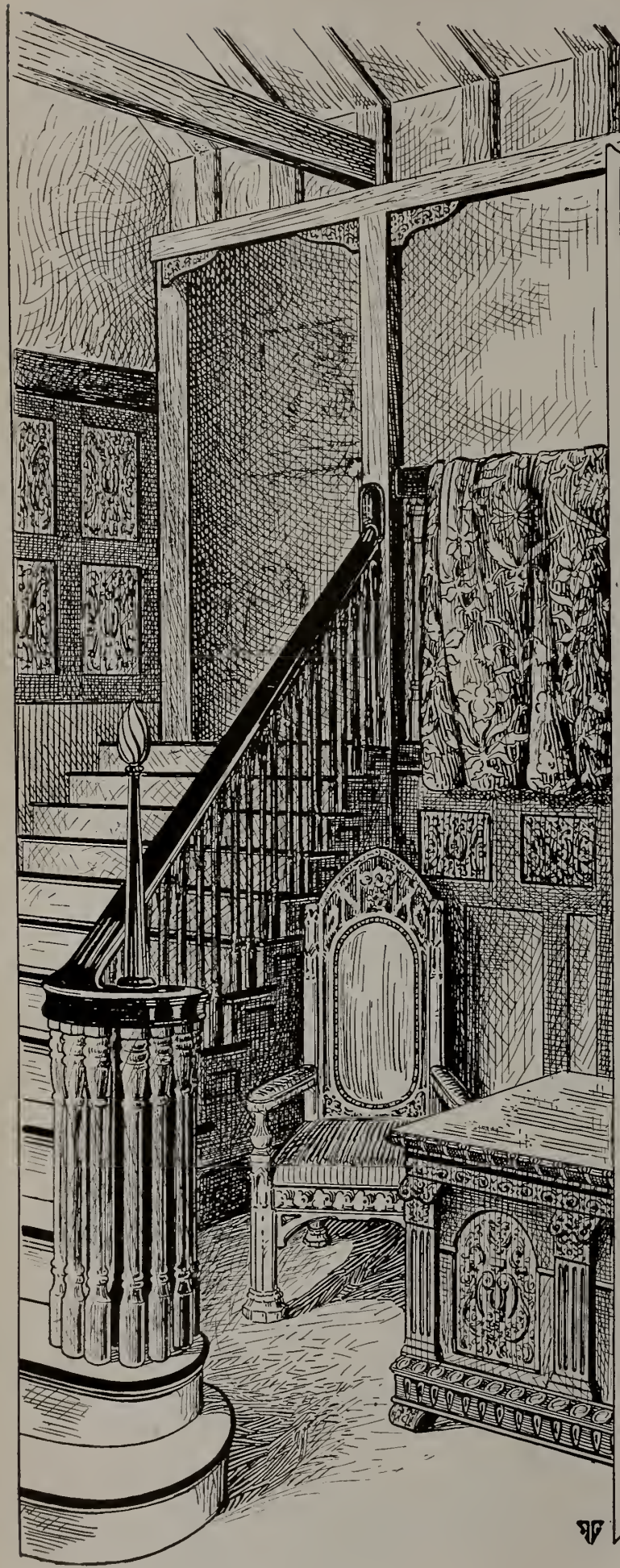
ANOTHER OAK FURNITURE ADV. APPEARING IN THE BEST MAGAZINES IN AMERICA.

"Good OAK FURNITURE is more nearly 'boy-proof' than any other equally fine cabinet wood"

Its elegance, dignity and artistic adaptability are backed by its sturdy resistance to dents and scratches. (Really a quite important point.)

"There is no finer heirloom than good OAK furniture." There is no more *safe* and *enduring* investment—none better worth *insisting* upon.

ADDRESS: OAK DIVISION
American Hardwood Mfrs. Assn.
Let Us Consult Together for the Good of All Concerned. Write Us. We'll Answer.
Room 1408 14 MAIN STREET, MEMPHIS, TENNESSEE



IOWA WALNUT

The War Brought It Out

The absolute insistence of our Government upon American Black Walnut for gunstocks (and for aeroplane propellors to the limit of our capacity) developed the fact that the amount of American Walnut still available is more than ample for our domestic uses of several generations to come!

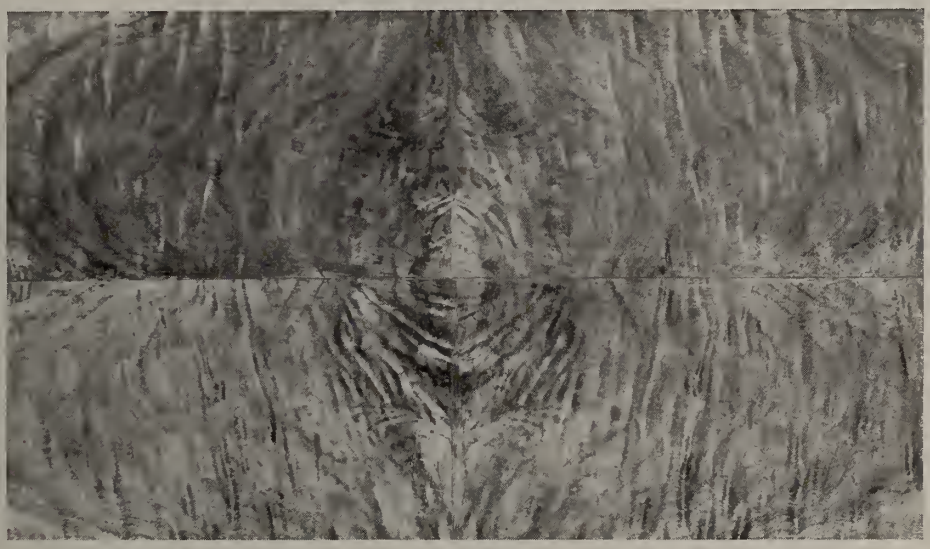
Its qualities are so incomparable among all hardwoods that it is no wonder that Walnut is classed as the supreme cabinet wood of the world. If you inspect the palaces and museums of Europe and America you will get quite an awakening—and you will then be glad that Walnut is still plentiful and that you can secure your supply—and at most reasonable prices.

Send us a list of your needs.

Des Moines Sawmill Co.
DES MOINES, IOWA

"Hartzell" Lumber and Veneers "Hartzell"

American Walnut Exclusively



"Hartzell's Choice Walnut"

Furniture manufacturers will do well to note that we produce only American Walnut, and therefore can be classed as the logical source of supply in this wood, and our years of experience in handling American Walnut will prove valuable to you if you desire to take advantage of it.

By saying that our long experience will prove advantageous to you we mean that you should by all means take time to examine our line before purchasing, because the quality will be far superior to the average line and the price no greater.

We study your particular interests and produce veneer of the kind and quality that is best adapted to your work, and whatever class of figure you are using we can give you a complete uniform line of just the wood you want for your selection, and it will not be necessary for you to handle a great lot of all sorts of samples and then find only a few stocks suitable for your needs.

When you purchase our line you can rest assured that you can duplicate your purchase just as near as it is possible to do so in Veneers, that is our part in serving you and we see to it that you are served right.

"SEND YOUR INQUIRIES FOR VENEERS TO US."

"Hartzell" Piqua, Ohio "Hartzell"

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

WHITE ASH

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	22,000	3,800	60,000	95,000
1¼ in.	78,000	5,500	108,000	35,000
1½ in.	26,900	1,200	10,000	36,000
2 in.	85,300	500	19,000	58,000
2½ in.	50,500	.....	10,000	5,500
3 in.	59,500	.....	15,500	7,500
4 in.	500	.....	1,000	500

BUTTERNUT

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	12,300	35,800	23,600	.....
2 in.	8,400	17,000	10,000	.....
2½ in.	3,000	3,000	.....	.....

CHERRY

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	13,500	210,200	94,500	62,000
1¼ in.	11,500	9,600	18,500	41,900
1½ in.	22,000	20,700	78,300	36,000
2 in.	4,100	22,200	31,900	5,500
2½ in.	4,500	2,100	1,200	.....
3 in.	20,700	2,500	2,300	.....
4 in.	9,900	.....	.....	.....

CHESTNUT

	1 & 2	Clear Strips	No. 1 Com.	S.W.& No. 2 Com.
¾ in.	.....	.....	.....	.....
1 in.	15,900	1,500	49,300	180,500
1¼ in.	149,800	1,800	68,200	125,200
1½ in.	116,500	.....	86,000	29,000
2 in.	33,200	.....	54,300	91,200
2½ in.	4,000	.....	1,150	500
3 in.	2,800	.....	1,300	500
4 in.	1,500	.....	300	.....

PLAIN RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
⅜ in.	30,200	.....	.....	.....
¾ in.	43,000	.....	30,400	20,200
⅝ in.	2,500	.....	87,000	53,600
1 in.	193,200	.....	38,000	73,400
1¼ in.	94,700	2,400	4,000	1,200
1½ in.	157,900	4,300	39,200	40,000
2 in.	83,100	.....	92,800	20,000
2½ in.	61,100	.....	10,000	2,100
3 in.	28,800	.....	14,500	11,000
4 in.	16,600	.....	8,900	.....

PLAIN WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
⅜ in.	1,000	.....	.....	.....
½ in.	.....	.....	.....	.....
⅝ in.	25,150	.....	2,000	16,900
¾ in.	37,900	.....	95,000	6,000
1 in.	29,300	1,200	75,000	60,200
1¼ in.	73,300	.....	6,000	8,000
1½ in.	48,500	.....	21,000	9,000
2 in.	47,000	.....	80,000	50,000
2½ in.	166,800	.....	47,500	3,000
3 in.	75,800	.....	51,800	14,400
3½ in.	5,500	.....	3,000	1,500
4 in.	72,000	.....	18,500	2,000

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	300	.....	3,700	200
1 in.	20,200	2,300	500	.....
1¼ in.	2,000	.....	.....	.....
1½ in.	150	.....	500	.....
2 in.	1,000	.....	7,400	.....

QUARTERED WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
½ in.	5,500	.....	.....	.....
¾ in.	18,500	.....	44,600	9,000
⅝ in.	5,800	.....	6,500	.....
1 in.	41,400	9,000	22,400	17,000
1¼ in.	6,000	.....	400	1,300
1½ in.	9,500	.....	8,000	.....
2 in.	31,500	.....	25,100	4,700
2½ in.	1,000	.....	.....	.....

POPLAR

	1 & 2 18" & up	1 & 2	Box Boards 13" & up	Bright Saps
⅝ in.	.....	17,600	.....	.....
1 in.	.....	45,000	4,600	11,200
1¼ in.	2,800	9,300	.....	2,000
1½ in.	4,300	.....	.....	9,000
2 in.	.....	13,600	.....	1,000
2½ in.	.....	44,800	.....	11,600
3 in.	.....	27,900	.....	20,600
4 in.	.....	6,000	.....	7,300

POPLAR (Continued)

	Stained Saps	No. 1 Com.	No. 2 Com.	No. 3 Com.
⅝ in.	10,800	22,300	2,600	.....
1 in.	40,600	160,900	171,000	40,000
1¼ in.	7,600	23,600	8,000	.....
1½ in.	6,700	41,000	9,500	4,000
2 in.	4,000	118,500	27,500	.....
2½ in.	3,700	2,000	500	500
3 in.	1,500	21,000	47,000	10,000
4 in.	700	17,750	5,000	.....

Also Large Stock of BEECH, BIRCH and MAPLE

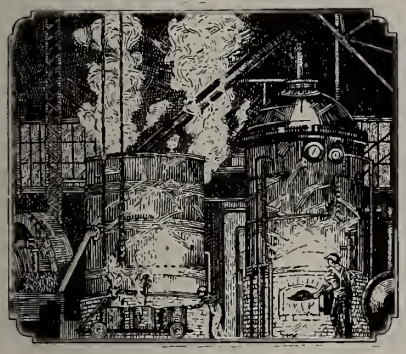
THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

Wood Turpentine

(MADE IN CANADA)



THE Canadian Wood Turpentine—made at our mills at La Tuque, P.Q., is an excellent diluent and solvent and contains no free rosin.

This Turpentine is made by an improved laboratory process from Canadian woods and its distinctive odor clearly indicates that it is a different product from that given by the older methods of distillation.

Further and complete information gladly sent upon request.

BROWN CORPORATION

Sales Office:

56 St. Peter Street

Quebec, P.Q.

HAVE you considered contracting for 1920 Hardwood requirements?

Edward Clark & Sons, Limited

807-9 Bank of Hamilton Bldg.

Toronto, - Ont.

Our dry kiln capacity has been increased to 1,000,000 per month; so there is no reason why you should suffer for the want of

Dry Hardwood Lumber

Write us about it

James E. Stark & Co., Inc.

MEMPHIS, TENN.

Canadian Hardwoods

Good Stocks, Right Goods,
Prompt Shipment

C. A. SPENCER, Limited
LUMBER MERCHANTS
Offices—500 McGill Building
MONTREAL - - Quebec

STEELE & HIBBARD LUMBER CO.
St. Louis, Mo.

52 Years in Business

Five Million Feet Dry Hardwoods
25 Different Kinds,
QUICK SHIPMENT

F. Huntington Smith
Canadian Representative.

J. H. Bonner & Sons
Memphis, Tenn.
Mills:
Jonquil and Ruffwood, Ark.

Manufacturers

Band Sawn
Hardwood
Lumber

Write or wire for prices on
Gum, Oak, Elm, Etc.

Southern Hardwoods

Our mills now producing high grade stock, well manufactured, including

Poplar, Chestnut, Basswood Buckeye, Hickory Red and Sap Gum, Plain and Quartered Red and White Oak.

Agricultural and other special purpose stock, Oak Planking, Railway Material, Heavy Timbers, in fact almost anything in the line of Hardwood Lumber.

Buskirk-Rutledge Lumber Co.
Cincinnati, Ohio.

J. R. EATON & SONS, LIMITED

MANUFACTURERS OF HIGH GRADE WOOD PRODUCTS

Wood Turnings, Hardwood Dowels, Turned Table Legs, Kitchen Tables, Kitchen Cabinets, Oak Extension Tables, Oak Library Tables, "Empire Brand" Hardwood Flooring in Maple, Birch, and Plain or Quarter Cut Oak, Solid Pine and Veneered Hardwood Doors.

A Large Factory equipped with up-to-date machinery is at your service to furnish "WHAT YOU WANT"— WHEN YOU WANT IT."

YOUR ENQUIRIES SOLICITED

Orillia Ontario Canada

E. SONDHEIMER CO.

MEMPHIS, TENN., U.S.A.

Manufacturers and Exporters of

American Hardwoods

Specializing in RED GUM and SALIX

Dry Stock for Immediate Shipment

1 car 1" 1s and 2s Plain White Oak
1 " 1½" No. 1 Com. Pl. W. Oak
1 " 1" 1s & 2s Plain Red Oak
2 " 1¼ x 12" and up, 1s & 2s Plain Red Oak
2 " 1¼" No. 1 Com. Pl. Red Oak
1 " 1½" No. 1 Com. Pl. Red Oak
5 " 1" 1s & 2s Qrt. Red Oak
3 " 1" No. 1 Com. Qrt. Red Oak
2 " 1" No. 2 Com. Qrt. Red Oak
1 " 1¼" 1s & 2s Qrt. Red Oak
1 " 1" 1s & 2s Qrt. White Oak
1 " 1 x 10" & up Qrt. White Oak
3 " 1" No. 1 Com. Qrt. W. Oak
2 " 1" No. 2 Com. Qrt. W. Oak
3 " 1 x 12" & up 1s & 2s Pl. Red Gum
1 " 3/4" 1s and 2s Pl. Red Gum
1 " 3/4" No. 1 Com. Pl. Red Gum
2 " 4/4" 1s & 2s Pl. Red Gum
3 " 4/4" No. 1 Com. Pl. Red Gum
100,000 ft. 1" 1s & 2s Sap Gum
100,000 ft. 1" No. 1 Com. Sap Gum
1 car 2" 1s and 2s Soft Elm
200,000 ft. 1" No. 2 Com. & Btr. Salix
3 cars 1" No. 1 Com. & Btr. Qrt. Red Gum (Figured wood)

Also Pecan, Hickory, Sycamore, Black Gum, Poplar, Tupelo, Circassian Figured Red Gum

Distributing Yard and Sales Office
McLean & Chelsea Ave., Memphis, Tenn. U.S.A.
Cable Address: "Sonderco"

We have Four Band Mills:
Sondheimer, La., Tallulah, La., Ferriday, La., Baton Rouge, La.

Walnut Lumber with Mahogany

Straight or Mixed Cars

WALNUT VENEERS

Plain---Striped---Figured---Circassian Effect

Let Us Know Your Requirements

The Kosse, Shoe & Schleyer Company

Eastern Branch
Baltimore, Md.

325 Powers Theater Bldg.,
Grand Rapids, Mich.

Main Office and Band Mill
Cincinnati, O.

Quality First-Service Always

The superiority of our lumber can only be determined by the use of our stocks.

We have the following thoroughly dry items on which we can make immediate shipment:—

ASH
1 car 4/4" No. 1 Common
1 " 6/4" No. 1 Com. and Btr.
2 " 10/4" No. 1 Com. and Btr.
2 " 12/4" No. 1 Com. and Btr.

PLAIN RED OAK
1 car 4/4" 1s and 2s

QUARTERED RED OAK
2 cars 4/4" No. 1 Common
1 " 5/4" No. 1 Com. and Btr.
1 " 6/4" No. 1 Com. and Btr.
2 " 4/4, 5/4, 6/4 & 8/4 L. R.

PLAIN WHITE OAK
1 car 8/4" No. 1 Com. and Btr.

QUARTERED WHITE OAK
5 cars 4/4" No. 1 Common
1 " 4/4" No. 1 Com. 10" & up
3 " 4/4" 1s and 2s
1 " 5/8" No. 1 Com. and Btr.
2 " 4/4" No. 1 Com. Strips

POPLAR
1 car 4/4" 1s and 2s SND.
2 " 4/4" No. 1 Common
2 " 4/4" No. 2-A Common
1 " 5/4, 6/4 & 8/4" No. 2-A C.

ELM
1 car 6/4" No. 2 Com. and Btr.
2 " 8/4" No. 2 Com. and Btr.
1 " 12/4" No. 2 Com. and Btr.

MAPLE
1 car 6/4" No. 2 Com. and Btr.
1 " 8/4" No. 2 Com. and Btr.
1 " 12/4" No. 2 Com. and Btr.

BEECH
2 cars 8/4" No. 2 C. & B. Green

HICKORY
1 car 8/4" No. 2 C. & B. Green

WALNUT
1 car 6/4" No. 2 Common

GUM
2 cars 8/4" No. 1 Com. and Btr. Quartered Red Gum, SND.
1 " 8/4" No. 1 Com. and Btr. Quartered Red Gum.
1 " 4/4" No. 1 Common Plain Red Gum.

J. V. Stimson & Co., Owensboro Ky.

Mercerau-Hawkins Tie Company

Huntington - W. Va.

Manufacturers and Wholesale Dealers

West Virginia and Southern

HARDWOODS

We specialize in

Oak Tie Siding
White and Red Oak
Yellow Poplar
Basswood
Chestnut and
Gum Lumber.

Canadian Sales in Charge of

C. W. PETERS
Vice President and Manager of Lumber Dept.

Bone Dry

Right now dry lumber is scarce. Here's a list of dry stock ready for prompt shipment. Remember there's 30 years' experience back of every board.

1 car 5/8 FAS Plain Red Oak.
1 car 5/8 No. 1 Com. Plain Red Oak.
10 cars 4/4 No. 2 Com. and Btr. Plain Red Oak.
1 car 5/4 FAS Plain Red Oak.
1 car 5/4 No. 1 Com. Plain Red Oak.
2 cars 6/4 FAS Plain Red Oak.
2 cars 6/4 No. 1 Com. Plain Red Oak.
1 car 8/4 FAS Plain Red Oak.
1 car 8/4 No. 1 Com. Plain Red Oak.
3 cars 10/4 FAS Plain Red Oak.
1 car 10/4 No. 1 Com. Plain Red Oak.

Write for our Complete List with Prices

North Vernon Lumber Co.
NORTH VERNON, IND.
LOUISVILLE, KY. DYERSBURG, TENN.
Every Board Branded "NVLCO." Quality Guaranteed

The Hyde Lumber Co.

Band Mills: LAKE PROVIDENCE LA.
Southern Office: MEMPHIS, TENN.
Bank of Commerce Bldg.
Northern Office: SOUTH BEND, IND.

MANUFACTURERS

Plain Red Gum
Quartered Red Gum
Plain Sap Gum
Quartered Sap Gum
Cottonwood, Cypress
Tupelo, Ash, Elm, Oak

CHARLES O. MAUS
Canadian Representative

American Walnut

Our large supply of well selected logs makes it possible to produce and maintain an abundant stock of high grade walnut lumber.

A part of our log supply being cared for in a pond of water.
The picture shows surface of pond.

All Grades and Thicknesses.
American Walnut Exclusively.

Pickrel Walnut Company

St. Louis, Missouri

GUM

Churchill-Milton Lumber Company

GUM

General and Sales Office: LOUISVILLE, KY. Mill: GREENWOOD, MISS.

Let us have your inquiries for—

Ash
Plain Oak
Quartered White Oak
Quartered Red Oak
Elm
Tupelo
Cottonwood

Plain Red
Quartered Red
Sap
Qtd. Red, Sap
No Defect

GUM

GUM

Our Specialty is DELTA GUM

GUM

F. T .DOOLEY, President. T. E. JONES, Secy.-Treas.

F. T. Dooley Lumber Co.

Inc.

MANUFACTURERS and WHOLESALERS of

SOUTHERN HARDWOODS

Plain and Quartered Oak
Cypress, Gum, Ash
Soft Maple and Elm

Send us your inquiries

Memphis ∴ ∴ Tennessee

Hardwoods

We can furnish you immediately Factory Stock including all grades and thicknesses of

Walnut, Chestnut
Mahogany, Teak, Oak
Ash, Cypress

ALSO

VENEERS

Oak, Maple, Walnut and other Fancy Woods

The McLennan Lumber Co.

Limited

MONTREAL

Felger Lumber and Timber Company

MANUFACTURERS AND WHOLESALERS

NORTHERN AND SOUTHERN HARDWOODS

Main Office:
GRAND RAPIDS
733 Mich. Trust Bldg.

Southern Office:
MEMPHIS, TENN.

Indiana

Quartered Red and White

OAK

1,000,000 feet of dry stock carried at all times

ALSO PLAIN OAK AND ASH

We manufacture all stock carried

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
GEO. H. FOOTE, Vice-Pres. & Treas.
JOSEPH WALTMAN, Secretary

Mills at EVANSVILLE, Indiana

SPECIALS!

For Immediate Shipment

QUARTERED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.

PLAIN SAWED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.
5 " 1¼" Common.

QUARTER SAWED OAK

10 cars 1" No. 1 Com. and Btr., White.
10 " 1" No. 1 Com. and Btr., Red.

Thomas & Proetz Lumber Company

No. 3400 Hall St. St. Louis, Mo.

GUM

Sap Red Tupelo Black

Prompt Shipments any Time

Cypress Cottonwood Oak Ash Elm Beech Sycamore Crating Fir Spruce Yellow Pine

INQUIRIES SOLICITED

Manufacturers & Wholesalers

Cornelius Lumber Co.

Home Office—Arcade Building, St. Louis, Mo.
Northern Office—Lumber Exchange, Chicago, Ill.
Northwestern Office—St. Paul, Minn.
Southern Offices—Tupelo, Miss., Memphis, Tenn.
Saw Mills—Drew, Miss., Osmeek, La., Lake City, Fla.

ATTENTION:

"Auto Body and Furn. Manfgs."

We are one of the few firms in the country handling

White Ash Exclusively

We sort it to meet all requirements. **Tough** texture and **Medium** texture. Can furnish **Special Widths** and **Lengths** one to four inches thick. Write or wire when needing WHITE ASH.

THOMPSON, KATZ LUMBER CO.

Memphis, Tenn.

Cable Address "TomKats"

A name that should be on your inquiry list for Hardwood Lumber

American Column & Lumber Co.

Brunson Building, COLUMBUS, OHIO

—Manufacturers of—

West Virginia

Soft Yellow Poplar
Plain White Oak
Plain Red Oak
Quartered White Oak
White Oak Timbers and Plank

Chestnut	Butternut
Basswood	Ash
Maple	Cherry
Hickory	Walnut
Beech	Sycamore
Buckeye	Black Gum
Birch	Hemlock

Oak and Hardwood Dimension Stock

American Hardwood Lumber Co.

St. Louis, Mo.

Large stock of—

Dry Ash, Quartered Oak Plain Oak and Gum

Shipments from — NASHVILLE, Tenn., NEW ORLEANS, La., and BENTON, Ark.

Aromatic Tennessee Red Cedar

CAR LOAD LOTS OR LESS

Earthman Lumber Co.

Murfreesboro, Tenn.

BRITISH COLUMBIA FOREST PRODUCTS

British Columbia Lumber Commissioner

No. 1 Adelaide St. East

(Street Floor)

TORONTO

Personal calls or correspondence cordially invited from Dealers and others interested in British Columbia Woods

Telephone Main 6872 *Note: We do not quote prices*

Yellow Poplar Lumber Co.

Manufacturers of Band Sawed

Poplar Plain Oak
Quartered Oak
Chestnut Basswood

Capacity, 50,000,000 per annum

SPECIALTY: Monogram Brand Oak Flooring

CANADIAN ENQUIRIES SOLICITED

COAL GROVE, OHIO, U. S. A.

We Offer For Prompt Shipment

Sap Gum

4 Cars ... 4-4 1s and 2s
1 Car ... 4-4—12" and up No. 1 Common
5 Cars ... 4-4 No. 2 Common
3 Cars ... 6-4 No. 2 Common

Quartered Gum (Sap No Defect)

1 Car ... 6-4 No. 1 Common and Better

Sap Gum Boxboards

4 Cars ... 4-4—9 to 12"

Cottonwood

6 Cars ... 4-4 No. 1 Common and Select
5 Cars ... 4-4 No. 2 Common

Elm

2 Cars ... 6-4 No. 2 Common and Better

Pecan

6 Cars ... 8-4 No. 2 Common and Better
3 Cars ... 12-4 No. 2 Common and Better

Sycamore

4 Cars ... 10-4 No. 2 Common and Better
1 Car ... 12-4 No. 2 Common and Better

Plain Red Gum

2 Cars ... 4-4 1s and 2s
2 Cars ... 4/4 No. 1 Common and Select
5 Cars ... 4-4 No. 2 Common
1 Car ... 5-4 Common and Better
2 Cars ... 6-4 No. 1 Common and Select
2 Cars ... 8-4 No. 1 Common and Select

Quartered Red Gum

3 Cars ... 4-4 No. 1 Common and Select
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Plain Red Oak

2 Cars ... 4-4 1s and 2s
2 Cars ... 4-4 No. 1 Common and Select
1 Car ... 4-4 No. 2 Common

Quartered Red Oak

3 Cars ... 4-4 No. 1 Common and Better

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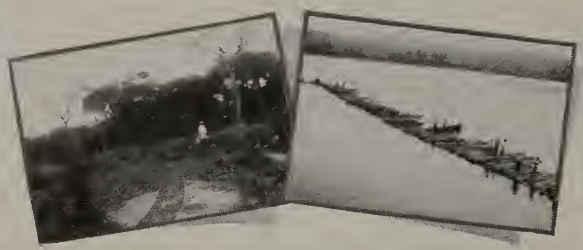

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Right: Raft of logs being towed out to steamer in Mexico.

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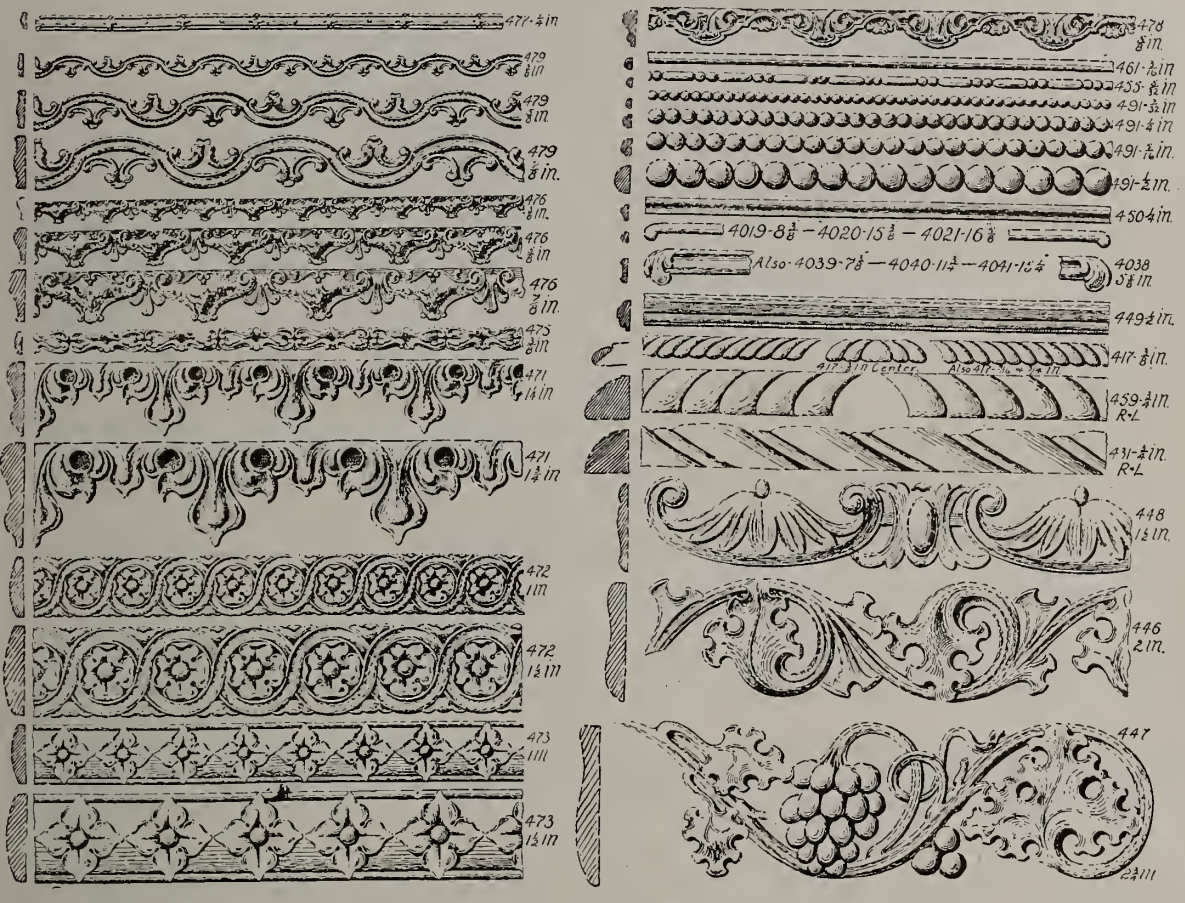

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Is Canada to be Sectionalized?

It has come to our attention that the Postal Department of the Dominion Government is contemplating an increase in postal rates on Canadian business and technical newspapers. The new rate is zonal, i.e., it varies with the distance from the point of publication, and so great is the increase suggested that it would place a prohibitory tax on anything beyond purely local distribution, thus, in effect, dividing the Dominion into sections between which there would be no means of circulating news and information. This would affect us, as Canadians, in many ways. For example, it would, of course, make it quite impossible for Canadian publishers of a national character to exist, and would result in the circulation of foreign publications in Canada, with a consequent increase in the sale of foreign goods, and a corresponding decrease in the demand for "Made in Canada" products.

Another evident example is the influence such a move would have on our immigrant population. Difficult as it now is to assimilate him, this difficulty would be many times greater in the absence of national literature. All our past hopes and ideals of a Canadian "nation" would go for nought. We would become merely an aggregation of groups.

For the Canadian publisher himself, it can be said that he has received little encouragement and no protection in the past. All his raw materials are subject to heavy duty, in spite of which he has been forced to compete with foreign publications entering Canada duty free. In spite of this handicap our publishing houses are to-day covering the country from coast to coast, supporting our industries, urging the conservation of our national resources and the building up of an export trade—in a word, seeking to co-ordinate the various elements in this rich and rapidly developing country, so that we may become an appreciable factor in world history. Is it fair, or wise, to destroy this influence for good which has been built up at so great expense of capital and human energy?

Handling Stock to Advantage

The economical handling of lumber and partially manufactured stock has been given more consideration of late years than ever before. One reads of factory transportation systems, overhead carrier systems, elevating trucks and even whole lumber yards on wheels.

In this connection many factory owners are installing conveyor belts or chains to assist in the economical movement of work through the plant. A belt placed behind a certain piece of equipment will carry the stock to the next machine, eliminating all intermediate handling and will often place the work so convenient to the operator of the second machine that it will tend to increase production from that machine.

Where a conveyor, either belt or chain elevating, is feeding a machine it is advisable to train the men handling the stock to feed the belt at a rate that corresponds to the capacity of the machine. They can be taught, with a little instruction, to do this. Thus if lumber to be dressed in transit, or for ordinary manufacturing purposes, is being conveyed to a machine that is carrying a feed of one hundred and seventy-five feet a minute, the men would be instructed to place the material on the conveyor at a corresponding rate. This would give the machine operator a chance to handle the material to the best advantage as well as maintain maximum production.

Some form of conveyor systems could be used advantageously in practically every woodworking plant. After once installed it is capable of doing an enormous amount of work with a minimum of upkeep and expense.

Standardize Building Material

Nearly every municipality on this continent is claiming a shortage of workmen's houses. This branch of the building industry is one that requires the best possible results with the least expense, and in order to attain this object there is room for improvements on the before-war- conditions.

If the houses for the working men were confined to, say, five styles, and those styles were standardized in regards to specifications, it would assist the contractor to speed up construction and also the supply man to assemble doors and frames, window frames and sash during any time that the factory was not crowded with orders. If the different contractors would use cost sheets of their labor, waste, and overhead expenses, in other words, organize a campaign of education as regards equipment, transportation, cost of work, etc., that would prevent waste and must surely cheapen construction.

Shall We Divide Canada?

IN 1867 our fathers consummated at great price a union of all the provinces and interests of Canada. For over half a century the provinces of Canada have developed together, each the component of the other.

Canada must be bound together as it is to-day, not so much by the machinery of government as by ideas held in common by all and freely exchanged, so that all sections sympathize with each other. This result has been accomplished primarily by the press, particularly the weekly and monthly periodicals and business papers.

They have no local or sectional bias.They go to all parts of the Dominion. They serve all parts alike. Their service is in bringing all provinces close together into one great nation through one common understanding.

Canada must not be split into half a dozen sections—weak with the evils of sectionalism, disastrous in the extreme—overflowing with narrow provincialism.

Emanating from we know not whither, comes an idea that will rip asunder all the good done in over half a century of patient building.

It is proposed to tax the very thing that has bound Canada into one—to place on the nation-binding press a zone postal tax which would increase the postal charge upon national periodicals as high as 800 per cent. It means loss to you personally and a loss to your country. It will weaken, cripple and in some cases destroy Canadian national periodicals. You will be deprived of papers that have kept you informed on your country's problems, your business problems—that have helped you in your work. Such magazines as do survive will cost you much more.

The publishers are not trying to evade fair taxation. They will gladly accept any fair tax upon their profits.

But is it fair that you should be taxed out of getting journals, papers and magazines that have helped you build your business and in turn built the business of the country?

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Well planned four and six room houses

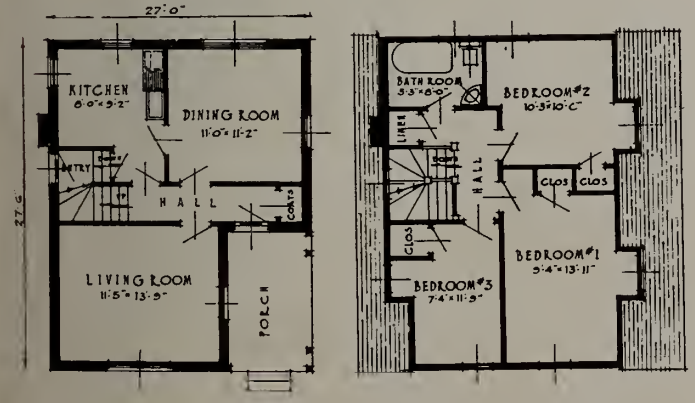
Cosy Homes at Reasonable Cost

The residences being erected by the different housing commissions contain many features that could well be embodied in the majority of private homes. The arrangement and size of rooms, the elimination of waste space and little used or extra rooms and other similar details are the result of years of investigation and study.

The accompanying sketches illustrate the type of houses designed by William Lyon Somerville, Toronto, for the Trenton Housing Commission. Many housing schemes are spoiled by erecting residences that are very similar in design. True the houses may not be exactly alike but the variation is in detail only and is not marked enough to detract from the monotony of a row of houses of the same general style. The staggering of the buildings helps some and is a very desirable idea to follow but in itself is not sufficient to overcome the sameness of construction.

In this scheme the contrast is more marked and consequently more pleasing. The cosy cottage between the more pretentious dwellings cannot help but lend variety and add to the attractiveness of the whole scheme.

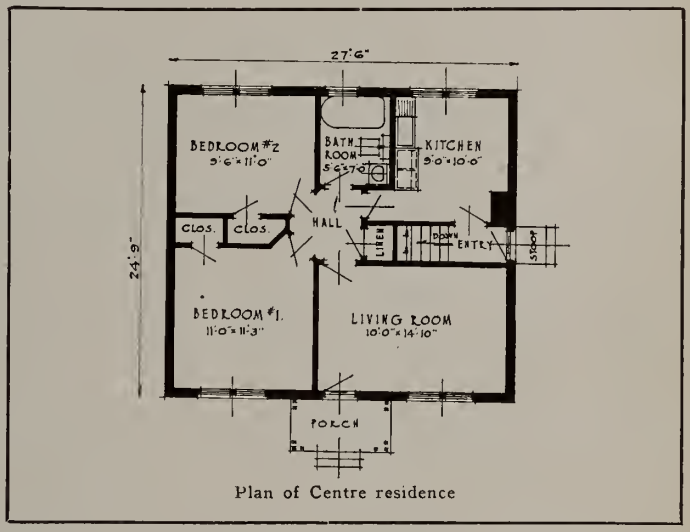
A study of the floor plans will reveal the fact that the hall space has been kept as small as permissible. This is in keeping with the idea of doing away with



Layout of larger house

all waste space. There is just sufficient room to provide access to the different parts of the house. Closet space is provided where needed and every attention given to detail so as to, as far as possible, provide a convenient layout and lessen the work necessary to the upkeep of the home.

The idea of making the rooms of odd sizes is to enable stock lengths of joists and rafters to be used without cutting. This lowers construction costs, for less labor is required to frame the house and a certain amount of waste is done away with. A room 9 ft.



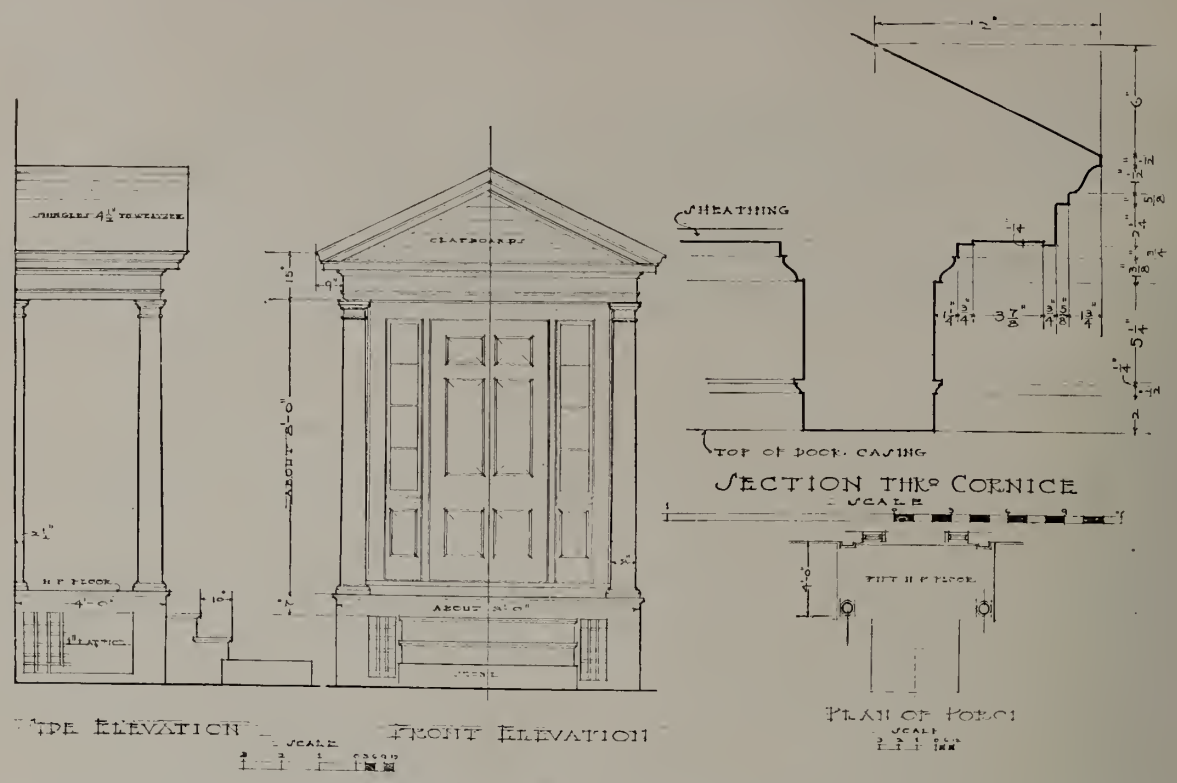
Plan of Centre residence

6 in. will require 10 foot joists while if it were made 10 ft. wide 12 foot joists would have to be cut to suit.

One suggestion would be a cheery fire place in the living room. As these houses were designed to be built for a very reasonable figure it was probably found that the amount allowed would not cover such a desirable item.

New Furniture Woods Brought to Light

As a result of the work of British investigators who have been studying the timber resources of the Malay Peninsula several woods not previously used for commercial purposes have been brought to the attention of the public. Among these, says Eastern Engineering, was the wood of the serays (Shorea curtisii), which seems suitable for use in the construction of furniture and of railway wagons and coaches; the wood of a tree locally known as belain, that is apparently of excellent quality, and four species of emranti, which are being experimented with for railway sleepers. Other woods there are suitable for making canes and matches.



Details of pleasing Colonial entrance

The Choosing of Doors and Entrance

Appearance Expresses Individuality of Owner—Should Conform with General Style of House—Attractive Designs for Doors—Vestibule Given Attention

By W. H. Shaw

Many people do not realize how large a part the entrance to a house plays in determining its character The doorway reflects the spirit of the owner, since his dominant traits characterize not only the type of house he builds, but the details and the whole atmosphere of the structure. To choose a doorway design arbitrarily, without adopting it to the house, is not the right way.

So many people make the mistake of deciding upon their details quite independently of the general architecture of the house they intend building. Of course, if the doorway seems to them more important than the house, they can choose their doorways first and then build a house to suit it. A far better plan is to choose the type of house first, and after that is done, pick out the details in the order of their importance.

Choosing Appropriate Entrance

One of the most difficult things is to decide on an attractive and appropriate entrance for a house which does not possess one. It is a problem which finds its way very frequently to the drafting board of the contractor and the millwork supply man.

The design of the entrance should be distinctly in the adopted style of the house. A beautiful design for a colonial house is the so-called Venetian type, 49 on the accompanying illustration.

It gives a cheerful aspect to a house, has a broad open-faced welcome, and admits an abundance of light to the hall. The lights can be leaded or divided with wooden sash bars into a number of different designs in lieu of those illustrated.

If more simplicity be desired, a design can be used for the transom light similar to 43, and the sidelights can be the same as 45. This design, altered as suggested, would match well with a Palladin window placed on the stairway at the opposite end of the hall. Much that has been said can be applied to design No. 44, except that it would go better with a window of simplier design.

Let me emphasize this point of keeping all things in harmony. If the style adopted can be carried out in the furnishings of the house, so much the better, but at least keep the house itself exclusively in one style.

Entablature Type of Doorway

The door shown as 43 is a century-old Deerfield, belonging to the class known as entablature doorways. These look especially well for a side-drive entrance or a front entrance where the porch is very high or where there is not any porch, the door opening directly on the street. The door knocker shown is not of much practical use in this day of modern eletcrical equipment, but it serves to bring up memories of the past and is often a very pretty ornament. To be too utilitarian or conventional often takes from the home the sentimental qualities that tend to make it inviting and homelike. These are most desirable features in a home.

The door numbered 50 is very attractive, while number 51 would make a neat cottage door. if in keep-

ing with the windows, divided likewise into diamond lights. Design 48 would make a very attractive doorway for a side porch, opening into the garden, or, better still, between a room and the conservatory.

The style indicated at 42 would make an attractive entrance to a small suburban cottage having no front porch. The columns should set out from the house from two to six feet. If not out more than three feet, it would look well to put a lattice, similar to that in the pediment, up the sides between the columns and wall, these to grow vines on.

A pretty side or rear doorway that was a favorite with our grandparents, is made by placing a vertical lattice about thirty inches wide extending outwards on each side of the door and across the top; overgrowing the whole with old-fashioned roses, or other climbers, transforming by nature's aid a mere hole in the wall into a beautiful entrance with the added fragrance of an effusion of flowers.

Dimension of Front Entrance

You cannot limit the exact dimensions of a front entrance, depending, as it does, upon so many conditions. Its proportions, therefore, can only be spoken of in a general way. It must not be narrow or of a stingy appearance for that would be the first impression one would then receive of the owner of the house. It should rather be broad and generous in its aspect, even to a fault.

Over the front entrance there should always be some kind of shelter to protect one while awaiting the opening of the door. This of itself expresses congeniality. Make that shelter or porch appear for utility rather than a means for expressing one's fastidiousness by excessive ornament, bearing in mind the charm of simple beauty.

Suggestions for Treatment

The home builder who can not or does not desire to go to too much expense for his entrance can find many good suggestions in designs 30 to 35, designs 30, 32 and 34 being particularly commended for their simple beauty and dignity. Doors 30, 31 and 42 can have either glass or wood panels, as desired. If there are no sidelights or windows in the hall it is best to admit light through the door in some one of the many ways shown.

The lights can be made of crystalline or other obscure glass if desired; but for the sake of looks it is best to use clear, plain or bevel plate for door lights, with plate (preferred) or double-strength glass for the transom and side lights.

Finish Alike on Both Sides

If the outside trim of your house is painted and the inside finished in natural woods, make the door of natural wood finish on both sides, the outside panes, sash and casing of the entrance like the trim, but the inside casings, etc., the same as the door and other inside finish. Never "mix" on the door, making the inside of one color or wood and the outside another, as it cheapens it in appearance.

After having studied the front door problem and having arrived at a conclusion of what is desired, due attention must be given to the interior doors, that they may conform in design and be in harmony with the entrance door. For example, if design 34 is used for the entrance, design 41 should be used for the interior, or if design 50 or 57 are used for the entrance door, design 36 or 38 should be used for interior doors. If one desires to copy our public buildings they can use design 40, as this is the design used in both the parliament buildings at Ottawa and Toronto.

Suitable for China Closets

A good china closet door can be made by using style number 46 and placing shelves as indicated by the dotted lines. One gets a glimpse of the dainty ware on four shelves. Below the shelves behind the door, build in drawers for table linen, utensils, etc.

For sliding doors use door hangers that are held on the track and cannot jump off. Use three strong hinges in outside doors and two hinges for interior doors. Have your hardware in harmony with the finish and design of entrance and other doors and windows.

Designs for exterior and interior doors

Veneered doors are better than solid doors if made right. A better grain of wood can be obtained. Make side and top styles to panel doors five inches, bottom rail the height of baseboard; muntins between panels not less than three and a half inches.

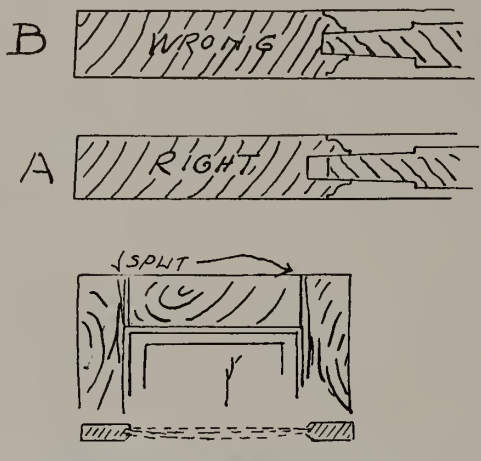
Thickness of Different Doors

In wide doors having considerable glass, top and side styles should be six inches for strength. Thickness of veneered doors one and three-quarters and two and a quarter inches. Solid doors are made inch and three-quarters and inch and three-eighths thick.

In the average house, the best width for front doors is three feet to three feet six inches; for interior doors, two feet six inches to three feet. Keep casings at top of doors on a line with top window casings. Usual height for interior doors is six feet two inches and six feet eight inches, but can vary. All doors on one floor, however, should be made the same height. Bedroom and closet doors are sometimes six feet six inches high. Height of entrance doors varies with

the design, but it is best when possible to make them the same height as the interior doors.

The front door of a very fine house is shown on the working drawing "A," allowing a space of half an inch in the style for the "come and go" of the mill oak panel. This particular door had been constructed originally as shown at "B". The panel expanded with the result indicated. This condition lasted for some time, when the oak styles, no longer able to stand the



Details of door, showing faulty construction

strain, let go with a crack like a pistol, the side styles separating from the top and bottom one, the door was a wreck and had to be made over.

Don't Overlook Vestibule

The vestibule is necessarily a part of the entrance. As its size, shape and location depend entirely upon the arrangement of the plan, a few remarks will suffice. The usual form is a rectangular box, a little wider than the entrance, but it is best to make it more of an ornament or of some use other than a mere place to pass through—and afford double doors to the weather. A small entrance vestibule is an eternal nuisance. A vestibule should be at least large enough to accommodate both the guest and the hostess at the same time.

A splendid arrangement is shown at "C," the interior entrance being a repeat of the exterior, while on both sides of the vestibule are coat closets, one each for ladies and gentlemen. The doors of these closets should have a mirror panel of two-thirds or all of the length. Do not project a square box vestibule out on the porch. It suggests a cramped condition of the plan within, being, as it is, fairly crowded out. Plan D. is a pretty and unique idea and would in no way trangress the above rule, being nearly a bay.

At E is shown a good substitute for a vestibule. Make the partition here twelve inches thick to prevent a hitting of the knobs. Make the outside storm door a counterpart of the permanent one, and replace it in summer with a screen door.

Speeding Up Production

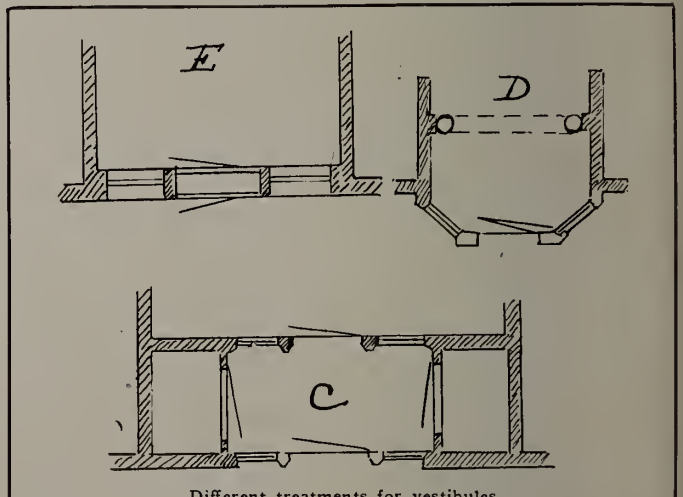
The March issue of the "Canadian Woodworker" contained an interesting and practical article on the application of the bonus system for increasing production and satisfying, to a greater or lesser degree, the demands and aspirations of the employees. The following item, taken from an American publication, shows that the above idea has been successfully adopted in certain factories and that it is believed that there are great possibilities in the bonus system as a panacea for most of the labor dfficulties with which industry is confronted:

"A new plan aimed to reduce industrial unrest and at the same time to secure greater output and efficiensy, has recently been adopted by a firm of machinery manufacturers in England, and the Higher Production Council, which has made public the details of the Priestman plan, as it is called, believes that it will solve many, if not all, of the labor difficulties now facing industry.

"The plan is based on the principle that a number of men can produce by ordinary effort a certain amount of work, which is considered the standard, but by increased individual effort this standard can be exceeded. Under the working of this plan every employee receives a percentage on his wages for all output in excess of the accepted standard. Therefore if the standard output is increased by 50 per cent. by an employee whose wage is, say, $12 a week, he would receive $18, the $6 over his normal wages representing the amount earned by him for exceeding the standard output.

"Under this arrangement, it is claimed, all friction caused by the usual piece-work system is avoided, and a maximum output is obtained because all concerned benefit by it."

This plan rewards any or many workmen for additional output. In a factory unionized it seems to us it would not operate satisfactorily, though it might serve as a temporary expedient. The union's policy is to subordinate the individual, and place all labor on a common wage-earning level.

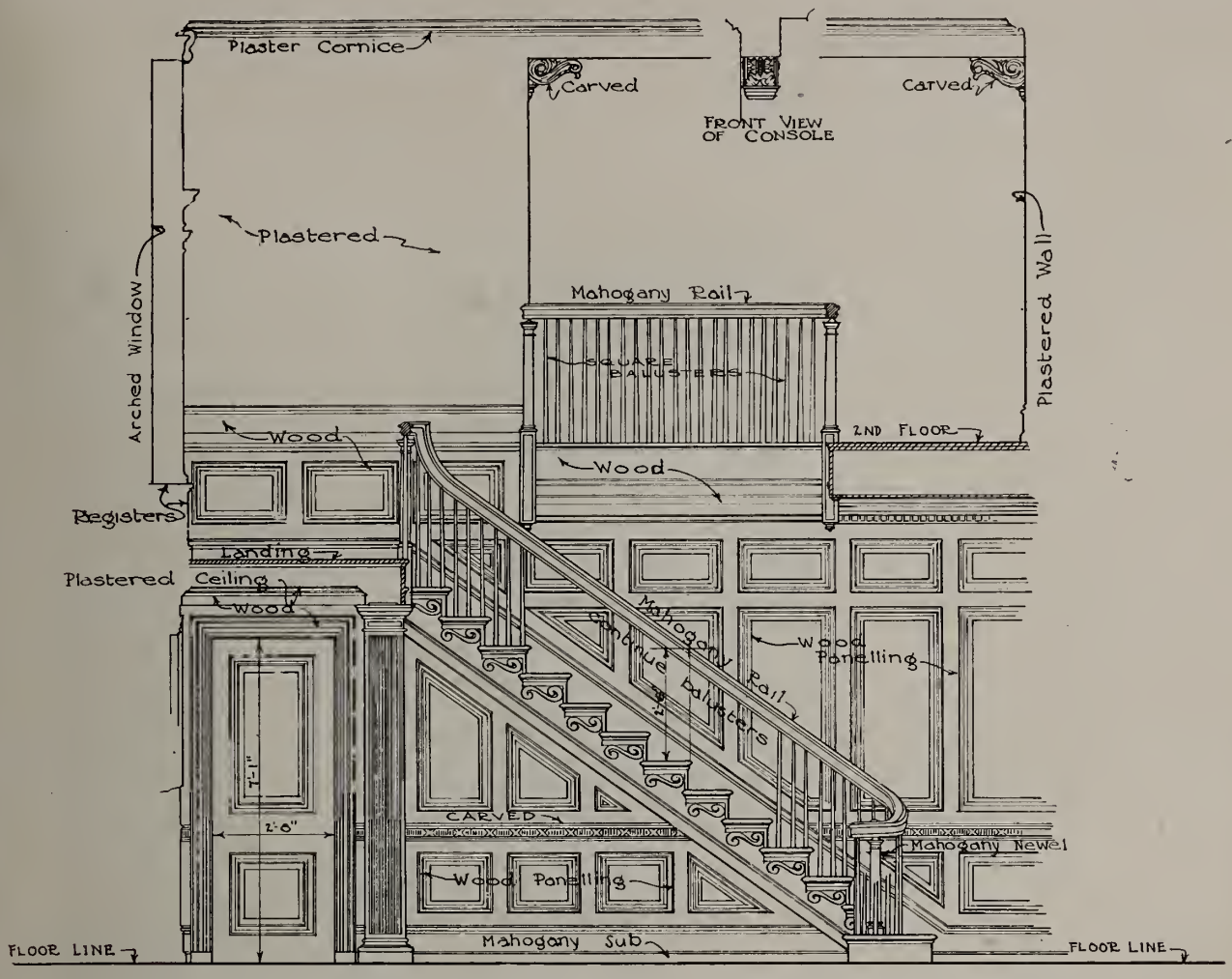


Different treatments for vestibules

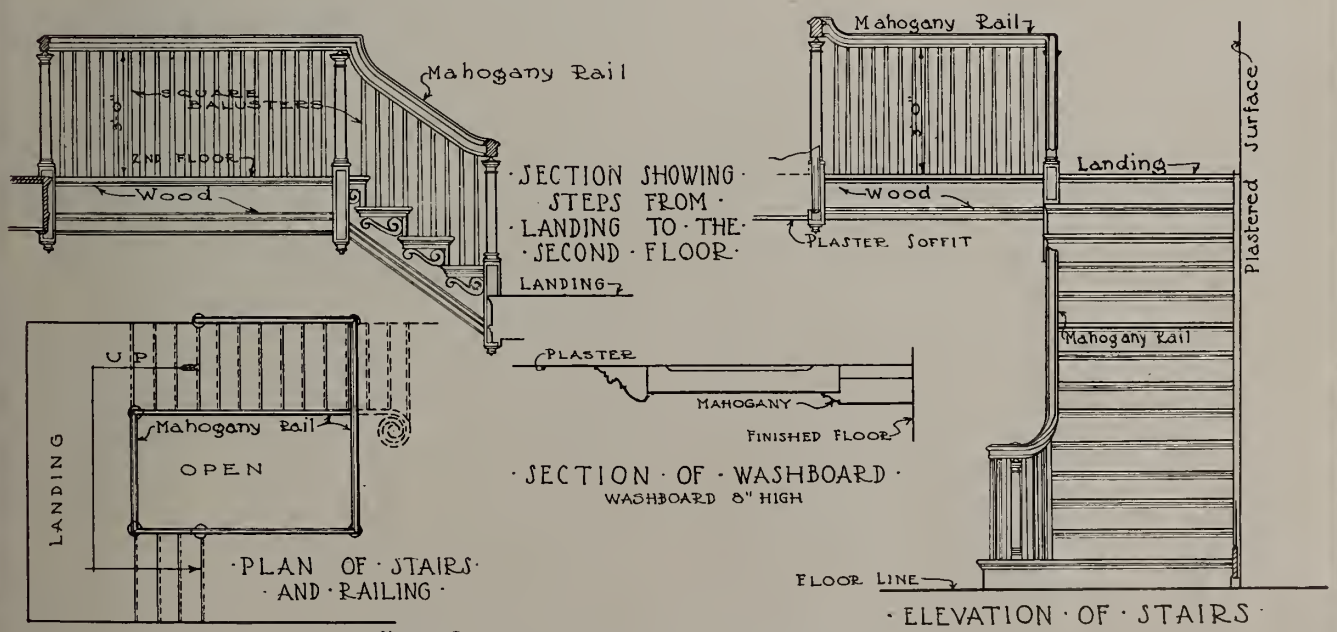
With either closed or open shop, would it not be better to fix a standard for the whole plant, and give the entire working force extra pay for additional production ?

Objection might be advanced that some of the men "soldier" on their jobs, and would get more than they deserve; but it is human nature in such circumstances for the industrious to get behind the laggards, and speed them up.

Anyway it is immaterial to the manufacturers whom he has to pay for greater production just so he obtains it.



· SECTION · THRU · LANDING · AND · SECOND · FLOOR · SHOWING · · STAIRWAY · AND · WALL · PANELLING.



NOTE:- RUN OF STEPS TEN AND ONE-HALF INCHES.

· DETAILS · OF · STAIRWAY ·

RESIDENCE OF MR. CHAS. LE-B. HOMER — CHESTNUT HILL, PHILADELPHIA, PA.

WALTER T. KARCHER & LIVINGSTON SMITH — ARCHITECTS

Courtesy "Building Age"

Building Bigger Market for Furniture

Furniture Manufacturers Have Unique Opportunity—Co-operation of Retailers and Patriotic Bodies—Competition to Arouse Interest in Rural Centres —Organize on Large Scale for Extended Campaign

By G. W. Gibbard*

Any nation whose citizens are home lovers is bound to be prosperous, as the population would be contented and happy. We as members of the Furniture Manufacturers' Association have a unique opportunity to help solve the problem in both rural and urban centres, by educating the people of Canada to the importance of having comfortable and well furnished homes. An attractive house cannot help but be an influence and help solve the rural problem which is so much talked of to-day.

G. W. Gibbard, Gibbard Furniture Co., Ltd., Napanee, Ont.

At the same time we have an opportunity to do ourselves a good turn. When we realize that the annual per capita expenditure of Canadians for furniture is less than $1.50, or approximately $7.50 per family, we can realize that a great field for cultivation is available. This applies more particularly to the smaller towns and rural districts. Young people are more certain to be kept on the farms if home conditions are attractive. In this respect there is room for great improvement in Canada. To accomplish this we must follow the fundamental law of selling. Get all the people thinking about the same thing at the same time.

Start while Business is Good

There are several ways to create a much larger market for furniture in the rural districts of Canada and in the smaller towns. If we manufacturers will study this problem and map out a program of a comprehensive character. While it is true that this means the spending of a considerable sum of money, when the amount necessary for an advertising campaign is based on the output of our factories, the assessment per thousand dollars would be a mere trifle, and I think would assure the industry of a steady demand which would keep our factories busy, even should there be the period of depression such as many people predict will come next year.

I would suggest that our Association proceed at once to organize for a campaign to be started in September. If we do this, benefits should begin to show themselves by the spring of 1921, and results would become greater and greater as the campaign continued. It would be unwise to delay our plans until there is a real slackening of business. The creating of a new market cannot be accomplished quickly. We must work at least a year ahead and we should frame a policy extending over at least three years. If we do this we will undoubtedly achieve results that will repay the investment over and over again.

In order to appeal to the imagination of the people of the rural districts of Canada, I would suggest offering a comprehensive list of prizes for essays or articles on subjects that would stimulate interest in house furnishing. I suggest subjects like the following: Influence of a Well-furnished House on Keeping the Family at Home; How a Farm Ought to be Furnished; The Relation of Well-furnished Homes to the Community.

By advertising in farm magazines and local papers reaching farmers, the competition can be brought to the attention of the public in all the rural districts of Canada. But I would not advise confining advertising to the boosting of the competition alone. From the very first we would make the advertisements of such a character that they would stimulate interest in home furnishing. By means of the competition, which should probably spread over a period of three or four months, a lot of interesting matter would be gathered together, and new material for advertising will no doubt be received. The advertising campaign should be made continuous throughout the fall and winter. It might dwindle to smaller proportions after the opening of spring and either drop or run on a very small scale throughout the summer. Then it should be taken up again in the fall on fresh lines for the second year.

Organize on Large Scale

The propaganda should not be confined to newspaper advertising. As many forces as possible should be brought into sympathy with the movement from a patriotic standpoint. The co-operation of the Woman's Institutes should be enlisted if possible, and articles on home furnishing should be prepared to be read all over the country at meetings of Women's Institutes. The patriotic appeal should be used. The importance of the campaign might also be brought to the notice of the rural school teachers whose sympathy in the movement for better furnished homes would be very helpful. If the movement is properly handled a great deal of very interesting editorial matter can be secured, free of charge, in many rural newspapers as well as in the farm magazines and similar publications.

One of the first moves should be to stir up furniture dealers in the smaller centres of Canada to the importance of what we are attempting to accomplish. Every local furniture dealer should be stimulated to boost the campaign in his local advertising. A suitable propaganda for stirring up the interest of dealers should be organized. If handled aggressively the whole campaign, comprising many different forces working in unison, should attract very wide attention.

*Address before Furniture Manufacturers' Association.

There is no question but that advertising can be used by our Association in such a way as to increase the demand for furniture in the Canadian rural districts. We have many examples of great industries that have been built up by the power of publicity. The automobile industry, for instance, has been developed by the heavy advertising carried on by so many strong companies. Advertising has made the phonograph industry. These are examples from many that might be mentioned. Everyone wants to do the popular thing and, if you can focus attention on the better furnishing of homes, we are bound to reap rich results. The secret behind many of the successful patriotic campaigns that have been carried on within the past few years has been the fact that means were taken to get all the people thinking about the same thing at the same time.

A recent example of success by following this fundamental law is the Forward Movement of the churches. They used newspaper and magazine advertisign, as well as other forms of publicity. I had the privilege of watching the results from a point of vantage in a large rural community. Many farmers, who were considered hard-shells and never gave away more than five dollars before in their lives, contributed one hundred dollars and without any persuasion, to the great surprise of the whole community. Moreover, our memories of 1914-15 should still be fresh enough in our minds to remind us how quickly good times can change to hard times. The experience of the piano manufacturers at that time is an example of what can be done in a rural community. They were slack for a short time, then adopted advertising to influence rural communities, and were very busy long before the furniture trade had recovered to normal.

Associations Who Believe in Publicity

Many examples can be quoted to show that the soundest method of creating a demand is by advertising. As one example out of many, we might take chewing gum, the annual sales of which now amount to over thirty millions of dollars. Gramophones are another example of what trade advertising will do.

I wrote to several associations as to the success they had had in their advertising, and the following associations have assured me that their advertising campaign has been successful and very profitable to them. American Face Brick Association, Southern Cypress Mfs. Association, Oak Floor Mfrs. Association, National Canners Association, Rite Grade Shingles, West Coast Lumbermen's Association, The Irish Linen Society, Save the Surface and You Save All, Paint, Varnish, Save the Surface Committee, Birch Mfrs. Association.

Western Plant Increased Production 100%

Bonus System Effective Aid—Finished Parts Storeroom Lessened Confusion —Accurate Recording System to Keep Track of Parts— Factory Organization Strengthened

By James J. Martindale*

The manufacture of phonograph cabinets was seriously delayed, due to the lack of veneered panels, in a factory where Luxembergers were mainly employed. These foreigners had mingled very little with English speaking people and accordingly many of them could not understand even the usual English expressions. This condition greatly hindered efforts to betterment.

As the investigation of methods and product got under way, the clannish sullenness of the employees became more evident. Their minds could not grasp the fact that their methods might be improved to their individual betterment.

Officials Showed Marked Indifference

The superintendent of this particular department, a very well educated and sociable American, was phlegmatic, indifferent and a brother-in-law of the owner. He was lacking in a sense of responsibility to the firm. However, observations were continuously carried forward under these obstacles and finally a chart was prepared which showed standard times covering all the various kinds of panels being made.

A report showing daily gang standing was posted and excited but little interest. Such a report generally arouses attention. It was evident more than the usual time must be given to make over the human element.

Consistently, tactful explanations and suggestions were made to the superintendent and foreman and at the end of the fifth week the men got into the bonus pay. From then on, the work assumed an easier aspect as the effect of the additional pay cheque became slowly apparent. The men realized pay by pay that the company was rewarding them for increased output.

Individual Responsibility Fostered

That most valuable spirit—individual responsibility—took root, was well nourished and the gang itself commenced to weed out the drones and replace them by ones more active and interested in the daily output. Most interesting of all was the complete reversal of the superintendent. This man now publicly proclaimed his strong adherence to the principles displayed, and his desire to push them.

A shoulder to shoulder spirit had displaced the sullen, apathetic attitude—the production increased over 100 per cent.—the value of output per year jumped from $135,000 to $335,000 in this department alone. The accompanying chart shows the increase.

The above "story" portrays in a somewhat general manner the introduction of production methods in one department of a Middle West plant. This plant was located in a small town of about 3000 inhabitants and was the largest industrial in the place. Probably a member of every family had at some time worked in the phonograph factory. The habits and methods of the employees were traditional. It was commonly called the chair factory as chairs had been the plant's output for 35 years until 1918 when the phonograph business was developed.

Details of Operations Worked Out

The foremen held their jobs due to the knowledge stored in their heads. If this knowledge had been

*Vice-president, James E. Morrison Co., Detroit, Mich., Industrial Engineers.

a matter of record, some of them would have been out long ago but the management was naturally reluctant to dispense with the services of any man who, due to his long experience and consequent command of essential information, could by his absence, seriously cripple a department.

Specifications and operation sheets covering all parts made by the company were developed. With this information in hand the life hold on his job by any foreman was seriously threatened and moreover, he knew it. This situation somewhat spurred on the majority of the executives, but in the case of one foreman who had charge of a primary department his attitude became more sullen and indifferent. He was let out. The effect on the rest of the executives was most beneficial. The organization commenced to realize its responsibilities.

Finished Parts to Storeroom

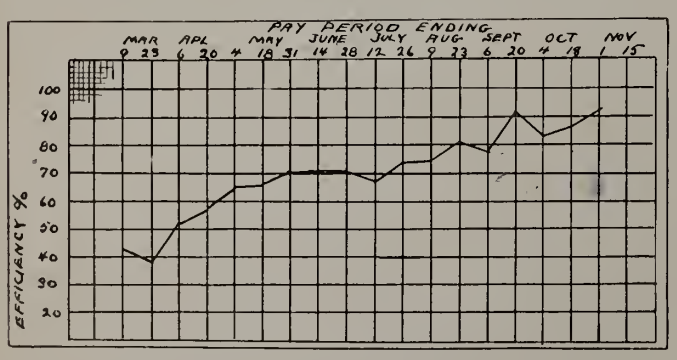
One of the serious handicaps to production in the main plant was the lack of a finished parts store room. The assembly floor was seriously impeded in its work due to the continual lack of parts and the consequent necessary switch to phonograph cases of a different construction. Work would be performed for a day or two on the second type of case until some part on it would be missing and the assembly gangs then changed back to case No. 1 or case No. 3. This condition was most discouraging to employees and the assembly foreman.

All truck loads of finished parts lying around the assembly floor, were moved into the stock room. This action gave the assembly men considerably more elbow room. They could arrange their individual activities to better advantage.

The primary departments were loaded with orders for parts and as fast as finished these parts were moved to stock and thence upon requisition, transferred to the assembly floor. Gradually a stock of parts for certain cabinets was built up. Finally a completed set of parts for case X was on hand and the assembly floor could be assured of a straight "drive up" for a week.

At that time the battle was won—production was under control.

Many other factors contributed to this control such as a "Part Order Progress Record," "Follow-up Report," "Job Ticket," "Stock Record," etc. The "Part Order Progress Record" and "Stock Record" are shown in accompanying illustration.

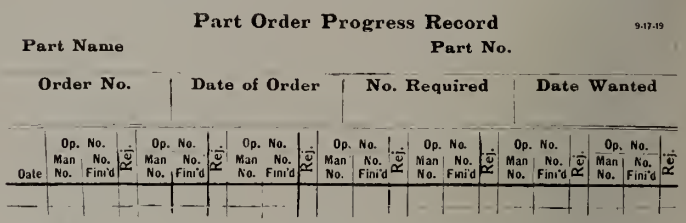


Indicating how efficiency increased

The Organization Biggest Asset

Carnegie didn't worry about a possible loss of his buildings and equipment—they could be easily purchased and set to producing if his organization was intact. He however, was most interested in his subordinates. His success was mainly due to the judgment and care he exercised in picking his executives and then rewarding their efforts.

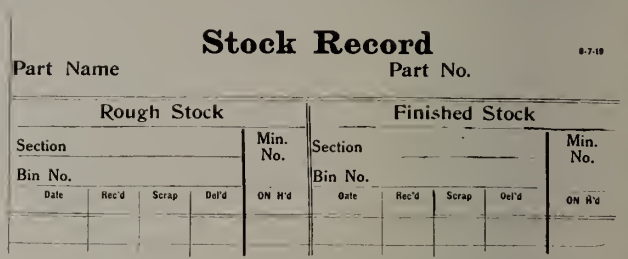
An organization is the determining factor in the success or failure of any enterprize, therefore the big problem in all industrial betterment work is connected with the executive force of the client. This problem was rendered more difficult than usual in this case as there were but few opportunities for the executives to obtain the cosmopolitan touch of a large


Part Order Progress Record 9-17-19

Part Name Part No.

Order No. | Date of Order | No. Required | Date Wanted

Date | Op. No. Man No. | Op. No. No. Fini'd | Rej. | Op. No. Man No. | Op. No. No. Fini'd | Rej. | Op. No. Man No. | Op. No. No. Fini'd | Rej. | Op. No. Man No. | Op. No. No. Fini'd | Rej. | Op. No. Man No. | Op. No. No. Fini'd | Rej. | Op. No. Man No. | Op. No. No. Fini'd | Rej.


Stock Record 8-7-19

Part Name Part No.

Rough Stock | Finished Stock

Section | Min. No. | Section | Min. No.

Bin No. | Bin No.

Date | Rec'd | Scrap | Del'd | ON H'd | Date | Rec'd | Scrap | Del'd | ON H'd

Reduced reproduction of forms used

city and consequently their habits had become set and hard to change.

It was necessary to devote considerable time and attention to conferences and impromptu talks in which the organization was brought to a better understanding of their duties and accountabilities. A production department was slowly and carefully built up. This department was coached in the betterment methods under way and future plans discussed and provisionally outlined. The work was terminated when the client's force was fully capable of carrying forward the principles implanted.

Combined Refrigerator and Kitchen Cabinet

A combination refrigerator and kitchen cabinet attracted considerable attention at the furniture exhibition in Grand Rapids recently. This cabinet, known as the Frigi-cabinet, consists of two parts, the lower section or base being fitted up as a side-icing refrigerator while the upper half is equipped with the usual kitchen cabinet fittings. It was shown in the usual woods and finishes.

The chambers in the refrigerator section contain ample storage room for meats, butter, milk and other perishable foods and the refrigerating qualities are such that these commodities will remain fresh for a considerable length of time.

The upper case is fitted with a flour bin, with sifter attached, a compartment for cake or bread, a large storage cupboard, and a bottom cupboard, with a roll front, containing the necessary glassware, sugar jar, measuring cup, etc.

The large number of ladies in attendance were very much taken with the idea of having their butter, eggs and milk in the same cabinet with flour and other baking materials as a saving in labor and steps would naturally result. So that in addition to the space saved by combining a refrigerator and kitchen cabinet the labor saving features of such an article should make a strong appeal to the housewife.

Accident Prevention as Dividend Producer

Furniture Manufacturers Assessed at Lower Rate Than Planing Mills—Woodworking Industry as a Whole Suffers by Comparison

By S. Price*

There has now been five years' experience of the present Ontario Workmen's Compensation Act. Since it came into operation laws similar in principle have been adopted in nearly all the other provinces of Canada. The outstanding features of the Act are the simplicity of its provisions and procedure, the extension of the benefits to all injured by accident arising out of and in the course of employment, the elimination of litigation and expense, and the expeditious payment of benefits directly into the hand of the injured workman or his dependents.

Comparing Compensation Laws

It is a collective liability law, as distinguished from the direct individual liability law of Great Britain, and from what may be called the private company insurance individual liability law prevailing in most of the United States, though the conditions upon which payment of compensation depends are now, in all the places mentioned, much the same. In England the law is said to be only about 50 per cent. effective, because of the litigation and law costs involved and the financial insufficiency of many of the employers, while in the United States, as revealed in a recent investigation and report made in the State of New York, the settlements which the insurance companies are permitted to make with the beneficiaries have been found to be far short of what the latter were entitled to, though the premiums collected are greatly in excess of those in Ontario. Abuses and frauds connected with agencies and "ambulance-chasers" have been exposed, and recommendations have been made for their prevention. In England, also, at the present time exhaustive investigation looking to alteration and improvement of the law is now being made. The Manitoba Act, which was previously an individual liability law, is at the present session of the Legislature being changed into a collective liability system similar to that of Ontario.

Elimination of Expenses and Profits

Under the old employers' liability insurance, according to statistics collected in the United States, less than 25 per cent. of what the employers paid actually reached the injured workmen or their dependants. In Ontario, apart from the expenditure for accident prevention associations, over 98 per cent. of the assessments collected from the employers goes for the benefit of the workmen. During 1919 only 1.71 per cent. of the assessments went toward expenses. It is believed that under no other law does so nearly the whole of what employers pay for accidents go directly for the benefit of the injured workmen and their dependants.

With the exception of a boiler explosion in a woodworking factory, which caused the death of five workmen and injury to seven others, the year 1919 has not been marked by anything out of the ordinary so far as the furniture manufacturing and woodworking industries are concerned. The experience in the furniture class, including also piano manufacturing, etc., has, as heretofore, continued to be much better than that in the planing mill and woodworking industry proper, the former being known under the Act as Class 3 and the latter as Class 4. The assessments and the compensation and medical aid for the year, including estimates for adjustment of assessments and for accidents not yet finally disposed of, are as follows:

	Assessments	Compensation	Medical Aid
Furniture and Piano Mfg. Etc.	$ 94,574.00	$ 79,993.51	$11,008.12
Planing Mills and Mfg. of Wooden Articles	186,385.83	189,026.89	24,242.32

Provision for Major Accidents

The boiler explosion above mentioned is costing, in compensation and medical aid, about $18,000. Under the provisions of Section 88 (2) of the Act a limited special fund, called a Disaster Reserve, comprising one per cent. of the assessments, has been formed to meet contingencies of this kind which might seriously and unfairly burden the employers in any class. Out of this fund $12,000 has been assigned to Class 4, to assist in meeting the burden of the explosion mentioned, thus reducing the deficit in the class and avoiding the large increase of assessments that would otherwise be required to be made.

The importance of making every possible effort to prevent accidents must again be emphasized. Accidents in the planing mill and woodworking industries are all too frequent, and it is felt that many of them could and should be avoided. The management and officers of the employers' accident prevention associations are, it is believed, doing their utmost to assist employers in this direction, but active and systematic co-operation and organization are essential if the best results are to be obtained. As a rule it is the industries that are well managed that have the fewest accidents, and it is now pretty generally recognized that accident prevention pays, as a matter of good business, even apart from its effect upon the rates of assessment, and apart from the higher humanitarian aspect.

Merit Rating Again Adopted

The system of merit rating previously adopted was again applied last year. This system permits an extreme variation of 45 per cent. of assessment between the employer, who has a good accident experience, and the employer whose accident experience is bad.

In the furniture and piano manufacturisg class the rates for 1919 are the same as those provisionally fixed a year ago, while in the planing mill and woodworking class an increase has been made. Regard has been had to some expected increase in amount of benefits, especially in the case of widows and children of former accidents. The rates in the furniture and woodworking industries in Ontario do not show the same exceedingly favorable comparison with other places that is shown by most of the other industries of the Province. This argues the necessity of greater attention on the part of the employer to accident prevention.

*Chairman, Ontario Workmen's Compensation Board.

Do You Guess at Your Cost Figures?

Many Woodworkers Give Estimates on Millwork Based on Insufficient Knowledge—As Easy to Guess Below Cost of Production as Above—Uniform System of Estimating Based on Past Costs Desirable

By S. J. Sutherland

(This is the first of a series of articles on shop estimating for woodworking factories. The author, who has had a wide experience in this field, will outline the methods employed in some of the more up-to-date plants. Labor and material costs are high and unstable, so a practical system of estimating is a real necessity if intelligent bids are to be made on all work that offers.—The Editor.)

Every manufacturer is vitally interested in the problem of securing for his manufactured products a price that will represent at least replacement value, together with a profit. All who are familiar with the mill-work business will agree that the poor showing made by many factories engaged in this work is due to ignorance of costs. A part of the product is sold at a profit, part close to the cost line and the balance at a loss. By eliminating the latter class, fair profits should result. There is little likelihood of any improvement until a better and more general knowledge of costs is sought and such knowledge applied when making estimates, thus avoiding the acceptance of unprofitable business.

None of us can afford to be deceived by our own affairs.

A modern shop must be more or less of a school, with the manager as one of the pubils.

Equipment is not the best because you own it.

Obsolete machinery is the foe of profits, the brother of high costs and the friend of bad methods.

It is better by self-criticism to find your own faults than to have your customers do it for you.

A factory manager must keep the balance between cost to manufacture, quality of product and service to the customer.

With lumber and labor rapidly advancing, a factory owner is severely handicapped, unless he has access to accurate material, labor and expense bills so that he knows his overhead costs and can figure his manufacturing costs. Whether the figures are carried in a vest pocket, handbook or a detailed weekly cost sheet taken from the factory records, it is absolutely essential that the estimating department be conducted on scientific, safe and intelligent principles.

Need of Cost Knowledge Great

The owners of planing mills, sash and door factories and general woodworking plants are experiencing trying times. They have all been impressed with the rapid increase in costs. It is doubtful, however, if they have realized the extent to which these growing expenses have cut down profits or increased losses. Notwithstanding the advanced selling prices, the results achieved for the first three months of this year, as reflected in actual cost records, have been more disappointing than ever before. The increased cost of materials, labor and expenses, with reduced efficiency, is simply astounding, and it is doubtful if the end is in sight.

It has been predicted that many contracts made even at present high prices, will prove to be unprofitable when they have been completed. Any losses on work already accepted must be overcome on new business taken if disaster is to be avoided.

In the case of orders calling for a large amount of bench work or labor of any kind, it is extremely difficult to obtain a price that will yield a profit. When higher costs are proven it requires only ordinary intelligence to know that higher prices should be immediately put into effect to avoid serious loss. We are aware of the advanced costs which have already taken place, and there is every prospect of still further advances.

Assuming that one is operating a planing mill and sash and door factory and competing for business, as is the custom, there is the choice of two methods,—First, the old way; plans are delivered with request for an estimate covering the items of mill-work required to complete the job. The estimator or other competent individual proceeds to price the numerous items, many of which or perhaps all of which may involve problems that are entirely new. Prices on many of the items are often established from memory or possibly from figures made on similar jobs, but without any available means of knowing if the figures used on the former items showed a profit or loss.

In many cases not even a comprehensive schedule to fortify the memory is provided, and few, if any, records of costs on previous work are kept. Only in rare instances do those in charge of this important duty of making prices, have any knowledge of the overhead expenses or cost of doing business, or any means of securing such information; notwithstanding they are attempting to make prices to secure the business and yield a profit. Numerous examples might be taken which show that it is no uncommon thing for a variation of from 10 per cent. to 40 per cent. to occur on the same items when estimates are made by different men in the same office, and sometimes even by the same estimator at different times.

Lack of Proper Basis Handicap

This is not surprising. It is a mental impossibility for anyone to commit to memory all the elements of cost entering into the many items manufactured in an odd work factory. The wonder is that any method so crude and hazardous should have been tolerated by men who show progressiveness in other respects. The effect of this policy has been to place the entire responsibility of determining the price at which the product should be sold on the estimator, (the prices realized determine the ultimate earnings of the business) and he without a guide, without a list or any means of knowing the various elements of cost except, possibly, a general idea of cost of material and direct labor, without any record of the results on previous jobs of the

same character, and nothing to serve as a guide for items that are new.

He proceeds to guess, after which the estimate is turned over to someone who often knows still less about the work, and this latter gentleman presumes that the estimate may be too high and proceeds to reduce certain items. At the end of the year the concern finds that the results are very unsatisfactory. They know the prices made were too low but they have absolutely no means of knowing what those prices were because no uniform guide, basis or list was used. Should the company decide they must have a certain percentage more, all they could do would be to instruct the estimator to have his prices average a certain proportion higher and then wait for another inventory.

Average Cost Figures the Solution

No one can determine in advance the exact cost of the most simple item of mill-work, as the workmen or material or conditions under which it is produced will vary and such variations will increase in proportion to the size and nature of the work, so that it becomes a question of averages based on previous experience. The safest guide is that which is based on the largest number of similar operations. Every man must choose as between establishing his estimates upon the schedules which are based upon averages or trusting to the judgment or memory of an estimator making prices in the old way. It is the part of wisdom, in fact the only sane and business-like procedure to assemble the largest possible amount of information, tending to prove the average cost of producing the various items of millwork based on actual experience, and, after having secured such information, that a list or schedule be compiled in convenient fashion so that it may be used as a basis upon which to determine future costs.

Uniform Schedules Desirable

"Uniform prices can only be brought about by the use of uniform schedules or lists. Nothing is more harmful than a wide range of prices. It creates distrust of the value of the merchandise as well as of the mill-man offering it. It invites a wider range of inquiries for prices, oftentimes extending to un-natural sources of supply, in the hope of finding someone still doing business in the old way. Every quotation and sale should be considered from the standpoint of how it will affect the market and future trade."

"Know your cost" is of prime importance. The systematic use of cost schedules is of still greater importance. The cost system makes it possible for the manufacturer to know the profit or loss on work put through the factory. Cost schedules provide the only means by which the manufacturer can anticipate his cost and thereby avoid contracting unprofitable business.

Although accounting has in the past been generally considered as an unproductive expense and has, therefore, not been given the attention which it deserves, there has been in recent years a very general realization that without the accurate knowledge of the cost of production and the expenses of doing business, the manager of a plant is as helpless as the pilot of an ocean liner without a compass. It is gratifying to note that the progress of cost-accounting is making rapid strides.

"This is Mandy"

The accompanying illustration shows a new type of combination serving table and tea wagon recently brought out by an American furniture manufacturer. The idea is a good one and the design could be changed to suit the ideas of the individual manufacturer.

The idea is that this piece of furniture ("Mandy," the maker calls it) may be taken to the kitchen and the entire meal placed on the shelves; there is a shelf for each course and a drawer for the silver and serviettes, and then wheeled to the dining room and the

Practical combination tea wagon and serving table

meal served without having to leave the table. The soiled dishes are placed on the shelves as each course is finished and the table cleared in one trip. As the dishes are washed they can be placed back on the shelves ready for the next meal.

There should be a strong demand for an article of this kind, as it will save many steps for the housewife.

The size is thirty-five inches high, thirty wide and thirteen deep. The wheels are swivel and fitted with felt treads.

Preparing Stock for Bending

In order to make wood pliable for bending, both moisture and heat are required. There should be a moisture content of about 25 per cent., or enough to saturate the cell walls, more than this does not produce any appreciable increase in pliability. Up to a certain point heat increases the pliability of wood very rapidly, but very high temperatures are not advisable. Boiling for any length of time permanently reduces the strength and toughness of the stock. Stock which is freshly-sawn at the mill is usually thoroughly saturated and therefore requires no additional moisture; but heat is needed to produce pliability. Air-seasoned or partly-seasoned material should be sprinkled, sprayed, or dipped in warm water before being placed in the steam retort, and once in the retort it should be steamed at low pressure with moist steam; dry steam at high temperatures will ruin it.

Wood kept permanently dry will last longer than that exposed to climatic conditions.

There Are Foremen And Foremen

Large Employer Describes Types Observed — Initiative Character and Knowledge, Valuable Assets—Should Have Real Interest in Work— Acquisition of Technical Knowledge Advantageous

By a Furniture Manufacturer

Did you ever ask yourself "What is a foreman?" The dictionary says: "An overseer, superintendent, or leading man of a number of men." The dictionary is probably right, as far as it goes, but my personal opinion is that a foreman in a furniture manufacturing establishment is anything from a millstone round the neck, to a priceless jewel. In this article, it is not my intention to give pointers on technical details to foremen, but rather to try and indicate some of the qualities and methods that make a foreman a jewel instead of a millstone.

In the first place let me illustrate by a comparison of two foremen in different factories, both of which have come under my close personal observation. One gets a salary of $1500.00 a year. He is a man of good appearance, intelligent in conversation,the work turned out of the factory under him is fairly good, (quite up to the average), and he knows how to set and run any machine in the place. He is also well liked by the men. In spite of this he has missed his proper vocation in life; he ought to be part of the machinery in a flour mill.

The Big Salaried Man

The other, in a factory of about the same size, is a man of inferior general intelligence, of uncertain temper, of poor education, (he brings into the office slips of paper about "peace-work"—of which he knows no more than President Wilson) with a salary of nearly $4000.00. The first man is so expensive that it would pay the firm employing him to build a glass case to put him in—if they could make sure of him staying in it. The second one is worth his salary and more.

Now if I could tell you exactly and completely what the difference is between these two men, and tell it in such a way that any foreman could imitate the better man, and assimilate all his valuable qualities as a foreman I would be doing something of priceless value to the furniture manufacturing industry in general and to most foremen in particular, but one cannot expect that at the price of this paper.

Get the Most from Each Department

The question is further complicated by the fact that some of the qualities that make a good foreman, or for that matter, a good man of any kind, are innate. The dictionary says the word "innate" means "inborn, not acquired." All the writing in the world won't make a coward into a brave man, or a sneak into a loyal man.

"Mais, revenons a nos moutons," which, being interpreted, means "Let us get back to our sheep, or, in this case, foremen." The better one was loyal to to the firm that employed him; he loved his work, and would put his whole soul into turning it out well and into getting each department to run up to its full efficiency. He was not a "slave-driver" and his men respected him, but he was not satisfied with anything less from a man than a full day's work. It seemed as if he would sooner break a leg than let one department fail to keep the next one supplied. If difficulties cropped up, as they have a way of doing in furniture factories and other places, he was always "right there," and faced them with sober commonsense. So much for his "innate" qualities, which are of even more importance than acquired technical knowledge, although that, of course, is essential.

His Heart Not in the Work

The inferior foreman, whose technical knowledge was fully equal to the other's, was of an easy-going disposition. He would put a man on a machine and not bother whether he got a day's work from it or not. He would not worry if one department got ahead of another. If goods "in process" got "hung up" on account of some department being behind, he would think it was "too bad" and let it go at that. The work he turned out was fair, as above stated, because he knew "how," but he never got within 15 per cent. of the quantity of the other men. His firm was not gaining any headway, while the other was doing well, in spite of the fact that they were paying their foreman and employees generally a higher wage.

Now, Mr. Factory Foreman, my most earnest desire—at the present moment—is to be able to tell you something that will be of service to you. If I could get your salary raised I would be delighted. Perhaps if you will "read, mark, learn and inwardly digest" the following advice, and also act upon it, it (your salary) will grow, itself. I hope so.

Questions for Self Analysis

First. Ask yourself: Am I playing the game as well as I can? Is the work turned out as good as we can make it? Could we get more out by better methods, say, by getting the firm to bonus any set of men that will give us more work, by putting in a better machine here, or by using a different method there?

Second. Ask yourself: Am I giving my firm the best judgment of which I am capable? Am I loyal to their interests and courageous in the face of all difficulties that come up ?

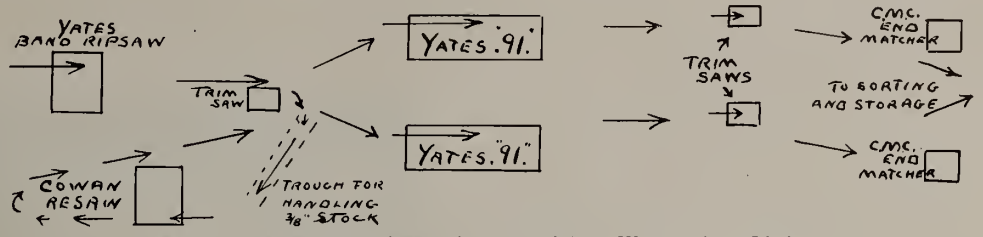
Third. Get all the technical knowledge you can. Study books on technical subjects connected with your trade. Read about new machines; some of them are good. Read trade papers. The Canadian Woodworker sometimes has a good article or two.

First, "Iniative"; second, "Character"; third, "Knowledge"—these three, and the greatest of these is—well, I won't say, but why not take the lot?

Let me just say that if you have them all you may not get more pay, but you will be worth more, and that's better—isn't it ?

Serving Trays Proving Popular

A line which has proven very popular, especially during the last holiday season, is the better grade of serving trays. The damask base, covered with glass, has been the big seller, because of the almost unlimited variety of designs and colorings to be had; but the mahogany and walnut all-wood lines have also been much in demand because of their rich effects.



Layout of hardwood flooring equipment, Midland Woodworkers Limited, Midland Ont.

Newcomer in Woodworking Field

Large Midland Plant Taken Over By Recently Formed Organization—Efforts Centered on Hardwood Flooring, Sash, Doors and Panels—Equipment Modern and Complete

One of the newer firms in the woodworking field is the Midland Woodworkers, Limited, Midland, Ont. This concern was recently organized to take over the plant and business formerly conducted by the Georgian Bay Shook Mills. The manufacture of boxes and box shooks, as conducted by the old company, has been discontinued and production centered on sash, doors, hardwood flooring and general woodwork. The building taken over contains about 6,500 sq. feet of floor space and employment will be furnished for about 200 hands. The excellent rail connections and waterfront facilities which this plant enjoys places them in a favorable position for handling a large volume of business.

The reorganozation of the plant, which is about completed, has been aimed at making each department a separate unit. This will enable each line to be manufactured with maximum efficiency and should tend for high production.

Modern Hardwood Flooring Plant

The hardwood flooring produced includes 3/8-in. and 7/8-in. stock in oak, birch, beech and maple. The lumber, after being seasoned, is thoroughly dried in a Grand Rapids vapor kiln and then run into the factory, where it is ripped to width on a Yates power feed band rip saw. The small kerf made by this machine ensures that the fullest advantage is taken of every foot of hardwood which is run into the mill. The accompanying sketch gives an idea of the layout of this department. The stock progresses in a straight line from the entrance to the store room. The only deviation from this is when 3/8-in. material is being run, then the stock from the band rip is taken back to the Cowan band re-saw, where it is split in halves. As the stock is passed to the resaw in a trough or chute the confusion consequent upon two lines of material crossing is eliminated.

Between the band rip and the stickers—two Yates No. 91's—a trim saw has been installed to cut out bad ends and large knots as the stock goes to the stickers. The two saws behind the flooring machines are used to trim the ends and cut out all defects as the matched stock passes to the C. M. C. end machers. From here the sorters now take the flooring, grade and bundle it, the different lengths being sorted on horizontal racks. The bundles are stamped with the grade length and other information and run into the storage room. Production runs about 75,000 feet weekly.

The other half of machine floor is fitted up as a planing mill, the equipment including a Cowan band resaw, C. M. C. power feed rip, and three stickers—one a Yates. These machines take care of the mouldings, handrailing and other forms of general planing mill work.

Door Department Busy

The sash and doors are made on the second floor. A separate kiln is operated for the softwoods used in this department. The two kilns, one for hardwood,

Preston belt sander in Midland Woodworkers' plant

have a capacity of 150,000 feet. The stock is carried to this floor on a chain elevator and is ripped to width on a C. M. C. power feed rip and then dressed on both sides. The next machine is the trim saw, on which the stock is cut to the required lengths. The rails and mountings are tenoned and coped on a Hayes double end tenoner and then, with the stiles, pass along to the boring machines. The rails are bored on a Hayes multiple spindle double-end machine, which bores both ends at one operation. Another Hayes multiple spindle machine handles the stiles. As the panels have been prepared and sanded, when the stock is run through the sticker, the doors are all ready for assembling.

The dowels are made on a dowel sticker and cut

to length and pointed on a special automatic machine. Another special machine drives the dowels in the ends of the rails, the required number being forced in at one operation.

Some Changes Contemplated

A gluing machine, with treadle attachment, glues all the holes in the stiles. The rails and panels are put in place and the door laid in a power clamp which forces it together. This press is fitted with a squaring attachment so that if the rails were tenoned true and square the door emerges absolutely square. As the stiles were stamped with the size, number and grade before assembling, the sanding of the doors completes the operations and the doors are ready for shipping out.

Practically all the door making equipment in this plant, such as power clamp, dowel sticker, double tenoner, automatic boring machines, etc., was manufactured by the E. B. Hayes Co., Oskosh, Wis. This concern has been taken over by the Jenkins Machine Company, Sheboygan, Wis. The Garlock-Walker Machinery Co., Limited, Toronto, are the Canadian representatives for this line of equipment.

The output of this department runs from 250 to 300 doors a day. This will be increased to 500 daily. To produce this latter number it is necessary that all special doors be made in another department. When this is done the door department can be kept steadily on large runs of stock doors. A tenoner and sticker are being added to the sash department and when installed will be used for special doors.

The sash-making equipment consists of the usual run of sash machines, such as a Cowan sash sticker, with plowing and boring attachment. Cowan chain mortiser, Cowan sash relisher and mortiser, arm sander and sash clamp. Other general purpose machines on this floor include a Hall & Brown panel raiser, Whitney planer, C. M. C. double cut off, Cowan shaper, band saw, Preston belt sander and other pieces.

Panels Form Part of Outfit

A veneer department is being operated and when fully organized and equipped, will be up to date in every respect. In addition to making built-up panels for doors and special work this department will cater

Installation of Hall & Brown panel raiser

to the demands of the furniture and phonograph trade for panels in various sizes and woods. The equipment consists of Preston veneer taping machine, Jenkins-Falls veneer jointer, Merrit power veneer trimmer, Perkins glue spreader and Cowan screw clamps. A hydraulic press will be added in the near future. This machine should effect a saving in manufacturing costs as well as increase the output of this department.

Jenkins-Falls Veneer Jointer in Midland plant

A few machines have been conveniently installed to take care of the milling in transit trade. These are so arranged that the lumber is unloaded from the car directly on chain carrier which takes it to a Yates No. 91. From this machine the stock is loaded directly into another car, thus the work is done with a minimum of effort and handling. In addition to the "91", a Yates double surfacer and a six-inch band resaw are available for transit work.

The personnel of the new company is as follows: A. H. Vanderburgh, Toronto, president; W. H. Firstbrook, Toronto, vice-president; R. H. Scrivener, Midland, secretary-treasurer; W. Benson, Penetang, director, and F. M. Beatty, Midland, managing director. Mr. Beatty has had a wide wood-working experience. Prior to taking hold in Midland he supervised the erection and managed the Saskatoon plant of Cushing Bros. & Co., Limited, of Calgary.

New Montreal Sales Office

The Engineering & Machine Works of Canada, Limited, St. Catharines, Ont., owing to the rapidly increasing demand for their products, consisting of boilers of all types, horizontal, vertical, locomotive and marine, tanks, plate work of all descriptions, etc., and particularly in connection with their recent and very successful venture, the manufacture in Canada of the Keystone Light Traction Excavator, Model 4, have found it necessary to open another eastern sales office in the Birks Bldg., Montreal, where inquiries can be more quickly and satisfactorily handled. This is in addition to their Sales Office in the Sun Life Bldg., Sherbrooke, Que.

The more prosperous the farming community the more need it has of forest products. Lands in Western Canada not fit for farming are set apart as national forests and reserved for the use of the surrounding community to supply it with firewood, rails and sawtimber. Regulated use by stock-owners of the grazing and hay in the forest reserves is provided for. Help to protect the people's forests from their enemies, the worst of which is fire.

Putting Wheels Under The Lumber Yard

Modern Way of Storing Stock Eliminates Excessive Handling — Lumber Unloaded From Railway Car to Kiln Truck — May be Started on Small Scale — Releases Hands For Productive Work

By J. C. Heath

It costs money, good money, to handle lumber in and about the ordinary woodworking plant and yard. Did you ever stop to consider the amount involved in paying for this unproductive labor or if any of the money could be saved by adopting a more efficient method of handling stock?

Here is the routine followed in many factories. The lumber is unloaded from the car to a wagon and hauled to the yard where it is unloaded and piled. When required, it is unloaded on a wagon and taken to the dry kiln where it is unloaded and piled on the kiln trucks. After being dried, it is loaded and, perhaps, being sorted, on a wagon again and taken to the factory where it is finally worked up.

Thus the stock is often handled from four to six or seven times, requiring the services of a team and a number of men. You will, probably, say that you do not do things that way; you have a more efficient method. It consists of a track, connecting kiln and factory, and the loaded cars are run from the kiln into the plant without further handling. This saves one handling, but is not there some way of reducing the number of times the lumber is handled down to one and thus dispense with the services of a number of men, and the team, that are not producing—unproductive labor—or at least putting these men at productive labor?

Many large plants have adopted the idea of placing their lumber yard on wheels. The accompanying sketch gives an idea of how this may be accomplished. A system of parallel tracks, together with transfer cars, is employed so that the lumber may be piled from the railway car directly on the kiln car and then stored in the yard for air-drying, taken to the kiln and from there moved to the factory without any further handling.

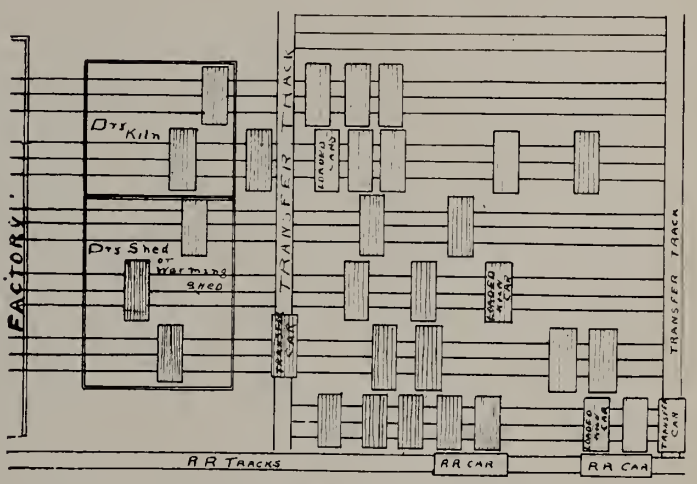
The tracks are laid on a series of concrete blocks. These provide a good foundation for the rails and in addition as they are 12 in. or 15 in. high, keep the stock well clear of the ground. By having two transfer tracks and a sufficient number of parallel rails, cars may be shuffled around so that any desired load of lumber may be picked out and moved into the kiln.

The cost of installation may deter many factory owners from putting down such a system. It is not necessary to do it all at once as it may be started in a small way; in fact unless one had a clear yard to work on, it would be impractical to attempt a complete installation at one time as it would mean that numerous piles of lumber would have to be moved. The better plan would be to start in a small way and then extend the system, from time to time, as circumstances permit or warrant.

The writer recently visited the plant of a western Ontario manufacturer, who had adopted this idea. He operated a progressive type kiln about 125 ft. long, and had placed a set of parallel rails, mounted on concrete piers, along one side of the kiln. This gave him a storage space, 125 ft. long, that would accommodate loaded cars containing about 125,000 ft. of lumber.

The transfer track was run right to the railway siding so that the lumber was unloaded from the cars directly on the kiln trucks and run on the storage track and taken from there to the kiln as desired. His plans include gradually extending this installation until the whole stock of lumber will be carried on wheels. When this is done, handling costs will have been reduced to a considerable extent.

In addition to the saving effected in the cost of handling the lumber, the storing of the stock on cars where it is carefully piled and stuck, insures that the lumber will remain straight and true while being air dried. Another feature is that where the piles are kept



System for storing lumber on kiln trucks

so far from the ground, the air has a better chance to circulate and the lumber will be in better shape enabling the kiln-drying period to be reduced. The saving in preliminary manufacturing costs effected through some such method would amount to a considerable figure during the course of a year.

Manufacturing Furniture Trimmings

Messrs. C. C. Larsen & F. Shaw have recently acquired the business of Messrs. C. C. Larsen and F. Clarke at Walkerton, Ontario, for the purpose of manufacturing a full line of furniture hardware, also motor boat fittings, all kinds of brass castings, special stampings, dies, tools and fixtures and special machinery. We understand the firm is fully equipped to handle any work in the above mentioned line.

Mr. C. C. Larsen was formerly chief engineer with the Canadian Linderman Company, Limited, Woodstock, Ont., and previous to this was connected with the leading manufacturers of furniture hardware in the States. Mr. F. Shaw, who is a brother of Mr. J. R. Shaw, general manager of the Canada Furniture Mfrs. Ltd., is also secretary-treasurer of the Canada Spool & Bobbin Co., Ltd., of Walkerton, Ont.

Care and Operation of Chain Mortiser

Bent Chain Bar Frequently Encountered—Jointing and Sharpening Chains—New Saws Require Extra Attention—Lubrication Must Not be Overlooked

By H. H. Ralphe

The care and operation of the chain mortiser is supposedly so simple that one seldom sees any reference to this machine in trade journals. Like any other piece of woodworking equipment it has little peculiarities of its own and the remedies and adjustments are not always known to the operator.

Probably the trouble most frequently encountered is crooked mortises. There are several things that would account for this fault. As a mortise that is not parallel with the face of stock causes extra work and worry later on it is well to make it a hard and fast rule to check over and make all needed adjustments and changes before running a quantity of stock through.

Keep Chain in Good Running Condition

The chain bar should be examined first. This often becomes sprung from one cause or another. Sometimes a poorly ground chain—one that has a tendency to follow the grain of the wood will gradually spring the bar. The sharpening is usually done on a special outfit which comes with the mortiser but that does not relieve the operator from all responsibility. This work must be carefully watched and executed. The jointing is often done with the chain running at full speed. This is permissible but the teeth must be jointed perfectly square and only the points touched.

A plan often followed is to hold an oilstone on a piece of wood clamped on the table and gradually feed up to the chain so that the points of the teeth just touch the stone. When properly jointed the teeth all cut evenly thus taking a lot of strain off the chain and bar. Another point is that on a properly jointed chain the strain is distributed thus lessening the risk of a broken chain. Any new teeth which may be inserted should be jointed to the same length as the remainder of the chain.

Never Run a Dull Saw

Other causes that account for a sprung bar are, tightening the clamp when the chain is in the cut, sometimes, when heavy pieces are going through, releasing the pressure before the cutter clears the work has accounted for bent bars, the chain being run too tight, not being sharpened often enough, and not being jointed square across, which leaves the teeth longer on one side than on the other. The best way to correct a bent bar is to replace it with a new one. Needless to say one should be certain that the trouble which sprung the old bar has been remedied before using the new one.

Another item that requires close attention is the roller bearing and ring at the bottom of the bar. While these are easily replaced yet they should be carefully attended, for with care such as cleaning every day and lubricating with a good grade of grease, they will last a long while without giving any trouble.

New Chains Often Heat

Watch the new chain bar carefully when it is first used. The constant striking of the chain as it leaves the ring will batter the plates which cover the bearing in the bar. Any roughness encountered here should be carefully filed down, otherwise it might cause the ring to bind.

The chain itself requires frequent oiling not less than twice a day when in continuous operation. Place a little oil in an open can and hold it to the chain, revolving the chain slowly through the oil. This method not only lubricates but has a tendency to remove any grit that may have gathered. Many operators keep all the chains in oil when not in use. This is a good practice and should be followed wherever a chain mortiser is used.

Judging Amount of Hook

Should the chain heat from any cause, new ones often will, do not attempt to cool it with water. Take it off and let it stand awhile. A good way to break a new chain in is to run it alternately with an old one, on short jobs until it works into a free easy running condition. This avoids excessive heating.

Regarding the amount of hook to use the principle applied to saws is followed. Where the work is on nothing but soft wood plenty of hook should be given, while for hardwood the hook should be reduced. For general work on mixed woods only a moderate hook should be used.

Production is being speeded up in some plants through the installation of gang mortisers, which have several cutters and permit of a number of mortisers being made at one operation. Other machines which are built with a rapid up and down stroke, can be used advantageously when a greater output is required.

Dining Table Manufacturers Meet

The Central Bureau of the Dining Table Manufacturers gathered recently in convention in Chicago.

The lumber situation was reviewed and no immediate relief from the present shortage is anticipated. The lumber held by the different table makers was about 33 per cent. of the normal supply and not more than 26 per cent. on order.

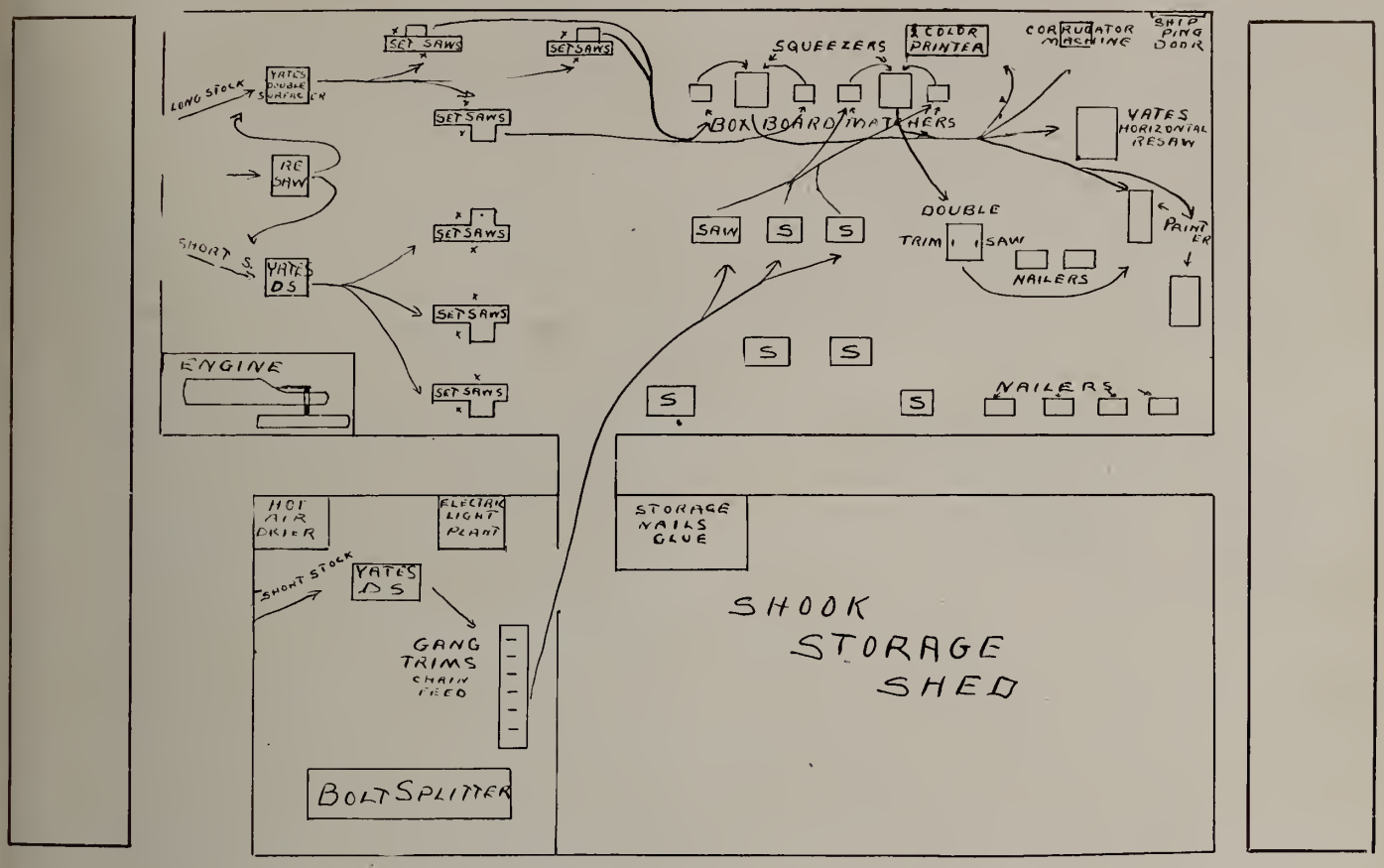
A number of protests from retailers regarding "prices prevailing" were tabled and an effort was made to explain why this policy was necessary.

Simmons, Limited, Open New Building

Between three and four hundred of the Simmons, Limited, employees gathered for the official opening of the new building on St. Ambrose street, Montreal.

The affair proved a very pleasant one and reflected the spirit of goodwill among the employees at the Montreal factory. Cards and dancing were indulged in, the prizes for the former being distributed by Mr. J. H. Sherrard, president of the company, and a buffet supper was served about midnight, after which dancing was continued until the early hours.

The committee in charge were Messrs. J. W. Abbott, A. C. Guthrie, W. Dubuc, L. F. Flanagan, G. E. Buckley, A. Healey, J. R. Lecompte. E. Leger, J. B. Shanahan, C. Lightfoot, T. Kaerney and Roland Gomery, chairman.



Layout of Penetang plant, Firstbrook Bros. & Co., Limited

Modern Shook Plant at Penetang

Well Equipped Factory Turning Out Car a Day of Finished Shooks—Product Made from Mill Waste—Gang Trim Saw Interesting Machine

In addition to their large and up-to-date box factory in Toronto, Firstbrook Bros. & Co., Limited, Toronto, operate a large shook factory at Penetang, Ont., and are constructing a similar plant at Thessalon, Ont.

The Penetang plant is a large well equipped factory, employing in the neighborhood of 100 hands and averaging slightly over a car of finished shooks a day. The material used is practically mill waste, consisting of short ends from the trim saws, called trimmer blocks, and mill cull lumber. At times a certain amount of stock is manufactured from short bolts.

The work is carried from machine to machine on trucks, the floors being kept absolutely clean to facilitate the moving of the stocks. A blower system carries the lighter waste from the different machines and suitable trucks with a box attached is placed at the saws to hold the small ends and edgings. The operator or helper chucks the wood waste in these boxes and a couple of boys keep moving them away and bring up empty trucks.

The equipment is laid out so that the work goes through with a minimum of effort and confusion. The long stock, mill cull, is routed differetly from the trimmer brocks. The dressing is done on Yates double surfacers, three being employed. The long stock goes to the saw sets, a combination cut-off and rip saw. These are manned by two men and a helper. The ripsaw man takes the stock from the cut-off table, thus eliminating all unnecessary handling. From here it is taken to the matchers.

The shorter material after being dressed is cut to length on a gang cut-off. This machine consists of ten or twelve adjustable saws mounted on an overhead spindle and an automatic chain feed to carry the pieces under the saws. The saws are usually set to cut both ends and sides and the stock is placed so that it will be cut to the best advantage. The men feed this machine and the helpers behind remove and sort the pieces, piling them on trucks. They are then taken to the rip-saws and edged and sized and from there to the boxboard matchers.

The matchers are set in batteries which consist of two matchers, together with a boxboard squeezer. This arrangement tends for high production with very little handling. After the stock is matched and forced together, the routine varies, depending altogether on the box being made.

The balance of the equipment consists of numerous rip and cut-off says, three Morgan printers, Yates horizontal resaw, six Morgan nailers, corrugating machine and automatic double trim saw, together with a completely equipped filing room.

Excellent trackage and loading facilities have been provided and as far as possible the material is loaded in cars as manufactured. A large warehouse gives

ample storage room should there be a dearth of cars, but needless to say, it is used as little as possible.

Both the Thessalon and Penetang plants are under the supervision of W. Benson of Penetang.

Standard Apple Box Specifications

At a fruit growers' conference which was held recently in Seattle, Wash., it was agreed that the following sizes be adopted for specifications and footage:—

No. 51—N. W. Standard "Heavy," 13/16 and 3/8, 18 x 11½ x 10½.

	Gross	Net footage
2 Ends, 11½ x 10½ x 13/16 in.	1.7570	1.678
2 Sides, 19¾ x 10½ x 3/8, 2 from 1 in.	1.5087	1.440
2 Tops, 19¾ x 5½ x 3/16		
2 Bottoms, 19¾ x 5½ x 3/16		
3 from 1 in..	1.0972	1.010
3 Cleats, 11½ x13/16 x 3/8	.1600	.160
	4.5229	4.288

No. 52—N. W. Standard "Medium," 13/16 and 5/16, 18 x 11½ x 10½.

	Gross	Net footage
2 Ends, 11½ x 10½ x 13/16..	1.7570	1.678
2 Sides, 19¾ x 10½ x 5/16, 3 from 1¼. ...	1.2573	1.200
2 Tops, 19¾ x 5½ x 3/16		
2 Bottoms, 19¾ x 5½ x 3/16		
.. ..	1.0972	1.010
4 Cleats, 11½ x 13/1 x 3/8	.1600	.160
	4.2715	4.048

No. 53—N. W. Standard "Light," 11/16 and 5/16, 18 x 11½ x 10½.

	Gross	Net footage
2 Ends, 11½ x 10½ x 11/1	1.3177	1.258
2 Sides, 19½ x 10½ x 5/16	1.2413	1.200
2 Tops, 19½ x 5½ x 3/16		
2 Bottoms, 19½ x 5½ x 3/16		
... ...	1.0833	1.010
4 Cleats, 11½ x 11/16 x 3/8	.1600	.160
	3.8023	3.628

Two piece ends properly fastened with three corrugated metal fasteners have proven and will be considered as standard or equivalent to one piece sides. One or two piece sides satisfactory.

The object of specifying a number is with the intent of eventually dealing by number only, which will eliminate the necessity for naming specifications in referring to any one of the three boxes.

The numbers 51, 52 and 53 have been adopted instead of numbers 1, 2 and 3 with the view of eliminating any reference to grade, which might be the case should the smaller numbers be used.

It is the intention to supply all fruit growers with a copy of these specifications just as they appear here with the exception of the footage. It is desired that the fruit industry and the box manufacturers become so familiar with the numbers as pertaining to these specifications that the name referring to "heavy," "medium" and "light" can eventually be eliminated.

New Patented Box Construction

A patent has been granted Henry J. Williams, of Mobile, Ala., for a new and useful improvement in shipping cases, which it is claimed that it will revolutionize the box-making industry in this country.

It is also maintained that through the use of this patent it is impossible for thieves to break into a box without leaving a trace, and that such a box will be in demand by practically all the large shippers of the country, as there is no telling how much is lost every year by boxes being broken into, some of the contents removed and the container closed by replacing the nails drawn.

This patent box is very much stronger, though it weighs only about two-thirds as much as the boxes now in use, saving freight and express charges every time it is used.

It requires 108 large nails in an ordinary box 32 in. x 32 in. x 33 in., while only four are used in this new way. The invention consists of bevel-edged shoulders with little steel straps drawn over the corners in a slanting manner, causing them to act as wedges as the strain comes on the box. Small cement-coated nails driven through the strap and beveled edges of the cleats will resist 1,400 pounds' strain at each fastening. The box may be used over and over again by just cutting the straps that hold on the cover when opening it.

It would seem that the problem of placing on the market a box for which there has been a demand for many years has been solved, for this box with all its commendable features can be produced for less money than any now in use for the same purpose.

Ottawa Veteran Celebrates Birthday

John R. Booth, the veteran lumberman, pulp and paper manufacturer and railway builder, celebrated his 93rd birthday on April 5th and received messages of congratulation from all over the continent. Mr. Booth spent the day as usual in working and in getting his photograph taken. The latter has been a custom of his for some years now as an incident to passing each successive milestone. The members of the office staff and superintendents sent a bouquet of ninety-three roses to his home.

Mr. Booth has resided in Ottawa since 1857, when he landed with only $9.00 in his pocket and went to work for 60c a day. He later operated a small shingle mill from which his present mammoth plants have developed. He has always taken a deep interest in sports and recently faced the puck in the Ottawa-Seattle Stanley Cup hockey series.

Turpentine and Resin from B. C. Fir

A new industry for British Columbia which, according to its advocate W. C. Oliver of the Douglas Fir Turpentine Co., of California, promises to have most wonderful possibilities, is being considered by Hon. T. D. Pattullo and the experts of the Forests Products Department.

The Douglas fir, which Mr. Oliver describes as "the most valuable economic timber in the world and one of the prime assets of British Columbia," can, he declares, be made to produce hundreds of millions of dollars worth of turpentine, resin and other by-products while at the same time the timber growth of the tree can be enormously accelerated.

Machinery & Equipment

Two Color Box Board Printer

The fine distribution of ink, accuracy of register and printing, the simplicity and quick adjustment of the Morgan Two Color Box Board Printer make this machine a new feature in box making.

The smooth and complete distribution of ink insures an accurate, uniform impression on each board. The machine is built for accurate work, but is also a rapid printing press, making from sixty to eighty impressions a minute. The changing and re-arranging of the dies is quickly done. All adjustments are made from the front of the machine.

The latest model Morgan printer is equipped with a safety release device which automatically and instantly stops the feed chain in its forward movement in case a board becomes lodged from any cause whatever, preventing any part of the machine being broken.

Another feature of this new machine is the gearing which drives the cylinders and rolls. These gears are always in perfect mesh and require no adjustment when the cylinders are raised or lowered for various thicknesses of wood. The play, due to slight variation in thickness of stock, is taken up by the springs supporting the meshed gears. It is regularly fitted for belt drive, but can be equipped for direct gear connected motor drive, a seven and one-half horsepower motor being used. It will print stock as long as 40 inches and as short at 4 inches, and any width up to 24 inches.

Strongly built to stand the continuous use of box factory work, accurate and speedy, the Morgan Two Color Box Board Printer is in every sense a high-class, up-to-date machine. Full particulars may be secured from the Morgan Machine Co., Rochester, N. Y.

Montreal is to borrow $3,000,000 from the Provincial Government this year for housing purposes.

Portable Electric Drill

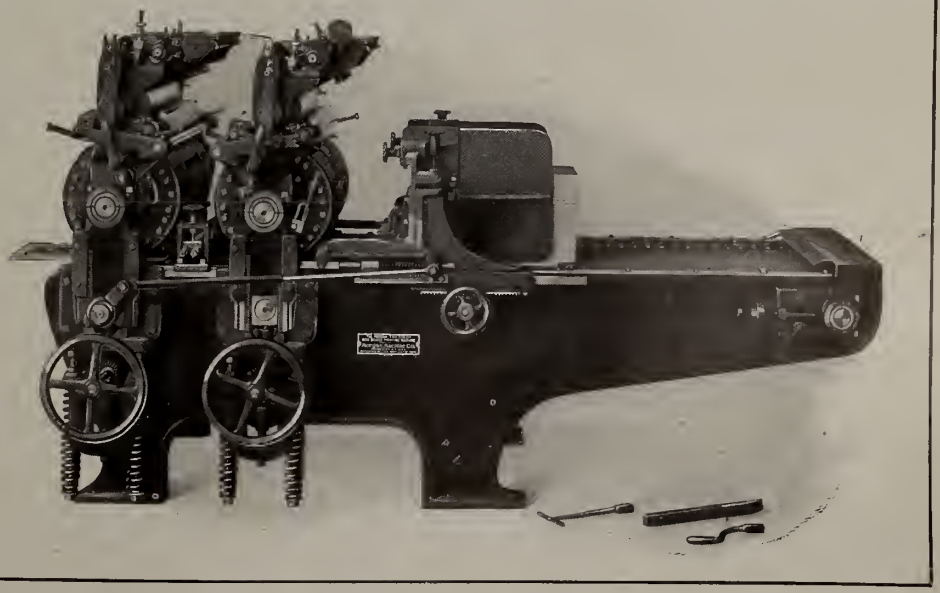
The Dumore Model 1-D portable drill is a light type of electric drill admirably adapted to the rapid boring and countersinking of small holes in wood and metal. Will bore up to 3/16 in. in steel, and

Light "Dumore" Model 1-D

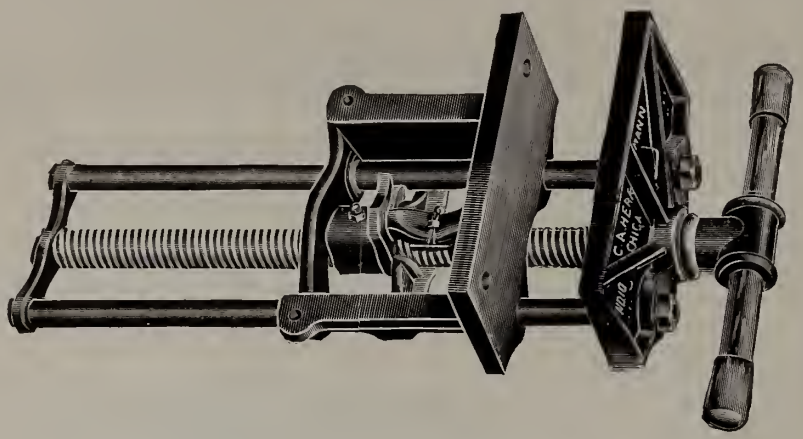
as large as 13/64 in. in wood and alloys. The offset spindle enables the drill to be worked at any angle, in corners and other hard-to-get-at places. It is small and may be handled with great facility, the overall length being but 10 in. and the weight 4¾ pounds. It is manufactured by the Wisconsin Electric Company, Inc., Rachine, Wis.

Quick Acting Vise

The Herriman Master Vise is a time and labor saving device that should appeal to all woodworkers. It is made in three sizes—7, 8 and 10 inch—the first size opening 9 inches, while the other two open 12 inches. Can be had to open wider if desired. This vise need not be screw loosened or screw set, a slight movement of the handle locks or unlocks the jaws. It is positive in grip and very rapid in action. The jaws are planed true and bored so that wood facings may be attached. The use of this vise reduces the time required in opening and closing the ordinary



Efficient two-color printer



Slight twist locks or unlocks this vise

Compact Colladay scroll saw

type of vise. The O. E. Johnson Co., 1293 W. Washington Blvd., Chicago, will gladly furnish full particulars.

Automatic Electric Screw Driver

The accompanying illustration shows an efficient type of electric screw driver. It is light (weighing only six pounds) easily handled and will drive all sizes of screws. It may be fitted with two spindles revolving in opposite directions, the right-hand spindle driving in and the left hand taking out. The electric motor is connected to spindles through gear and worm drive.

May be equipped with left hand splindle in place of handle

The bits do not revolve until pressure is applied, engaging a positive clutch. thus the bit can be readily entered in the screw slot and the risk of marring the wood surface eliminated. One man with this machine should drive as many screws as three or four men with ordinary drivers. For full particulars write Geo. C. McKay & Co., 1046 St. Clair Ave., Cleveland, Ohio.

Self-Contained Scroll Saw

An examination of the accompanying illustration of the Colladay scroll saw will show that this is a practical, efficiently designed machine. It is compact and self-contained in every respect. The table is 32 in. by 38 in. and allows for a swing of 37½ in. clear of arm. The height from table to arm is 10½ in. and 12, 14 or 16 in. saws may be used. The cross head is made of steel and gun metal and carefully strapped to insure long service. The springs and leaves are made of carefully selected ash, the tension being very evenly graduated. It is fitted with belt drive counter shaft but may be had with motor drive through flexible coupling on lower shaft at a slight additonal cost. Floor space 36 in x 53 in., weighs 800 lbs., power required 2 h.p., speed of counter 900 r.p.m. For full particulars apply to the Colladay Machine Works, Philadelphia, Pa.

Looking After Narrow Bandsaws

Correct sharpening and setting of band saws, writes a correspondent, go far towards prolonging their life. Some operators believe that it is always best to sharpen from each side, bevelling every tooth similar to a hand saw. Others are as equally convinced that the best results are obtained only if each tooth is filed straight across. Certainly the latter method is the easiest and consumes less time.

Much diversity of opinion also exists as to whether the use of rounded corner files actually does minimize the tendency of a saw to fracture from the tooth edge. My own experience certainly prompts me to this view, but would the use of a sharp edge file accentuate the common danger of breakages arising out of a flaw occurring on the back edge? I think not. Rather am I inclined to think such happenings point more to a lack of support to the back of the saw, the thrust not being properly taken up.

Personally, I always use a rounded saw file, as I find it use prevents undue weakening of the blade; and this is a consideration. And I always endeavor to bring each tooth up with a single stroke of the file —that is, unless a saw is in a very bad way.

Although my saw doctoring outfit includes a setting hammer and a bevelled block, I rarely use it unless on saws over 1 in. wide. I adopt the more speedy file method. With a length of the saw secured in the sharpening vice, I take an old file and bring it down between the first two teeth, and press the handle slightly to the right; this sets in different directions both teeth simultaneously.

Having thus gone through the full length of saw in the vice, the teeth are then sharpened, and a further section proceeded with.

Most of the land on which our Canadian forests now stand is not suitable for agriculture but it is suitable for growing fine crops of trees to keep our sawmills, our wagon factories, our furniture factories, and our paper-mills running at full force for ever. Let us all take part in protecting our valuable forests. Fire is their enemy. Therefore, be careful with fire.

Upholstering and Trimming

"For Men Are Square"

By D. D. Fennell*

I am sure that we Buffalo people feel very much gratified at having such a representative body of men in industry here at this convention, particularly because Buffalo has become an industrial city. Through a great many years of its life it was purely a commercial city, but in the last 15 months we have added a hundred industries to the city of Buffalo, which gives you some idea of what is being done by industrial Buffalo, particularly through the activity of the Chamber of Commerce.

I do not propose to discuss with you the technique of the "industrial relations" proposition at all, but I am going to draw out a few fundamentals that I believe are basic. I want you to know that I am little concerned as to whether we are to treat with the unions or not to treat with them. In fact, I am little concerned with unions, or with the opposition—the non-union movement. I wish just to make this prediction, that within fifteen years there will not be in the United States an organized Federation of Labor. I have a good reason for stating that, and my reason is that men are seeing so far and are planning so wisely, and are endeavoring to deal with this problem so infinitely just, that the management in industry will offer more to the men than any labor leader can possibly advocate. The only thing men demand is sheer, stark-naked justice, and they are getting it—more and more every day.

Six words will epitomize all that I have to say, and those words are—vision, spirit, aristocracy, democracy, justice and brotherhood, and in those six words I am going to give you a program that is absolutely workable along the lines of industrial relations.

Vision

First we have vision. We fellows in industry must acknowledge certain facts. We must know that in the early days of industrial life the American workmen did just what we told him to do—he had no say whatever concerning the conditions surrounding his job. He was given a job to do and he was supposed to do it for what it brought—it was not his to say how, where or when he would do it. This was the day of "Master and Man." Apprentices were trained in little shops by direct instruction, and their years of apprenticeship were long, and without pay.

After a time machinery came in and with its coming the master found that he could use a number of men. His unit developed until there was need for help in supervision, and then was introduced that most strategic feature of all industry—the foreman. We have come to recognize the foreman as the keystone in the arch. He is the man in direct contact with the men, and it is through him that we must get our vision to the men. If we are successful in this, we have accomplished a great deal towards settling the usual small difficulties in plants.

Training the foreman, then, is a very fundamental thing. To-day I believe that if I were operating a plant of any size I would spend a great deal of time trying to make my foreman understand me, and then have them represent me adequately and properly to the men.

In the early days we selected our foreman because he was a good workman. The human element was not seriously considered. Labor was bought and sold and we did not understand that the foreman who was an embryonic psychologist, was worth 20 foremen who might have the skill of any man in the shop. The man who had the right kind of feeling for his men, who was bound to them by a common interest, and who had a little of the milk of human kindness in his heart, was worth more than all the skilled men copied from mental machines.

Vision: All the preachers, theorists and economists, labor leaders, welfare societies and whomsoever you want to include—are not the men who are going to do great things for America. The hope of America, the salvation of America, will come through industry. There is no class of workers that feel more keenly the need for production and the dollar that it brings than the men who are in the industry.

I was greatly interested the other day when two gentlemen wished me to go out to the largest plant in the city of Buffalo where they were having trouble with the foreman. They could not get the wheels turning and production coming along.

Before I talked with the supervisors in that plant I talked to the president, with whom I am personally acquainted. I said, "Bill, tell me what you are trying to do. You are a rich man. You have plenty. You can retire now and take care of yourself for a hundred years. What are you trying to do?"

His answer was, "The vice president and the secretary and I could, to-day, sever connections with this firm and have plenty; but we are not in this thing for the mere money we can get out of it. Naturally, we hold out profits as an incentive to which we must work. Any industrial scheme which does not develop ambition is a worthless kind of dream. This is my job, right here. This is my duty to perform right here. I owe to America and these workmen all that I have and all I have in me until that day when I must totter away because I can do no more; even then I am still going to try to have an interest and some definite connection with this plant of mine which has meant so much to me. We are working to do something to serve the men, the community, the family.

I asked, "Bill, are you doing it? Are you working this thing out here or simply talking?"

His answer was, "No, I am not simply talking. I believe it is my bounden duty and my deepest conception of that duty to do this thing. We are going to have a big banquet and we will have 600 of our

*Address before National Association of Upholstered Furniture Manufacturers at Buffalo, N.Y.

leading people—superintendents and office force and the unit men all through the plant—and I wish you would come up and make an address—discuss some topic and then listen to my speech. I am going to commit myself to these people."

At the banquet that night his speech was something like this: "Ladies and Gentlemen, we did $20,000,000 worth of business this year. I did not do it—no one man did it—we did it."

All through that little unostentatious simple address, a talk from heart to heart as he spoke to those women and men gathered there, he just put emphasis on that fact.

I was in this man's office a short time ago when an engineer brought in a plan for a building and the bill of specifications was beside it. The building was to cost so much, machinery was to be so located, ventilation, rest rooms, and so on. When we got through, the president said, "Bring me in a perspective of the building." There was one ready and the engineer brought in a picture of the building. It was one of saw-tooth construction. Architecturally it was nothing worth looking at.

When he got all through, the president said, "Now tell me what it would cost to do so and so, and so and so, and have bushes and flowers and lawns and so forth."

The engineer replied that it would add 35 per cent. of the original bill to it.

I asked, "Bill, what will your stockholders say?"

His answer was, "Wait until they see the profits that will come out of this plant. Wait until they see the 35 per cent. returning many times over. You may be sure that they will say, 'We will follow you all the way when it is all over. I will tell you what it is for. This great big organization of ours is a family; it is a domestic proposition quite as much as the house we are living in.

"I want production to the very maximum. I want no shirkers in this plant. I want a man to give everything he has for his job. I don't want to stand by as a hard, exacting, parasitical individual and tell him to give me that production regardless. I want to be able to say, 'I am making a place for you, which, when you approach it in the morning, you will approach it with the same anxiety to get on the job as you feel when you turn at night to that haven of rest which you know as home.' This is one family, that is another, but they are bound together with a common cord."

He had the spirit to put that across and that kind of spirit is typical of that organization from the smallest boy to the highest in power.

We must have vision. We must see what we must do, and we must have the courage and strength to go to it, reach out to it and grasp the thing. The American wants vision to encourage and challenge his courage and then the man who is proud of his nationality will jump in and strive to reach it.

(Continued in May Canadian Woodworker)

Covering for Porch Furniture

The weather man isn't always very considerate of the feelings of the housewife who prides herself on her taste in furnishing her porch. When he sends along one of his sudden thunder showers, he generally sends with it, as an escort, a high wind that propels the rain obliquely under porch roofs and on to the pretty cretonne cushions and the linen arm and back rests and table covers that adorn the porch. After Jupiter Pluvius has finished shedding his copious tears and passed on to the next county, madam's porch upholstery is in a condition frequently to cause tears from some quarter other than the Heavens.

But this trouble can all be avoided now and without much sacrifice of artistic appearances either. Science has outwitted Jupiter. There is now on the market a material that defies the rain. It is made to resemble leather so slosely that only a leather expert can distinguish it from that. It comes in all the standard leather grains and finishes. It can be artistically embossed or painted and withal makes an ideal covering for all sorts of porch furniture.

The base is a cotton fabric which is coated with a pyroxylin film. It is this film that is water-proof. Rain harms it no more than it does a rubber boot. If it becomes soiled in any way, even with grease, it can be washed with soap and water without the slightest injury.

When housewives become better acquainted with this article, cretonne will have to look to its laurels for it looks as though its days as a porch furniture covering were numbered.

Comfortable Upholstered Chair

The chair shown in the accompanying illustration is a new design recently brought out by H. A. Bywater, Toronto. The lines are very suggestive of the English style of upholstered chair. Mr. Bywater has been conducting a retail upholstering business but is

An attractively designed chair

branching out and going after the wholesale trade.

The general appearance of this chair is certainly inviting. The low, deep seat with the thick springy cushion makes one long to recline in it. It is just as comfortable as it looks.

The workmanship and material is of the best. The cushion is filled with a good grade of curled hair. The usual construction, consisting of springs and curled hair, is followed in upholstering the back and arms. The covering shown is a striped denim in a rich brown. Taken as a whole the chair is very attractive and sho ' find a ready sale.

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Standard Paint & Varnish Co., Limited

Windsor, Ontario

The Making and Working of Fillers

Provides Satisfactory Foundation—Many Substances Employed—Formulas for Paste and Liquid Fillers

By Dixy Wells

As wood fillers are very important in the proper finishing of furniture, a few paragraphs on this subject should be interesting. There are two well-known kinds of fillers, liquid and paste. The former is used on practically all classes of close-grained woods, while the paste filler is employed on the coarser grained species. The more open the grain the heavier and coarser must be the filling that is applied.

The purpose of all fillers is to provide a perfect foundation. One that will receive the varnish coats and enable them to stand out, producing a flawless surface. To make this foundation coat effective the filler must not only fill the pores but must so saturate the wood cell as to provide for the absorption of the varnish when it is applied. If any wood is not thoroughly filled or an inadequate foundation has been laid, the varnish will not stand out and pinholes, pitting, and other faults will result. The varnish can not be blamed for these defects, as the filler itself is at the root of the trouble.

Surfacer Often Applied

In some cases it is necessary to apply a surfacer over the filler coat, thus supplementing the work of the filler. This surfacer is, in most cases, a liquid filler. Sometimes the ordinary commercial article, or it can be made up in the shop by thinning a paste filler down to a consistency where it can be worked with a brush. Shellac is often used or the ordinary commercial liquid filler much reduced.

Fillers come in many colors and one should be used that matches the wood to be finished. For instance when the furniture is to be finished natural, such as oak, ash, etc., the no-color fill must be employed. Many beautiful effects are obtained in our modern factories by not coloring the wood, but by using a colored filler of the required shade.

May Be Made in Shop

While many of our filler manufacturers are supplying standard ready-mixed materials a good preparation can be made in the shop and a reliable formula is as follows: Mix two parts of good coach Japan and three parts of raw linseed oil, gauging them by weight rather than by measure. Add to this combination a sufficient quantity of puverized silica to form a stiff paste. If the facilities for putting this substance through a hand mill are available it will greatly facilitate the work. After going through the mill coloring may be added as required. The mill is used for the purpose of grinding the materials finer and ensures a better mixture. Authorities state that fine silica is the best basis that can be used in a paste filler, but this by no means the only one. A very satisfactory filler may be made from corn starch. In this case mix together equal parts of Japan dryer, turpentine and raw linseed oil; after this add corn starch sufficient to form a thick paste. A very good way, perhaps the best is to wet the starch by placing it in a suitable container and pour the liquid mixture over it, then cover and allow it to stand over night. After this it may be stirred to a perfect mixture. When this has been accomplished the result should be about the consistency of thick paint. If it should prove too thick it may be thinned with a little benzine or turpentine.

Equal parts of boiled linseed oil and japan, when thickened with corn starch, also makes a good filler. This should be thinned with turpentine. A finishing room expert recently furnished the following formula: To one pound of corn starch add one-half pint of boiled linseed oil, one-fourth pint shellac varnish and two and one-half pounds of finely pulverized pumice stone. After being thoroughly mixed this may be colored as desired. In making any of the foregoing formulas, uncooked starch is always used. There are many other bases in addition to silica and corn starch that may be used, such as China clay, marble dust, plaster of paris, whitening and others.

Shrinking to be Avoided

Some pastes cause a lot of trouble by shrinking as they dry, thus leaving cracks and partially filled pores. This fault does not occur when the best standard makes are used. A good non-shrinkable filled may be made as follows: Mix sufficient flour and water to form a thick paste. Boil this thoroughly and set aside until cold. This paste should then be thinned until it will barely spread over a board when poured. It should be neither too thick nor too thin. Then mix separately raw linsed oil and whitening in quantities to form a bulk equal to that of the paste and of about the same consistency and then mix the two batches together. A certain amount of dryers will have to be added to secure proper drying. This filler may be thinned out as required.

A certain amount of difficulty may be experienced in getting the right proportions for this formula, but a little experimenting will surely bring results. The chief trouble is in getting it to dry and not too hard, but with a little work and patience it will be easy to make a practical product.

Other Mixtures That May be Made

There are a large number of liquid fillers to meet the requirements of the various woods. One is made from a formula which calls for China clay and carbonate of magnesia, about twice as much as the former as of the latter, the two being thinned with turpentine to a proper consistency. Another filler on the market which enjoyed great popularity was made from pale rosin which, when melted and used with whitening turpentine and coach japan gave excellent results.

On cheap furniture an inexpensive filler is often used, the better grades being reserved for the higher class of goods. On some of the common grades, for

instance, glue may be employed in the composition. Good glue makes more size than a cheap grade, and thus the use of the better grades makes for economy. When something along this line is required make up a good size with glue and water, and thicken it to usual liquid filler consistency by adding a quantity of dry carbonate of magnesia or whitening and coloring to suit. This liquid is practically a surfacer, drying very quickly and may be sand papered within a few hours after being applied. This is an item of considerable importance with manufacturers of cheap furniture. It is also a good material to use on a one-coat job. In some cases a coat of varnish is not given as two coats of this surfacer gives a far better finish, and is often used on cheap lines that will not stand for a more expensive treatment.

Determining the Value of a Varnish

Some Tests Usually Applied by the Progressive Varnish User—Specific Gravity and Viscosity Test—Detecting Adulterants

Formerly the varnish salesman and the foreman finisher talked over the wares the salesman had to offer and decided which would be the best to select for the work in hand. Nowadays the furniture factory asks for a trial order of a gallon and tests it in his own way.

Usually an eight-ounce bottle of the varnish is sealed, labeled and laid away and the remainder put to a practical working test. Some factories employ the following method: Small boards are put through the various finishing processes until they are ready to be varnished. Several coats of varnish which the factory has been using is applied to some of the boards, and then the varnish to be tested is applied to the other. These are then put on racks in the open and exposed to the weather. Changes in the condition of the varnishes are carefully noted. The panels which lose their brilliancy and crack in the shortest time have been coated with an inferior varnish.

Color, Durability and Elasticity

Varnish may be tested for paleness by placing a small quantity of it in a thin glass vial, and comparing it with any standard sample by holding both samples to the light. Another simple test is to revarnish any suitable surface with the varnish being tested, and when the varnish is thoroughly dry rub it quickly with the finger. If the new varnish crumbles up quickly it evidently contains an inferior gum or most probably a large proportion of resin. A good varnish cannot be removed in this way. A method for testing varnish for elasticity is to apply two coats of it to a sheet of linen and after it has properly dried try its flexibility or tendency to chip off by crumbling between the hands.

There are three tests which a first-class varnish must be able to pass at approximately the figures stated, viz.: Specific Gravity, Flash Test and Viscosity. Specific gravity is the weight of anything compared with an equal quantity of water which is 100. The specific gravity of a varnish at 70° F. should be between .80 and .90. This is most easily determined by the use of hydrometer for liquids lighter than water, although it can be figured by a comparison of weights. If substitute oil or gum has been incorporated into the varnish, the specific gravity will show it, as no two oils or gums have the same specific gravity.

Determining the Viscosity

The viscosity of a liquid is determined by the length of time it takes a measured quantity to run through a hole of a certain size compared with the time it takes the same quantity of distilled water to pass through the hole. With a viscosimeter which can be purchased from any chemists supply house, this can be easily determined. The viscosimeter will have marked on it the time it takes 50 cubic centimeters of distilled water to pass through the hole. Allow 50 cubic centimeters of varnish at 90° F. to run through the viscosimeter and note the time required with a stop watch. Divide the time taken by the varnish to run through by the time required for the water to run through and you have the viscosity of the varnish as an abstract number. This should be in the proximity of 15. Any variation in the materials will be indicated by the viscosity of the varnsh.

In filling a long vial or test tube, a good pure varnish will appear without any cloud regardless of its color as some of the most expensive varnishes especially the hard drying varnishes are quite dark in color. Gum varnishes for instance, are darker than wood oil varnishes.

A Very Severe Test

The best and probably the severest test is the glass test. Take a clean piece of sheet glass, and pour some of the varnish on it, then watch it run. If it is a good varnish it will run out smoothly, level perfectly and set dustproof in a few hours, but will require two or three days to harden. Drying on glass will be much slower than drying on wood. Good varnish will not show up brittle by scratching nor will it leave white marks.

Rubbing and polishing varnishes of high grade will not show an impression when pressed upon with the hand. Failure to meet these tests successfully generally indicates cheap gums, the presence of resin, other impurities or imperfect manufacture. After all, however, these tests are not conclusive, and the best test is old Father Time.

Judge by Working Varnish

There are other practical tests, but the ones mentioned are the most common. The practical finisher can tell much by the action and working qualities of the varnish whether or not it is of inferior quality.

There is one point that should always be kept in ind, that is: that there is a varnish for every purpose, no general purpose varnish. The man who would get the best result from the varnish he uses will use only varnish made by a manufacturer with a reputation, and will use for his purpose the varnish that such a manufacturer recommends for that purpose.—Jamestown "Finishing Facts."

Heavy patches on a belt throw it out of balance.

A double cut-off saw will save a lot of work and time.

The Successful Finishing of Mahogany

This Wood Requires Special Care—Sponge Lightly to Raise Grain—Stain Applied Evenly and Quickly—Finishing Imitations

By J. C. Whitlock

IN these times of high prices one is liable to take a chance with something in the way of a finishing material which, under normal conditions, he would never think of doing. Owing to the scarcity of competent help, mistakes will occur with the best material, and when a piece of goods has been finished, but not finished right, it is a rather difficult matter to determine whether the trouble lay in the material or in the manner of application.

I recently visited a large furniture store in one of the border cities and was shown a crotch mahogany dining-room suite which was a beautiful example of workmanship, except the finish, and it was bad. The manager directed my attention to it and asked my opinion as to the cause. The pieces had been well stained, and the color of the wood was all that one could desire; but when a medium strong light was thrown on it there was a greenish cast to the whole which discounted all the other good qualities.

Should Use Pale Shellac

After careful examination I came to the conclusion that the goods had been shellaced with orange shellac, and the shellac had been applied in a damp atmosphere—possibly on a very damp day. It is also just possible that the solvent used in cutting the shellac was not the right kind. But apart from these things, orange shellac should never be used on mahogany unless it is a very pale shellac and used very thin; in fact, no matter what kind of shellac is used on mahogany, it should be used very thin. It should never be used for the purpose of helping build up a body. All that shellac should be expected to do on mahogany is to prepare a fine surface for the varnish.

The trouble seen here is all too common on the cheaper lines of furniture and might pass unnoticed there; but when one sees it on an expensive suite it calls for a note of warning against the causes. To this end we will give a few suggestions on how, and how not, to finish this class of wood. Starting at the very foundation of the finish, which is the sponging before staining. This should be done with as little rubbing with the sponge as possible. I know the more one rubs with the sponge the more the fibres will be raised, and which is really the object in sponging, but there are other things to be considered. If too much rubbing is done, the glue that has come through and remains in the pores will be drawn out and smeared over the surface, giving it a murky appearance after it is finished. Use clear, warm water for the sponging operation, and allow the wood to become thoroughly dry before sanding, which should be done with fine, sharp paper. Let me lay stress on the word sharp, for if the paper becomes dull it will merely press the fibres down again instead of cutting them off.

Apply Stain Quickly

The staining should be done with a brush, and the stain should be applied as rapidly as possible and with little brushing. Do not let the stain drag; flow it on to cover the surface, then lay it off lightly with the brush fairly dry, so as to break the flow and prevent running. If one tries to put on a light coat of stain the work is almost certain to show streaks and laps. If the stain is too dark to permit flowing it on, reduce it to the desired shade. Never wipe a water stain with a rag, as it will smear the glue and stain over the surface, making it murky.

The condition of the work after staining will determine what the next operation shall be. If the wood is smooth and free from projecting fibre and fuzz, one may go ahead and fill it as soon as sufficiently dry, but if it is fuzzy it had better be given a coat of wash shellac, which is 1½-lbs. gum shellac dissolved in 1-gal. of solvent. Put this on with a brush, and, when dry enough, sand lightly with very fine paper before filling.

Dark Filler Used

To show the best advantage the finer markings of the wood, fill with a black filler to make a dark pore. Use pure silex for the base of the filler, with Vandyke brown ground in oil or japan for the coloring matter.

In some instances the filler is followed with a coat of varnish, without any additional preparation of the surface, the object to avoid the very thing we spoke about at the outset of this article. But a coat of shellac makes such a great improvement in the surface, and leaves the first coat of varnish in so much better shape, that the care necessary to overcome the difficulties incident to its use is worth while. As far as possible observe the following rules for applying shellac to mahogany: Use bone-dry bleached shellac, not more than 2-bs. shellac to 1-gal. solvent. The solvent should be methylated spirits of alcohol or a good grade of wood alcohol. Never use any of the cheap substitutes. Never use a shellac that will not thoroughly dissolve in the solvent. If bleached shellac becomes old or affected by a warm, damp atmosphere, only a percentage of it will dissolve, the indissoluble postion settling at the bottom of the receptacle. When one finds shellac of this kind he should discard it all so far as its use on mahogany is concerned. If not too bad it may be strained and used on oak or any of the light finishes, but not on mahogany. If it is such that it would not be wise to use it on any finish it should be returned to the factory, where it can be reclaimed by a process they have for treating this kind of shellac.

Use Shellac Carefully

Never apply shellac on mahogany near an open window, especially on a damp day. If one is putting on bleached shellac and it loses its transparency if touched with the brush after it has become partially dry, even though it recovers its transparency you had better stop long enough to investigate, as there is something wrong with either the shellac or the conditions under which it is being applied. It may be that the atmosphere of the room is damp, in which case you had better do something to dry it. Close the windows and turn on the heat—do something, anything, except to put on shellac under those conditions.

If putting on orange shellac and it takes on a greenish cast when touched with the brush after it has be-

come partially set, the trouble here is as described above in the case of the bleached, and the same rules given there to overcome the difficulty will apply here.

Imitating Mahogany

The comparative scarcity of solid mahogany has forced some to resort to the uses of gum and other substitutes for certain parts, even on the higher priced goods, while still using the fancy veneers on the more prominent parts of the article. Where one does employ a substitute he should try and make it look as near like the genuine article (and not as much unlike it) as possible. Do not stain it any darker than the mahogany veneer which it is supposed to match. If the following process is followed an expert will find it difficult to distinguish it from real mahogany: Prepare a small quantity of stain three or four times as dark as that used on the main body of the work. After the substitute has been stained and is almost, but not quite, dry, put a few stripes on it with the dark stain, using a fine pencil brush for the purpose, and just before these stripes get dry blend them out with a camel-hair blender. In making these stripes be sure and follow the natural grain or figure of the wood.

The writer has always deplored deception in the finshing of our native woods, and no deception need be practiced here. Because it cannot be distinguished from mahogany does not mean that it should be offered as such. Gum has merits of its own on which it can stand. and goods of this kind should be sold for what they are. Call it mahoganized gum, or anything you like, but call the gum, gum; and the mahogany what it is.—"Furniture Manufacturer and Artisan."

Metallization of Wood

The following is a method of treating wood to give it the appearance of metal. The wood is soaked for three or four days, according to hardness, in a solution of caustic alkali at a temperature of 75 deg. to 90 deg. C. It is then transferred at once to a bath of hydrosulphite of calcium, to which a saturated solution of sulphur in caustic potash is added after a lapse of 24 hours. The wood should remain in this bath at a temperature of 35 deg. to 50 deg. C. for about 48 hours. Finally it should be soaked for about 30 to 50 hours in a solution of acetate of lead at a temperature of 35 deg. to 50 deg. C. These successive baths take some time, but the effect is surprising. After the wood has been dried at a moderate temperature, it may be polished with a burnisher of hardwood, and acquires a brilliant metallic lustre, which may be heightened by previously rubbing the surface with a piece of lead, tin, or zinc, and using a glass or porcelain burnisher. The wood then resembles a metallic mirror, and it is very hard and strong.

Keeping Brushes in Condition

How many finishers have experienced trouble with curved bristles in their brushes. The blame for this is frequently placed at the door of the brush manufacturer and no doubt in many instances he is to blame. The manner in which the brush is used and the way it is wiped and put away at night will often account for this trouble.

A brush should be wiped on the flat sides and just to the end of the bristles. When finishing fancy pieces, such as carving and grill work, if the ends should happen to curl they can be straightened by dipping the brush in hot water.

Good brushes are too expensive and too hard to secure to be allowed to deteriate for the lack of a little attention.

Judging Light Value of Colors

Investigations made by scientists prove that dark blue reflects 6½ per cent. of the light falling upon it, dark green about 10 per cent., pale red more than 16 per cent., dark yellow 20 per cent., pale blue 30 per cent., pale orange nearly 35 per cent., while white 70 per cent. Here is valuable information for the woodworker who would increase his shop efficiency.

New Lumber Reckoner

The "Tudor Lumber Price and Freight Reckoner" is the name of a book recently issued by Tudor B Carre, 6034 Prytania St., New Orleans, La. This reckoner will enable anyone to instantly secure the delivered price of a given quantity of lumber, of a stated weight and at a stated price and freight rate. The tables run up to $80 per M. but any combination of figures may be reckoned. Full particulars may be had from the author. Price $2.50.

New British C. I. F. Ruling

The actual presence of an insurance policy among the documents to a "c.i.f." transaction is necessary in Great Britain in order to compel a purchaser to accept the consignment, the British High Court ruled recently in a decision of interest to Canadian exporters. Previously the submission of a certificate that the goods had been insured was all that customary procedure required.

The decision was to the effect that when goods were bought "cost, insurance and freight," the purchaser was not bound to accept the certificate of a broker, or anyone else, that they had been insured, but was entitled to call for the delivery of an insurance policy.

The ruling was the culmination of a suit brought against a purchaser who declined to accept goods because the insurance policy was lacking. His action resulted in a loss to the shippers, as the market had declined in the meantime. The shippers claimed that the acceptance of a broker's note or certificate of insurance instead of an actual policy was allowed by custom.

Possible Shortage of Fruit Boxes

At a meeting of West Coast box men held recently in Portland, Oregon, it was brought out that unless the fruit growers quickly place their orders for this year's requirements they will find themselves short of fruit boxes before the season is over and will not be able to market their full crop.

On account of figures that lumber commands today much of the material that would ordinarily go into box lumber will, this year, be cut into other stock. Unless the fruit packers awaken to the seriousness of the situation with which they are confronted the output of shooks in the Pacific northwest will not be sufficient to carry them through.

The question of standardizing fruit containers also came up for discussion.

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(6) Wax and polish.

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When we got it back, I saw in that glowing mahogany just how it must have looked to its master maker, back in Revolutionary times, when he called it done, and wondered how a thing so simple should look so right.

Manning Speed-grits did the work—every bit, to the garnet finishing paper on the last coat. I know, for I asked, and Gibson said in answer to my question, "*Difference?* When you been at it as long as I have you'll say there's a heap o' *difference* in sandpaper."

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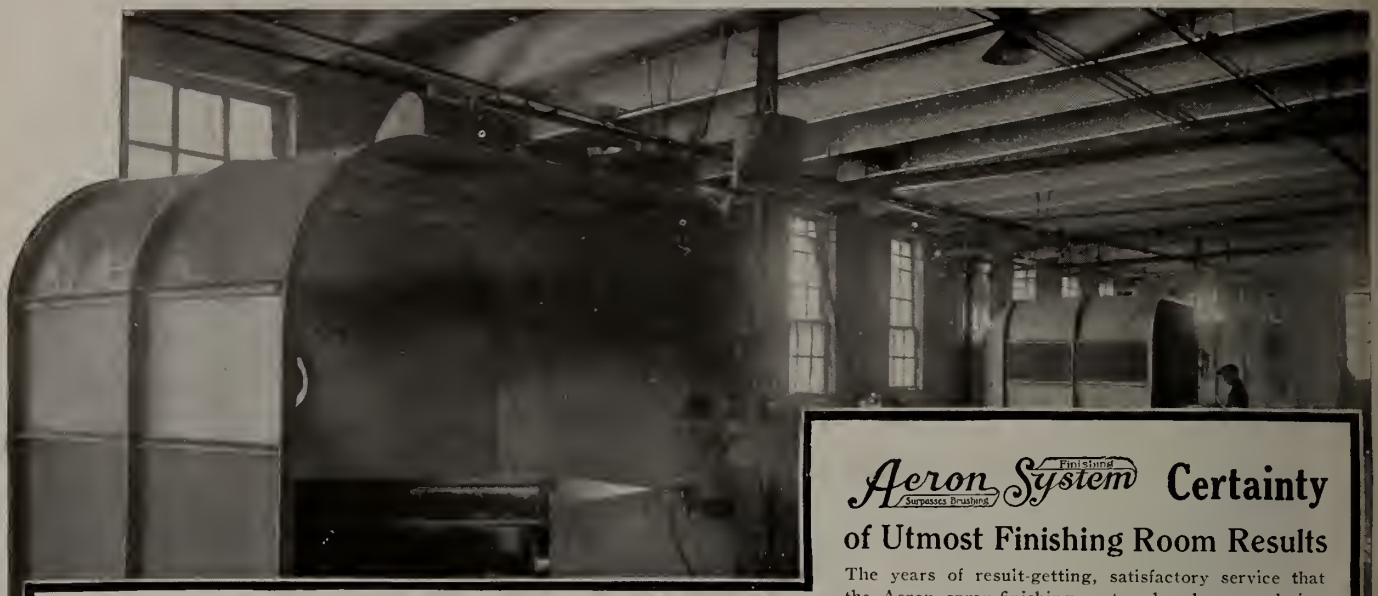

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Have You Had These Troubles?

Difficulties Met with and How they were Overcome—Uneven Drying Floor Caused Considerable Worry Until Discovered

By Superintendent

Volumes have been written on veneering, and probably all the difficulties mentioned in this article have been dealt with and methods of overcoming them explained in a much better way than I can do. As quite recently I have noticed furniture on sale in some of the best stores in our larger cities that showed slight defects in the veneering, it may not do any harm to touch on a few of the common troubles in making veneered goods, with some suggestions for overcoming them.

In the first place perhaps the commonest trouble is that the veneer joints are apt to show. This is most noticeable, generaly, in a large horizontal surface such as a desk top, where the light has a chance to show up even a slight defect. The same defect in a vertical face would perhaps not be noticed, but at the same time should not be there. The defect I refer to is not a bad joint but a very slight hair lineline crack in the varnish directly over the veneer joint. This defect is more common than some manufacturers realize and frequently does not make itself visible for some weeks after the goods are made and shipped.

Stock Not Properly Equalized

This fault is caused, generally, by the fact that all the moisture which had been absorbed by the veneers when the glue was applied, had not been eliminated before the varnish was put on, and sometimes by the fact that the veneer itself was not sufficiently dry when the veneering was done. Whatever the reason, I think it may safely be said that in all cases of this kind there has been a slight shrinking of the veneer itself and as the only place that there can be any actual movement is at the joint (on account of the veneer being held tight in place by the glue) it shrinks sufficiently, where it can—that is at the joint—to show the hair-line crack in the varnish. To overcome this, if you use animal glue, do not use a glue that takes too much water, make sure that your veneer is bone dry before being glued, and last and most important dry the veneered work thoroughly before finishing. A good plan is to put the veneered work through a special drying chamber before proceeding with succeeding operations.

Another common difficulty is blistering, or loose spots in the veneer. This is not so often noticed on the sales floors, as blistered goods do not often get that far but most factories doing veneered work have had this trouble "in process" from time to time. There are various causes for these blisters. Sometimes it is poor glue or with animal glue, glue of wrong temperature, sometimes uneven pressure in the presses and occasionally by the core stock or crossbanding being of such a hard non-absorbent material that the glue will not hold. A combination of two or more of these factors will sometimes accur. The remedies are simple and suggest themselves if the cause is located. First test your glue for strength, second, make sure that it is not overheated—if animal glue. Third, be sure that it is evenly spread and that pressure in the presses is even, and finally use suitable core-stock and crossbanding. I suppose at the present the last sentence should be qualified by saying: "If you can get it."

Care and Thoroughness Essential

One of the most essential characteristics in a veneer man is that he shall be careful and thorough, and it will be noticed that the above suggested remedies are little else than a suggestion that your head veneer man be careful in his details, because he is certainly aware of these remedies if he knows his business at all.

I will mention now a trouble that a certain factory had some years ago with part of its veneer work, one which gave a good deal of worry for a considerable time. The remedy eventually formed was so simple that it certainly should have been discovered earlier, but as a matter of fact the trouble had been cropping up occasionally for months before it was finally rectified.

Overcoming Warping in Desk Tops

The factory in question was making a number of tilting typewriter desks and the tops of these were of five ply material with quartered oak face. The tops of these desks of course had to be cut for the typewriter opening, and it was found that in a certain percentage of each batch the tilting top was inclined to warp. The greatest care was then taken with the materials, the glue, the drying and in fact it was thought with every detail of the work. Still the warping persisted. The manager noticed that when the tilting top of the typewriter desk was closed, it was nearly always the same corner that was too high, in other work the tops had a tendency to warp in the same way. It occurred to him at last that perhaps the warping was done in the drying, and on investigation it was found that the floor on which these tops were dried was slightly uneven and that the tops conforming to the shape of this floor in drying, had a tendency to remain that way when dried.

The curve being located, the remedy was simple, and thereafter the tops were dried on a perfectly level place and held in a level position when drying and the difficulty vanished.

There are difficulties in selecting, matching, jointing, taping, laying, and drying veneers, but the great remedy for all is a mixture of care, experience and common sense.

Matching Veneers for Color Most Important

North Exposure Best Light for this Work—Saves Considerable Time in Finishing Operations—Strong Glare Deceiving—Bizarre Figures Not Desirable

By R. N .Y.

The proper matching and shading of face veneers is becoming one of the prime essentials of first-class veneering. Time was not so long ago when very little, if any, consideration was given to the matching of veneers. With the great demand for built up panels in the construction of phonographic cases, however, it has become more apparent that the veneers entering into the construction of the cases must be properly matched for shade, as well as figure, if the full beauty of the fine stock is to be brought out in the finished article. One mismatched piece of quartered oak or other face veneer, has often spoiled the beauty of many a high-priced phonograph case.

The matching of the veneers, as far as figure is concerned, is not such a difficult task. Where skill is required is where it is necessary to match veneers, both for the figure and for color. I know of men who are experts in the matching of veneers, as far as figure or grain are concerned, but when they are put at color matching—harmonizing the veneers in such a manner that they will appear all one color when stained with a light stain—they are complete failures.

Good Light Prime Essential

This may not be due to any carelessness or neglect on their part, for undoubtedly they are doing their best. The chief reason for such poor results lies in the fact that the prime essentials in properly matching veneers for color, are understood by only a small number of veneer matchers.

A delusion that prevails among veneer workers is that in order to do a good matching job, it should be done in a bright location on the sunny side of the plant. This is the gravest error that can be made. It is the very reason that much of the veneer matched in a bright sunlight proves away off for color, and will often show up decidedly shaded when the stain is applied.

Experiments have shown that the most uniform and reliable natural light for matching for color is the north sky light. Veneers that are matched on the north side of the plant have proven invariably better matched than when the work was done in any other light.

Plenty of Light Required

The writer does not mean to infer by this that the matching of all veneers should be done in some dark, forsaken corner on the north side of the building. On the contrary, if the matching of veneers for shade is necessary, the most satisfactory results will be obtained when the work is done where there is an abundance of north light exposure. This light, combined with the skill of the average veneer matcher, will produce work that is as accurate for matching in figure and shade, as is humanly possible.

It is quite true that a bright south side exposed sunny room seems a more appropriate place for the matching of veneers (and this is true especially in the winter time) than the one situated on the cold north side of the shop, yet where the requirements of the product demand that colors or shades of veneers must be evenly matched, it becomes a hard task for the most expert veneer matcher to accomplish satisfactory results in the bright, sunny side located room for matching veneers.

Colors Deceiving in Strong Glare

As a rule the veneers will look properly mached as long as they remain in that room, yet when they are glued up, and the panels pass through the different stages of finishing, it will often appear that nothing but utter carelessness on the part of the workmen can be responsible for the great contrast in the matching of the shades as they appear when stained or finished.

Many plants are so situated that matching of veneers must be done the greater part of time in artificial light. In many plants it has been contended that the bright tungsten electric light would make the ideal light for this purpose. It is quite true that the same does prove quite satisfactory where matching of veneers is done only as regards the grain or figure. However, where matching for shade must be done, the bright electric light is not to be recommended. The ideal artificial light to select is the one which is capable of absorbing the excess of color shadows down to the proportion of daylight, so that the light produced will be as near a duplicate of color blending properties of natural daylight as possible, both in composition and effect.

It has been shown that the Welsbach mantle gas light comes the nearest of all artificial lights to daylight. It is true that the electricity and acetylene give a brighter light. These have the same effect in matching veneers for color as the effects of bright sunlight have. The Welsbach gaslight maintains a uniformity in color of light thrown off, and its rays and reflections of color composition are a much nearer approach to natural daylight than any other artificial means of light production.

Judging Value of Figure

When is a piece of face veneer properly matched? This is a question to which it is difficult to give a direct answer. The opinions or tastes of different individuals are so varied. The creation of a certain figure or grain out of a combination of several pieces of veneer, may strike one person as pretty, while another would look upon it with aversion. In matching for grain effects only the combination of grains or figure effects should be studied. The character of a combination of figures can often be materially influenced by a predominance of certain grains.

What mode or pattern of figured matched veneer is the most popular with the public? In this regard it would be well to advise the veneer matcher to steer clear of all fantastic designs or creations. Designs leaning towards natural everyday effects, such as flowers, mountain ridges and gullies, or similar creations, are in greatest demand and will always prove pleasing to the eye of the public. The veneer matcher, who takes nature as his guide, will always be capable of producing a pleasing lot of face veneers without regard to the predominance of the figure in the same previous to being matched.

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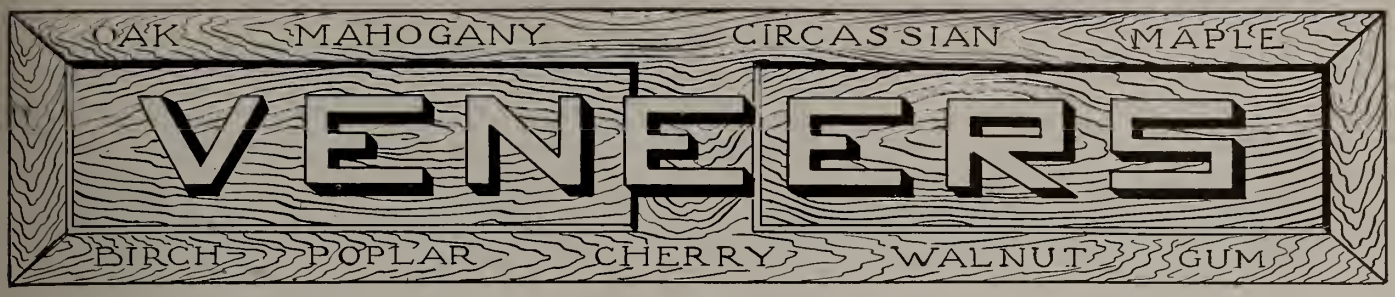
"PEERLESS" ROTARY CUT VENEERS

in Birch, Elm, Basswood, Maple, Ash and Beech for all purposes

Also hoops, liners and staves for manufacture of packages

Also "Peerless" Rock Maple, Beech and Birch flooring; Hemlock lumber; Lath, etc.
"Peerless" products are standard everywhere and you are always exercising Safety First in using them. Try us next time.
(When writing mention Canadian Woodworker)



Poplar and Walnut Veneers

We specialize in large size poplar veneers as we have extra fine poplar logs. We can cut veneer up to 10 feet square.

Our walnut veneer cannot be beat, both in plain and figured wood.

Write us for prices.

Central Veneer Company
Winter Ave. and Belt R. R., INDIANAPOLIS, IND.

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Southern Veneer Manufacturing Co., Inc.
LOUISVILLE, KY.

Importers and Manufacturers of all kinds of Sawed, Sliced and Rotary-cut

VENEERS

CARRYING

a large stock of selected Mahogany, Figured and Plain Walnut, Walnut Butts, Sawed and Sliced Quartered Oak and Sycamore and all other native woods.

1,000,000 Feet
QUARTERED RED GUM
to select from

WE Respectfully solicit your inquiries

In the Rush of Increasing Demand for Veneers

The natural tendency is for manufacturers to strive toward a greater output often at the expense of quality.

This is a mistake which the Lawrenceburg mills are carefully guarding against and buyers may be sure that in ordering "BATESVILLE QUALITY" Veneer they are getting goods manufactured in strict accordance with that standard of quality maintained for so many years.

Batesville Lumber and Veneer Co.
LAWRENCEBURG, IND.

SAWED QUARTERED White Oak Veneer

is the best buy on the market to-day and we have the following, available for immediate loading.

442,474′ 1/10″ x 6 to 9″.
273,135′ 1/20″ x 10 and 11″
157,594′ 1/20″ x 12 to 14″.
23,150′ 1/20″ x 15″ and up.

Prices on request

Memphis Veneer & Lumber Co.
MEMPHIS, TENN.

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

Veneers and Panels

PANELS

Stock Sizes for Immediate Shipment. All Woods. All Thicknesses. 3 and 5 Ply or made to your specifications

VENEERS

5 Million feet for Immediate Shipment

Any Kind of Wood Any Thickness

We are Chicago agents for WOCO FIR PANELS, and carry a full and complete line in all stock sizes and all thicknesses at our Chicago warehouse for immediate shipment.

J. J. NARTZIK 1966-76 Maud Ave., CHICAGO, ILL.

Mills: Grand Rapids, Minn. and DesArc, Ark.

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PANELS

AND

VENEERS

We can supply your wants

Milwaukee, Wisconsin

Litton Veneer Co.

Manufacturers

American Walnut, Figured Gum, Sliced Quartered Oak, and all Kinds of Figured Woods

Walnut and Quartered Oak Lumber

Office and Mill

ROCKFORD - ILLINOIS

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Manufacturers of

VENEERS

OAK - MAHOGANY - WALNUT

AND

LUMBER

22nd St. and So. Crawford Ave.

CHICAGO

Buyers of Veneers and Panels

will find it to their advantage to purchase from the manufacturers and dealers whose advertisements appear in this publication. They are progressive firms—the leaders in the business, which is a guarantee of good service and prompt attention to orders.

Give your business to the man who will spend his time and money to get in touch with you. He deserves it—if his stock and prices are right.

Estimating Red Gum Veneer By Weight

Outlines Advantages of Estimating Quantity Red Gum Veneer by Weight—Fair to Both Buyer and Seller

By Armin Elmendorf, Haskelite Mfg. Corp., Chicago, Ill.*

The following discussion outlines a plan for the purchase of red gum veneer, log run grade or sheet stock, on the basis of weight:

It is believed that the method proposed for measuring the number of square feet of red gum veneer in any particular shipment on the basis of weight is accurate, economical, and a justice to both buyer and seller.

It is proposed that veneer shall be bought and sold by the square foot, as heretofore, but that the square feet shall be estimated by weight in a manner similar to the estimation of the number of bushels of grain by weight. The latter procedure has been practiced by the grain industry for some time, and its advantages are quite generally conceded.

The proposal is a natural outgrowth of a practice which was adopted by the Haskelite Manufacturing Corporation in the fall of 1918 to check up losses in veneer during manufacture. The material was weighted as it passed from one department to another in the process of manufacture, and the losses in each department were determined. This naturally led to the weighing of veneer on its receipt from the mills, and then to the habit of estimating the square feet in any shipment on the weigh basis.

Has Proved Satisfactory

Our experience in estimating quantities of veneer by weight has proved so satisfactory that we have thought it our duty to the veneer industry to offer for general use a method which we believe to be more equitable, accurate and economical than that now in use.

A tentative table of weights has been prepared for general use in connection with red gum veneer. This table is called tentative because it has been necessary to base the table upon certain assumptions, and before such a table is finally adopted for general use it may be desirable to make changes in the assumptions upon which it is based. A change in assumptions will make slight alterations in the table. This table gives the weight in pounds per thousand square feet of veneer for each common thickness and for any ordinary moisture content.

We will say that one grade of veneer is to be made for shipment. Assuming that the veneer is of proper thickness and that the length is satisfactory, we must know two facts: one, the net weight of the veneer in the crate; and, two, the average moisture content of the veneer crated. The net weight of the veneer will commonly be obtained by weighing, first, the empty crate, and then the crate when packed with veneer; the difference is the net weight wanted.

Moisture Content Determined

The determination of the moisture content is already practiced by many manufacturers, particularly as a check against their drying ovens. The process is comparatively simple and should not be regarded as a hardship by any mill. One selects one or two fair samples of the veneer, possibly full length strips, marking the number of the crate thereon. He weighs these samples to an accuracy of ½ per cent. or a little better, and places them in an oven that is maintained at about the boiling temperature of water for about twenty-four hours, after which he weighs them a second time. The loss in weight expressed in per cent. of the dry weight is the moisture content.

The samples that are used in determining the moisture content need not be injured in the process, and may be included in another shipment of veneer of the same thickness.

Having determined the per cent. of moisture in the crate, one refers to the table and finds the number of pounds of veneer required to make 1,000 square feet at this moisture content. He divides the number of pounds of veneer contained by the crate by the number of pounds per thousand obtained from the table and in this way finds the number of square feet in the crate.

If one is making up several crates of the same thickness of veneer at the same time, it will be sufficient if all of the samples that are used for determining the moisture content are treated as a unit giving a single determination for the entire group.

Purchaser Can Check Up

When the veneer is received by the purchaser the procedure will be quite similar to that described above. Each crate will be weighed as received; a sample or two will be removed and marked for moisture determination; the empty crate will be weighed or its weight estimated. The moisture content may now be different from that at which the veneer was shipped, but if the moisture content is different the net weight will also be different, the difference being simply the weight of the water added or subtracted from the wood. The number of square feet will in no way be changed and the table will give the same result in square feet. It is important that the latter point be clearly understood.

It is well known that some gum trees show heavier wood than others. Tests have shown that the heavy wood is stronger than the light wood, the strength being almost directly proportional to the weight. The method in use at present for estimating quantities of veneer counts heavy wood and light wood on exactly the same basis. The proposed method pays for wood directly in proportion to its strength. The panel maker should be willing to pay a premium for superior material, and the veneer cutter is entitled to such premium.

Undersized Stock at Disadvantage

In the endeavor to make the best possible panels for engineering uses, it is essential that veneers that are supposed to be of a given thickness in panels shall actually have that particular thickness. We have recently had so much difficulty in obtaining deliveries of veneer of the full thickness that in many cases it has been necessary for us to plane these veneers down to the next usable size.

It may be noted that the present method of de-

*Extracts from address before Commercial Rotary Veneer Department of the American Hardwood Manufacturers' Association.

termining quantities places a premium on under-sized veneers. The labor cost per thousand square feet is no more on veneer that is somewhat thin than upon veneer that is of full thickness, but when the veneer is cut under size one gets more square feet from the same log.

It is not claimed that good makers of veneer deliberately intend to furnish thin veneer in order to get more square feet from the same log; it is claimed simply that the present method of estimating quantities gives the unscrupulous man an unfair advantage over the straightforward manufacturer, which condition it is desirable to eliminate.

Since the proposed method of estimating quantities is based upon weght at a particular condition of moisture, and since this weight is proportional to the thickness, it is evident that the method proposed does not place a premium on thin veneer.

More Accurate Than Measuring

The specifications for veneer are not at all definite as to the moisture content the veneer should have when it is measured for quantity. If a mill ships rotary cut gum veneer at 20 per cent. moisture content, while another ships it at 10 per cent. moisture, the first mill is delivering about 5 per cent. less veneer than the second per thousand square feet measure. This is due to the fact that veneer shrinks about 5 per cent. in width when the moisture content is reduced from 20 per cent. to 10 per cent. Here again the manufacturer who has been shipping dry material, that is, veneer having a moisture content less than 10 per cent., is not receiving full benefit for the work he does.

The proposed method of estimating quantities gives the same number of square feet in a given shipment, whatever may be the moisture content.

It is our impression that the proposed methods of estimating quantinties is thoroughly practical. It eliminates all measurements with tape; it is equitable both to the buyer and to the seller of veneer; it will save money to both parties to a like extent; it will place a premium on high grade stock; it will eliminate most of the opportunities of thinly cut veneer in even competition with that which is carefully cut; it tends to eliminate a part of the inequality in drying; it will eliminate many sources of error, and it will enable any shipment to be estimated as practically the same quantity of veneer, both by the shipper and by the purchaser.

Standardization of Rotary Veneers

By R. E. Becker.

One of the main follies and causes of delay in completing orders for rotary cut gum and poplar veneers are the many different thicknesses asked for.

If the furniture and piano manufacturers would condense their many thicknesses to three thin sizes, such as 1/28, 1/20 and 1/16 for cross bandings and face stock, and adopt also only three thicknesses, such as 1/8, 3/16 and 1/4, for core stock and drawer bottoms, they would have fifty veneer mills bidding for their trade where there are five now catering for odd sizes.

The furniture manufacturers especially have been pampered many years for their special desires and freak notions of designers, that now when no such stock can be had they blame the mill men for profiteering and delays, when the real causes are the many special thicknesses asked for, are an impossibility for a mill to keep up with.

Every veneer mill is confronted with such oddities as 1/11, 1/13, 13/64, 1/7, 1/6, 1/9, 5/32 and 7/32 thickness, because of some certain groove or angle that they want to fit into.

By adopting three thin sizes, 1/28, 1/20, 1/16, and three thick, 1/8, 3/16 and 1/4, would put all mills on a competitive basis, the same as lumber, and no overruns or left-over stock lots offered for close-cuts which demoralize the trade.

The standardization of six thicknesses would save a vast amount of detail and saving of storage room among the veneer mills and furniture factories.

I suggest that this question be taken up by the different trade organizations and encouraged by the veneer manufacturers to bring about a clearer understanding between the veneer manufacturers and woodworkers.

Veneer Construction for Pleasure Boats

Considerable veneer was used during the war in the British navy division of airplane work. It is safe to say, too, that there will still be a fair share of seaplane work calling for veneer. What looks like the big field of possibiities in this connection, though, is in the making of light pleasure boats. Already there has been enough experimental work in the use of plywood in small-boat making to demonstrate something of its possibilities. During the next few years we may expect quite an active time in the light pleasure craft industry, and this should furnish a very fruitful and widening field for the exploitation of veneer products.

Veneer Plant Nearing Completion

The modern veneer plant which is being erected at Grand Rapids, Minn., by J. J. Nartzik, Chicago, is rapidly nearing completion. Work has been held up by the non arrival of the veneer dryer, which is long overdue. When this machine is received it will not be long before the plant will be ready for operation.

Employees To Have Another Chance

The piano factory of Brimsmead and Sons, London, Eng., which had been shut down by the directors because of the alleged stalling, inefficiency and interfering tactics of its unionized employees, is to resume operation after all.

The airing of the differences between the directors and the workers in the press has had a reconciling effect. An announcement has been issued at the firm's head office, following a conference between a deputation of the workers and the directors, as follows:

"The employees stated their willingness to co-operate with the management and amicably expressed their confidence in the ability of both to achieve the desired results, and agreed that the factory be reopened for a probationary period under conditions to be mutually agreed upon between the workers and directors, and in this respect the directors expressed themselves as satisfied that the authorized statements made in the press detriment to the workers and the management were not supported by the facts."

In Line for Your Business

—with a large, attractive stock of veneers in Mahogany, American Black Walnut, Quartered Oak, Figured Quartered Gum and plain woods from which you may, if you desire, make your own selection. In our large, bright showrooms you may select directly from stock, or write, wire or phone your order, satisfaction is assured. Our service will interest; our quality will please.

Toronto Veneer Company, Limited

1100-1104 Queen St. West - TORONTO, ONT.

Walnut and Quartered White Oak Veneers and Lumber

Prompt Delivery

LONG-KNIGHT LUMBER COMPANY

INDIANAPOLIS - - - IND.

Little Hope of Early Reduction

Greater Production of Lumber Sole Solution—Industry Facing Many Difficult Problems—Huge Requirements of Certain Industries

By A. E. Clark

A stirring address on "Lumbering and the lumber markets of to-day," as far as methods, production, prices and demand are concerned, was delivered before the Electric Club in Toronto by A. E. Clark, of Edward Clark & Sons, Toronto, retiring president of the Wholesale Lumber Dealers' Association.

Mr. Clark considered his subject from many standpoints, showing how the lumbermen had year after year been facing increasing costs, the extent of which the public knew but little. He dealt with various phases of the calling both present, past and prospective, and referred to the part the lumberman had played in the war. They had carried on notwithstanding the industry had, probably, given more men to the forestry and other corps than any other branch. Lumbermen were, from their experience in outdoor life, particularly well-fitted for conducting operations in the forests of France, England and Scotland.

Mr. Clark did not hold out much hope for an early reduction in the prices of lumber, which, after all, are regulated by the law of supply and demand. There is an abnormal shortage to-day, owing to the tremendous requisitions brought about by the resumption of building after a cessation of six years and the fact that new uses for wood are being found on every side. It had been expected in some quarters that the lumber manufacturers could automatically rise to the occasion and meet this unprecedented state of affairs without the slightest difficulty. This is the view held by certain persons who did not understand the nature, extent and handicap of the lumberman's work. Those who are in a position to appreciate what he is up against, realize that he is doing his level best to cope with the situation in spite of the inefficiency of labor, its restlessness and excessive demands. In the matter of greater production, co-operation and assisting the work of reconstruction, the lumberman is not shirking his duty or taking any undue advantages.

Increase Capital or Decrease Production

"The lumber reaches the market approximately two years from the time you put the money into the product. If we had a reduction to-morrow the effect would not be felt till 1922," declared Mr. Clark.

The speaker reviewed the rapidly increasing costs in production during the last five years and pointed out the many little details which actually made the lumber business a precarious one from the point of view of the investor. "We must either increase our capital or decrease our production," he said. "There was never a greater need for production; yet we cannot increase our capital because people won't invest in standing timber at 7 per cent. when there is always the possibility of it being burned down."

Referring to the present high cost of lumber, he stated that there was no commodity which had not increased far more than lumber. "It may be lost sight of that during the war while the manufacturer was straining every effort and the farmer was endeavoring to get every acre of his land under cultivation, the lumberman was not idle," he continued. "We were fully as hard hit as any other industry and now that we are returning to normal times we are called upon to fulfill unprecedented housing demands. And we have no surplus on hand, for that was eaten up in supplying war needs." The lumberman, he pointed out, had supplied tremendous quantities of stuff for army cantonments, for trench revetment, and above all for crating purposes, and, therefore, he was no more able to take care of the unprecedented demand for building materials than was the clothier to fulfill the demands made on his industry.

Labor and Transport Difficult Problem

In addition to a general shortage of labor, which had been enhanced by the war, the lumberman had to contend with a scarcity of transport. Softwood could be floated down streams, but that meant that crews had to accompany the logs and roads had to be built to carry supplies along behind them. Hardwood must either be drawn out or other means of transportation used.

Logging locomotives, he pointed out as another instance of increased costs, cost only $13,000 in 1913. Now they cost $40,000, while steel rails, which in 1911 cost $22 a ton now cost $63 a ton—when they were obtainable. Sawmill costs had increased from 600 to 900 per cent.

We have the law of supply and demand, which very largely regulates our prices," he said. "For every 1,000 feet of lumber we produce we have ten gentlemen waiting for it and naturally that increases the price. Increased production is our main issue."

What Certain Industries Require

Both Canada and the United States were being called upon to supply the housing needs of Great Britain and France and this condition only aggravates the pressing demand. In the United States in 15 principal cities permits since the war had increased 182 per cent. and building values had increased 208 per cent. In Canada 11 cities reported a 45 per cent. increase in permits and a 77.7 increase in building values.

The automobile building programme for 1920 too had increased and at present it contemplated the construction of 2,900,000 cars, a condition which meant the use of three billion feet of hardwood lumber. "Formerly," he said, "the major portion of this work was taken care of by the oak and ash producers in the Southern United States. This wood was then selling at $90 a thousand. It has now increased to $385 a thousand and the automobile manufacturer has consequently turned to the northern hardwood fields for his supply. We do not know how to take care of this demand." Gramophones used up a tremendous quantity of hardwood, as well, he said. He cited the case of one factory he had visited where ten million feet were used annually.

Don't try to wipe or oil machines while in motion; stop the machine first. It's safer.

TRADE MARK
NICKEY BROTHERS INC
LUMBER VENEERS
NB
NONE BETTER
MEMPHIS
TENN.
U.S.
A.
For Enduring
Beauty use
N.B. Quality Veneer

Quality at the Very Beginning

Write for Samples and Prices

Human efficiency together with the best of modern mechanical equipment are the outstanding factors in producing N. B. Quality Veneer. Back of both, however, lies a primary quality that is the keynote of its exceptional value. This is the selected quality of the logs we use.

Our corps of trained log buyers go continually from one great log heap to another, selecting fine clear logs, which will grade up to the N. B. Quality standard.

On arrival at our mills every log is further classified, graded and marked for that particular department to which it is best fitted, whether it be sawed or sliced veneer, rotary cut veneer or into lumber. N. B. Quality is thus safeguarded through every process from log to finished product.

Concentrate Your Purchases and Save Money

Through Buying

Sliced Figured Red Gum and Rotary Cut Gum Veneer.
Sawed and Sliced Ash, Poplar and Gum Grand Piano Rims.
Sawed and Sliced Quartered Oak.

In Cars with Band Sawed Hardwood Lumber

Carload Buyers get Closer Prices, save freight on local shipments and eliminate damaged goods.

NICKEY BROTHERS INC.

MEMPHIS, TENNESSEE

Information and Inquiries

You are cordially invited to make use of this department

Quantity of Pipe for Kiln

Silver Hill, March 25, 1920.

Editor "Canadian Woodworker":—

I intend to follow your suggestion and put the pipes below the rails. The kiln is 8′ x 20′ x 8′. Could you tell me how many feet of 1″ pipe I would have to instal to heat the kiln, using exhaust steam from a 10 h.p. engine, augmented by a certain amount of live steam.. Where can I secure suitable instruments, such as wet and dry bulb hygrometer.

Sincerely yours,

Jas. Gilkes.

The quantity of feet required would, to a certain extent, depend on how you lay the pipes. You need at least 850 lineal feet, and if you use headers with the holes 1½ in. centres you might lay 1000 feet. The former figure should enable you to maintain a temperature of from 165° to 175°. The instruments may be secured from the makers of dry kiln equipment advertising in the Canadian Woodworker.

Construction of Small Dry Kiln

Replying to an inquiry in the March Woodworker regarding the construction of a small dry kiln, I would advise the use of the moist air system for this purpose. I would not build the kiln too small, although their requirements are small at present they are bound to grow, and nearly every woodworking firm finds themselves short of this same drying capacity. Besides it is better to have ample room so that it will not be necessary to rush the drying. Better results are obtained if you can keep the temperature of a kiln at 150° instead of 200°. I would advise a kiln to hold six trucks of lumber of 3000 feet each and the building should be 42 feet long inside the curtains by 18 feet wide. If lumber was all 12 ft. long 16 ft. wood be ample width, but lots of lumber is as much as 16 ft. long and there should be room for a man to pass at each end. The room should be 10 ft. high above the rails and should have two curtains at each end about six inches apart. The heating surface should be a double coil of 1 in. pipe laid between each rail of the track with drop headers at each end, and discharge pipes from the ends of all headers at both ends of kiln to a trap, preferably a Moorehead, back to boiler trap which will return the condensation back to the boiler at a high temperature and will result in quite a saving in fuel besides keeping the coils entirely free from water. There should be a double coil of 24 pipes in a row two rows deep between each track. That would make 96 pipes in all and should extend to within two feet of each end of the kiln. In regard to the ventilation, on page 82 of the December Woodworker will be found a cut and description of the best method of ventilating a dry kiln. It is the method employed by a number of the best makes of kilns. If these air ducts are placed as described up through the wall of the kiln letting the frsh air in at the bottom of the kiln under the pipes there should be no trouble in getting good results.—G. H. H.

Securing a Fumed Finish

Toronto, April 2, 1920.

Editor "Canadian Woodworker":—

We were very much interested in the article on fumed oak, which appeared in the March "Canadian Woodworker." We manufacture phonographs as a small way and was wondering if you would favor us with a few suggestions for securing a fumed finish.

Sincerely yours,

R. H. Ralston & Son.

If you are manufacturing in a small way you may not care to go to the expense of fitting up a fuming box. In that case would suggest that you secure a good fumed oak stain from some of the finishing material manufacturers who advertise in this journal—they are all reliable firms—and use that with a shellac and wax finish. On the other hand, you could construct a small, air-tight box—it would be better if you could run a steam pipe through it—and fume by placing cabinets in the box with a dish of full-strength ammonia and leave until the desired color has been secured. There are many solutions used to hurry the fuming, but as they all tend to raise the grain it might be well, in your case, to fume on the raw wood. After the desired shade has been reached, judge the color by wetting the finger and making a mark on the wood, the tone should be equalized by touching up any light spots or streaks. The finishing coats consist of two or three applications of shellac and a coat of wax.

Address of Association

Sudbury, March 25, 1920.

Editor "Canadian Woodworker":—

Can you favor us with the name and address of the Secretary of the Wholesale Sash and Door Association of the United States, and also the name of the Canadian representative should there happen to be one.

Yours truly,

The Evans Co., Limited,

This organization is known as the Wholesale Sash and Door Association. The headquarters are in the Steger Building, Chicago, Ill., and M. F. Godfrey is secretary. We do not think that they have a representative in Canada.

Jacobean Balusters Required

A subscriber would like to get in touch with some woodworker in a position to supply about 50 oak Jacobean balusters and six newels to match. The publishers of this paper would be glad to have the names of any firms who operate spiral turning machines and who could fill this order.

High-Grade Handles Wanted

A manufacturer requiring a quantity of high-grade wooden handles, suitable for tea and coffee pots in aluminum and nickeled brass. If you are in a position to make these handles kindly communicate with the publishers of this paper.

The higher the wages paid in a mill the greater the tendency to install labor-saving machines.

You cannot make good furniture out of green lumber.

Box Shooks Wanted in Britain

A large British soap manufacturer who has been buying quantities of box shooks from Sweden is desirous of securing his requirements in Canada. The material is bought cut to accurate dimensions, being smooth sawn and usually formed of two pieces tongued, grooved, glued and smooth on side so as to take a good impression when put through the two color printing machine. The following specifications indicate some of the normal requirements of the firm:

23¼ x 13½ x 5/16 inch.
23¼ x 12 x 5/16 inch.
21⅞ x 13½ x 5/16 inch.
21⅞ x 12 x 5/16 inch.
19⅝ x 8 x 5/16 inch.
17 x 8¼ x 5/16 inch.

Boards are also purchased cut to certain lengths, but varying as regards widths. The widths would be from 4-inch upwards in steps of ½-inch and the size—

21⅞ x 5/16 inch.
17 x 5/16 inch.
13 x ⅝ inch.
15 x ⅝ inch.

All the quotations received so far from Canada have been much too high, and in order to give some idea of the prices which would have to be equalled, if not bettered, the following are the Swedish quotations on certain sizes:

23¼ in. x 13½ in. 5/16 in.—25s. 10d. per 100 pcs., f.o.b. Gothenburg, Sweden.

21⅞ in. x 13½ in. x 5/16 in.—24s. 0d per 100 pcs., f.o.b. Gothenburg, Sweden.

17 in. x 8¼ in. x 5/16 in.—21s. 3d per 100 pcs., f.o.b. Gothenburg, Sweden.

The freight from Gothenburg to England is about £6 per standard. Timber in varying widths averaging 5-inch, not tongued and grooved, lengths from 16-inch to 23¼ by 5/16-inch in thickness, average £30 per standard, f.o.b. Gothenburg, while the prices delivered to the works in Bristol average £38 10s. 0d. The kind of wood usually supplied from Sweden has been white and red fir, but the former is preferred. The timber is usually cut some months previous to shipment and air-dried. It is doubtful whether steam or kiln-dried wood could stand the damp climate of England. The boards are generally imported in bundles of 25 pieces bound by wire.

Anyone desirous of quoting on these requirements can secure the name of the enquirers by applying to the publishers of the "Canadian Woodworker."

Opportunities in Wood Toys

A report read at the annual meeting of the Toy Manufacturers' Association of the United States, held in New York, December 17th, showed an increase in volume of business from $13,000,000 in 1914 to more than $21,000,000 in 1919. This great increase is due largely to the fact that American made toys have supplanted the German product in this country.

At a recent toy exhibit held in Chicago, it was interesting to note that the majority of the most original toys were made of wood. Many of them are in the form of comical animals and birds with jointed or movable parts, most of them on rollers. Toy building material was also conspicuous. Mechanical construction outfits, formerly supplied only in stamped metal, are now being produced in sets chiefly or entirely of wooden pieces. There is almost an unlimited field. An original design attractively executed finds a ready sale and at attractive prices. Toys can be made a most attractive side line to a box factory or other wood working plant.

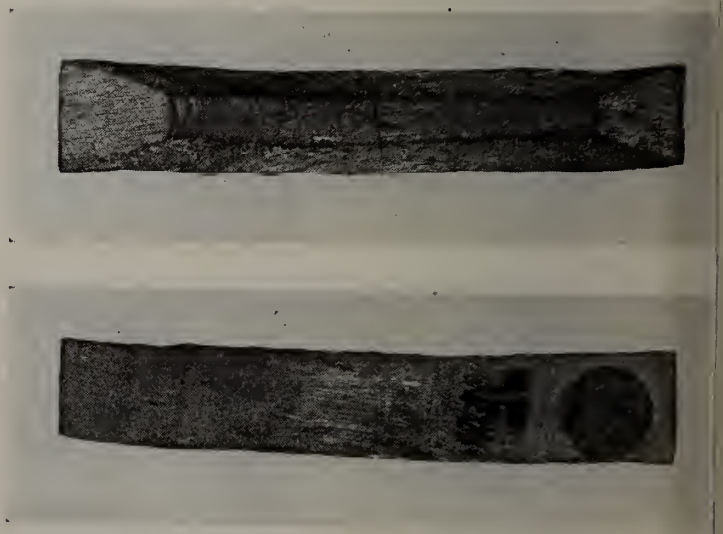
Wood Carving Losing Favor in Britain

A correspondent in an English journal bewails the decline of the British wood-carver. He says: "The machine has superseded hand-work for elementary or creap jobs; but I believe there is plenty of real ability in the country. Given the demand, at an adequate price, I do not hesitate to say that the work could be done. Grlinling Gibbons did not have to work "to a cut price"! Even so, there are few signs of a revival of the taste for good carving on the part of the public. The labor-saving crusade is all against much carving on pieces of furniture, rather than elaborate carved decorations. From the point of view of the wood-carver this is to be regretted, as it is artistically, because wood-carving is a beautiful craft and well worthy of preservation in a state of full prosperity."

Wanted—Hickory Blocks by the Million

A firm of hardware importers of London, England, who have been acting as agents for Canadian manufacturers, are receiving heavy inquiries for hickory wood shoe and boot stiffeners, bevelled, cut and steamed to curve as in sample shown below.

These stiffeners are wanted in the following dimensions: 4½-in by ⅛-inch, 15 million pieces; 4-inch



Shape of block required

by ¾-inch, 10 million pieces; 3½-inch by ⅝-inch, 10 million pieces in bags of 30,000 pieces. Any manufacturer who is interested in this business can secure the name of the firm from the publishers of the "Canadian Woodworker."

Fire prevention is the duty of every citizen.

Think safety and the doctor won't have to think of you.

You need all of your fingers and all of your toes. Be careful in the factory.

SERVICE

means giving the very best that is in you. No word has been over-played in modern advertising copy more than the word "service." In practical use the word "service" has a relative significance. The advertiser who honestly desires to live up to his advertised service, naturally has as his goal 100% satisfaction in all particulars of his dealings with his customers.

In reality, though, that man who advertises service and then gives the very best in him in his struggle to make it 100%, is giving service in the true sense even though he fall down 33% from his expectations.

Frankly, that is exactly our position to-day. Faced with a tremendous demand for our products and a woefully short supply, on top of which were heaped unheard of weather and labor difficulties, we have not hesitated to invest thousands and thousands of dollars in new mills and new logging equipment, and have spared no effort to get loaded cars out. However, the best we could do was not adequate under the conditions. We are still behind although hopeful of again getting our heads above the mud and mire that all winter has deluged southern timberlands.

At least we can say we have given the best in us and will continue to do so until our service does finally go back to approximately 100% level.

ATCo

— *Manufacturers* —

Southern
Hardwood Lumber
Veneers

Anderson-Tully Co.

Memphis - - Tennessee

News of the Trade

The Decca Portable Phonograph Co. was recently registered in Toronto.

Col. Peuchen, of McLeod, Alta., contemplates erecting a lath mill and box factory.

The Canada Spool & Bobbin Co., Walkerton, Ont., are erecting an addition to their factory.

Ewing & Murphy, wood turners, Toronto, contemplates installing an automatic turning lathe.

The plant of the Pembroke Organ & Piano Co., Pembroke, Ont., was recently damaged by fire.

C. N. Clendening, Niagara Falls, Ont., is giving up his planing mill and disposing of the equipment.

The Pearce Lumber and Planing Mill Co., Marmora, Ont., are considering disposing of their business.

The saw and planing mill of the Mayo Lumber Co., Sahtlam, B. C., were completely destroyed by fire.

H. Raymond, St. Urbain St., Montreal, upholsterer, is in the market for a number of woodworking machines.

The Harris Wool Products, Limited, Toronto, manufacturers of sectional houses, recently registered in Montreal, Que.

The Ingle Planing Mill, Lindsay, Ont., has been purchased by Robert Naylor from the trustees of the Ingle estate.

The saw and planing mill of Hector Giroux, St. Augustine, P. Q., was completely destroyed by fire. The loss is about $3,000.

The 21st annual convention of the National Association of Box Manufacturers was held in Chicago, Ill., on April 7th, 8th and 9th.

The Bellamy Furniture Co., Moose Jaw, Sask., were recently authorized by supplementary letters patent to increase their capital stock to $200,000.

The Chesley Furniture Co., Limited, Chesley, Ont., have taken out group insurance in the amount of $1,000 for each of the 62 men in their employ.

In connection with the new saw mill of the Nicola Pine Mills, Limited, Merit, B. C., a modern planing mill has been equipped and put in operation.

E. H. Shockley, New Westminster, B. C., has taken out a permit for the erection of a woodworking factory at Market Place Circle, New Westminster, B. C.

The large dry kiln recently completed at the plant of the Singer Mfg. Co., Ltd., St. Johns, Que., is reported to have collapsed. No particulars are available.

Joseph Blais, Levis, P. Q., hase secured a suitable building in Cap de la Madeleine, P. Q., and contemplates installing equipment to manufacture sash and doors.

The Otterville Manufacturing Co., Limited, Otterville, Ont., have been authorized by supplementary letters to increase their capital stock from $20,000 to $50,000.

The Pepler Bros. Co., Limited, Hanover, Ont., were recently incorporated to manufacture and deal in furniture and woodenware of all descriptions. Capital $500,000.

Recent Montreal registrations include the Canada Floor Lamp Co., the Montreal Stool & Cabinet Co., the Mozart Talking Machine Co., and the Memorial Workshops Inc.

The Luxury Upholstering Co., 2288 Cadbora Bay Road, Victoria, B. C., have been organized to manufacture all kinds of upholstered furniture. W. Vise is the manager.

C. A. Gingras & Sons, Sherbrooke, P. Q., have awarded a contract for the erection of a sash and door factory, 50 ft x 100 ft., and dry kiln, 15 ft. x 20 ft. Cost approximately $10,000.

A fire in the packing room of the Baetz Bros. Furniture Co., Limited, Kitchener, Ont., destroyed packing materials to the value of about $5000. The loss is fully covered by insurance.

N. Blain, 68 Casgrain St., Montreal, P. QQ., is erecting an addition to his carriage factory at a cost of $3,500. The new building will be a two-storey structure 75 x 25 of brick construction.

It is reported that the Laminated Materials, Limited, Sappenton, B. C., manufacturers of plywood and bass, are considering removing their plant to a more suitable location on Lulu Island.

The Memorial Work Shops, Montreal, P. Q., have installed a complete woodworking plant and finishing room in connection with their work for returned soldiers. J. S. Heath is in charge.

The plant of the Oakville Basket & Veneer Co., Ltd., Oakville, Ont., was recently destroyed by fire, loss $60,000 to $80,000. The company have not definitely decided whether they will rebuild or not.

Messrs. Stevens & Groff recently purchased the planing mill and sash and door factory at Beamsville, which was conducted by James A. Hewitt. The new concern will be known as the Beamsville Planing Mill.

John Stirrett & Son, of Port Arthur, Ont., together with other Port Arthur interests, recently purchased the plant of the Port Arthur Waggon Works. The amount involved is said to be slightly under $300,000.

The premises of the Stratford Bed Co., Limited, Stratford, Ont., were recently entered by burglars. Some drawers were pried open and the office thoroughly ramsacked, but nothing of value was secured.

A partnership known as The Canada Toy & Woodworking Manufacturing Company, Winnipeg, was recently formed, organized, and registered to carry on a business in the manufacture of toys and wood products.

The Stratford Mfg. Co., Limited, Stratford, Ont., have secured a number of orders from South Africa for their folding and camp chairs. A car of folding chairs were recently exported to that Dominion, and others will follow shortly.

The Gray-Dort Co., Chatham, Ont., manufacturers of the Gray-Dort automobile, have taken over all the buildings of the William Gray's Sons, Campbell, Limited. This marks the passing of one of Canada's oldest carriage factories.

The Aircraft Manufacturing Co., of London, England, have written the publicity commissioner of Vancouver, B. C., stating that they are desirous of securing a suitable site to establish a Canadian branch to manufacture aeroplanes.

The Canada Auto Parts, Limited, Montreal, recently were incorporated to manufacture and deal in automobiles, vehicles, furniture, and woodenware. Capital $49,000. N. Solomon and I. Bollon, of Montreal, are two of the incorporators.

The Box Crating & Manufacturing Co., Sidney Island, B. C., has been organized by the Sidney Island Brick & Tile Co., to manufacture crating and broom handles. J. S. Skeen is president and manager. About forty hands will be employed.

Simmons Limited, Montreal, P. Q., have taken over the mattress manufacturing plant and business of Hutchings & Co., Ltd., St. John, N. B. It is understood that this business will be enlarged and the operations conducted on a much wider scale.

H. Mathieu, Limitee, Montreal, P. Q., were recently incorporated to carry on a business as manufacturers of sash, doors and other wood products. Capital stock $49,900. H. Mathieu and F. R. Paquet, of Montreal, P. Q., are two of the incorporators.

The rights for Eastern Canada of the well known Way Sagless Spring have been acquired by the Canadian Mersereau Co., Ltd., Toronto, Ont., and the Parkhill Bedding Ltd., Winnipeg, Man., have taken over the rights for the Western provinces.

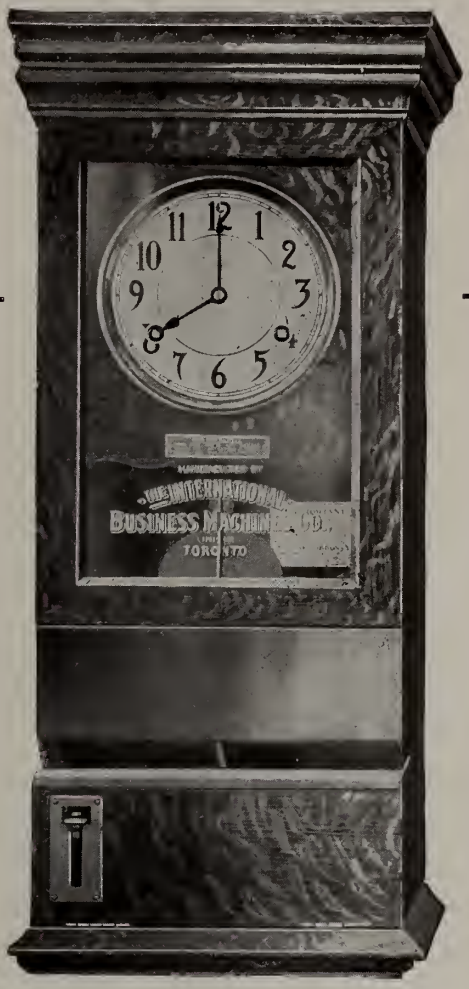
A by-law is to be submitted to the ratepayers of Thessalon, Ont., authorizing the city council to give a bonus of $500 to J. E. Asam to assist in moving his basket plant to Thessalon, and to grant exemption from taxation for a period of ten years.

Shipbuilding is still active in Nova Scotia. The keels recently laid include one for a 138-ton vessel by the K. & S. Shipbuilding Co., Yarmouth, N. S., and two for fishing vessels by the Nova Scotia Shipbuilding & Transportation Co., Liverpool, N. S.

The Echange Mount Royal, Limited, Montreal, P. Q., have been incorporated to manufacture pianos, phonographs and other musical instruments. Capital $99,000. A. Paten aude and P. Charlebois, music merchants, of Montreal, P. Q., are two of the incorporators.

The Wiarton Furniture Co., Limited, Wiarton, Ont., will soon be shipping. This firm recently took over the building formerly occupied by the Canada Casket Co., and have installed equipment to manufacture a line of dining and

Shows up the Efficient Workers



A Modern International "Job" Time Recorder

Shows up the "Drones"

IT'S A DIVIDEND MAKER

The shop where "production" counts finds the International Job Time Recorder a wonderful assistance. It gives PRINTED, unchangeable time records on every job—the exact time it started, the exact time it was finished. Every minute of working time can be accounted for, and, just as important, every minute of time that is not occupied.

Let us send you our latest printed matter.

International Business Machines Co. Limited

WINNIPEG
227 McDermott Ave.

VANCOUVER:
110 Water Street

OTTAWA:
190 Queen Street

(TIME RECORDER DIVISION)
Royce and Campbell Avenues, TORONTO
FRANK E. MUTTON
Vice-President and General Manager

HAMILTON:
2 Empire Bldg.

MONTREAL:
Sales Office:
212 McGill Street

WALKERVILLE:
Holland Bk.

(Also Makers of Dayton Scales and Hollerith Electric Tabulators)

bedroom furniture. Deliveries are expected to commence the first of May. C. Hill, formerly manager of the Wiarton branch of the Canada Furniture Manufacturers, Limited, is guiding the destinies of the new company.

The Hamilton Canoe Co., Limited, Hamilton, Ont., have been incorporated to manufacture and build canoes, boats, launches and other water and ice vehicles. Capital $40,000. J. Henderson and R. Shields, both of Hamilton, Ont., are two of the incorporators.

His Master's Voice, Limited, Montreal, P. Q., were recently incorporated to manufacture and deal in gramaphones, talking machines and other musical instruments. Capital $1,500,000. W. Bain and E. H. Stewart, accountants, Toronto, Ont., are two of the incorporators.

The Ericson Marine & Aircraft, Limited, Toronto, Ont., have been incorporated to manufacture and deal in aeroplanes, hydroplanes and vehicles of all kinds. Capital stock $250,000. Among the incorporators are F. J. Hughes and L. J. Phelan, solicitors, both of Toronto.

Fire broke out in the factory of Henry Morgan & Co., Limited, Montreal, doing damage to the extent of about $1500. The fire brigade, organized among the employees, set to work to extinguish the blaze and practically had the fire out upon the arrival of the civic brigade.

The Repeatograph Co. of Canada, Limited, Montreal, P. Q., were recently incorporated to manufacture and deal in phonographs, talking machines and other musical instruments. Capital $10,000. J. J. Meagher and J. E. Conlin, of Montreal, P. Q, were two of the incorporators

O'Donnell & Morrissette, Limited, Sherbrooke, P. Q., were recently incorported to manufacture and deal in furniture, musical instruments and other wood products. Capital $99,000. J. F. O'Donnell and N. Chevalier, merchants of Sherbrooke, P. Q., are two of the incorporators.

A company known as the Dominion Wood Specialty Co., Hespeler, Ont., has been formed to manufacture hockey sticks. At present a plant is being installed which will be in operation shortly. Edward C. Salyerds, the manager, has had a wide experience in the manufacture of this product.

The Dominion Store & Office Fixture Co., Limited, Montreal, P. Q., have been granted a provincial charter to manufacture and deal in furniture, sashes, doors, and other articles of wood. Capital $10,000. Two of the incorporators are B. Shulman and S. A. Shulman, both of Montreal.

The St. Lawrence Broom & Brush Co., Montreal., P. Q., have been reorganized R. Langlois has bought out the interest of one of the partners and has put enough capital in to enable the business to be conducted on a cash basis. The output of 700 dozen a week will shortly be raised to 800 dozen.

The Toronto Woodworkers, Limited, Toronto, Ont., were recently incorporated to manufacture and deal in furniture, cabinets, musical instruments and all kinds of woodenware. Capital stock $100,000. Among the incorporators are G. H. Lovatt and A. Pickles, students-at-law, both of Toronto, Ont

The Alma Ship Building Co., Sussex, N. B., have been incorporated to manufacture and deal in ships and vessels and to take over as a going concern the shipbuilding business of T. White & Son, Ltd., Alma, N. B. Capital $24,000. W. G. White and H. H. Reid, of Sussex, N. B., are two of the incorporators.

The Hamilton Canoe Co., Limited, Hamilton, Ont., has taken over the manufacturing end of the business conducted by H. L. Bastien Co. This puts the Hamilton Canoe Co. in a position to build or repair any kind of boat. A large staff of experienced boat builders is employed and all work is going through promptly.

Haley & Sons, Limited, St. Steven, N. B., have been incorporated to conduct a general woodworking and lumber business and to take over as a going concern the business carried on under the name of Haley & Son. Capital $299,000. H. E. Haley, J. L. Haley and H. R. Haley, of St. Steven, are among the incorporators

The Malcolm & Hill, Limited, Kitchener, Ont., have been incorporated to manufacture and deal in furniture and all kinds of upholstering goods and to acquire and carry on the business of the D. Hibner Furniture Co., Kitchener, Ont. Capital $600,000. G. H. Sproat, and C. H. Kemp, of Toronto, Ont., are two of the incorporators

Carriage Factories, Limited, Orillia, Ont., have disposed of the Heney carriage factory, Montreal, to Fry's, the well known English manufacturers of chocolate. The truck bodies and winter automobile tops which were made in this Montreal plant will henceforth be maunfactured in Orillia. Part of the Fisher plant will be used for this purpose.

C. H. Cudemore, a well known British lumberman, recently arrived in Vancouver in the interests of the Twentieth Century Building Co. This company has been formed in Britain for the purpose of importing knock down houses from B. C. Mr. Cudmore is of the opinion that this trade would reach large proportions in the very near future.

The activities of John Arbuthnot, inventor of the demountable lumber carrying ship, have been transferred from Victoria, B. C., to Seattle, Wash. Mr. Arbothnot recently stated that the actual construction of one of these vessels would be commenced in Seattle in the very near future. This ship will b constructed of timber for the British market.

The planing mill of C. B. Williams Co., Toronto, was recently destroyed by fire. The loss runs from $20,000 to $25,000. The lumber stored in the yard was badly scorched by the flames. The W. A. Moore Co., manufacturers of mentels who occupied a part of this building suffered a loss of $3,500, which was covered to the extent of $1,000 by insurance.

The Gerard Wire Tying Machine Co., Limited, Hamilton, Ont., manufacturers of wire tying and baling equipment, who were incorporated under a Dominion charter, have been granted a provincial license to carry on business in Ontario, provided the capital used does not exceed $60,000. W. S. Bauer has been appointed vice-president and general manager.

The Pellerin Pelton Music Co., Limited, Ottawa, Ont., have been authorized by supplementary letters patent to take over the firm or Arthur Pellerin Co., of Ottawa, and to manufacture and deal in musical instruments, home and office furniture. Capital stock $100,000. A. Pellerin and C. W. Pelton, music merchants Ottawa, Ont., are two of the incorporators.

The plant of the Chesley Chair Co., Limited, Chesley, Ont., was recently damaged by fire. The blaze broke out in the finishing room, where benzine and other inflammable materials are kept, and made considerable headway before the firemen were on the scene. The loss amounts to about $10,000. The operation of the plant was not seriously interfered with.

Moirs Limited, Halifax, N. S., are rebuilding the sawmill and box factory at Bedford, N. S., which was recently destroyed by fire. The new building, which is 160 x 60, two stories, with an L at one end, to give sufficient length for sawing logs, is the same size as the one destroyed. It is the intention of the company to equip this plant with the most up-to-date labor-saving machinery.

The Alfred McDonald Lumber Co., Peterboro, Ont., have just completed a new box factory. In view of the shortage of houses and the increased demand for building materials the McDonald Lumber Co. felt it was necessary to prepare for a busy season. The erection of the new box factory relieves the congestion in the sash and door plant, as formerly the boxes were manufactured in the same plant.

The A. R. Williams Machinery Co., Toronto, dealers in woodworking machinery and supplies, have quite a contract on their hands. They recently disposed of a large munitions plant in Halifax, N. S., to a firm in Hamilton, Ont., and undertook to take down the building, carry the material to Hamilton and erect it there, in consideration of a single cash sum to be paid when the structure is completed in Hamilton.

The Dominion Organ & Piano Co., Ltd., Bowmanville, Ont., celebrated their 50th anniversary this year, the industry having been established in Bowmanville in 1870. J. W. Alexander, the president and managing director, has been in control since 1894, and J. B. Mitchell, the superintendent, has put in 40 years with the company. The Dominion line, produced by this firm, is very favorable known to the musical trade.

Planing mill equipment consisting of circular re-saws, planers, rip-saws, stickers and other woodworking machines is being installed in the old planing mill of the dismantled British Canadian Lumber Co's. plant at Queensboro, B. C. This plant will be used to manufacture the 4,000,000 ft. of timber which is to be saved from the platforms of the yard area of the mill. A 75 h.p. motor will furnish the necessary power. G. O. Buchanan is in charge of this work.

The Rubberset Company of Newark, N. J., have purchased from the A. R. Williams Machinery Co., of Toronto,

HARDWOOD LUMBER

General Offices
GREENWOOD, MISSISSIPPI,
U.S.A.

This brand is your GUARANTEE and our mutual PROTECTION.

If you are not satisfied, we want to know the reason why.
Our lumber must buy your GOOD WILL.

Manufacturers Exclusively

BAND MILLS:

GREENWOOD, MISS. MOORHEAD, MISS.

Our Kraetzer-Cured Gum is guaranteed to be practically ***flat, straight*** and ***bright.***

Limited, a vacant factory at Gravenhurst, Ont., and will instal about $40,000 worth of machinery for making wooden handles for their line of brushes. It is anticipated that this plant will make the handles both for the Canadian branch located in Toronto and for the parent organization in Newark, N. J. The work will be rushed to completion and the new plant will be in operation at an early date.

The Canadian National Railways have placed orders for equipment to the value of $25,000,000. This equipment includes both locomotives and rolling stock. The following firms have received a part of this business: The Canadian car & Foundry Co., Montreal, 18 sleeping cars, 12 dining, 20 baggage, 100 box, 600 refrigerator, 80 cabooses; the Eastern Car Co., Trenton, N. S., 500 box, 1150 coal cars and 6 snow plows; the Preston Car & Coach Co., Preston, Ont., 20 cabooses; and the Hart-Otis Car Co., Montreal, 250 ballast cars.

The Langslow Fowler Co., Rochester, N. Y., have decided to erect a Canadian plant at Cobourg, Ont. A large factory will be erected and equipped at a cost of $150,000, on the site formerly occupied by the Crossen Car shops. The equipment of this plant will be up-to-date and modern in every respect. About seventy-five hands will be employed at the start and it is anticipated that this number will be doubled inside of two years. The town of Cobourg is making a loan of $50,000 which is to be repaid with interest by yearly payments Exemption from taxation, except school taxes and local improvements, has been granted for a period of ten years.

Personal

Edward Clark, of Edward Clark & Sons, lumber dealers, Toronto, has returned home from a very enjoyable trip to southern California.

D. M. Wright, managing director of the McLagan Furniture Co., Stratford, Ont., recently returned after spending a few weeks in Denver, Colorado.

Robert Fulton recently passed away in Toronto. Mr. Fulton, who was 70 years old, was engaged in the carriage manufacturing business for the greater part of his life.

S. Pettit, of Delaney & Pettit, Toronto, Ont., manufacturers and dealers in curled hair, glue, sand paper and other products, together with Mrs. Pettit are enjoying a short holiday in the south.

The sympathy of many friends will go out to N. G. Gunter, vice-president of Murray & Gregory, Ltd., St. John, N. B., in the loss of his wife, who recently passed away from pneumonia after a short illness.

Frank X. McDonagh, son of R. McDonagh, of Hart & McDonagh, wholesale lumber dealers, Toronto, who recently returned from overseas, has taken a position with the above-mentioned firm. Mr. McDonagh has been overseas since 1915.

H. B. Smith, Owen Sound, Ont., president of the North American Furniture Co., Limited, Owen Sound, is taking up his residence in Toronto. Mr. Smith also holds an official position with the Northern Navigation Co., and the Canada Steamships Co.

D. C. Baird, St. Mary's, Ont., was recently elected a director of the Stratford branch of the Ontario Retail Lumber Dealers' Association. Mr. Baird operates a planing mill and box factory at St. Mary's and in this connection conducts an up to date lumber yard.

John P. Waters has recently been appointed to a position on the buying and inspecting staff of Hart & McDonagh, wholesale lumber dealers, Toronto. Mr. Waters has had a wide experience in the lumber game, having a practical acquaintance with lumber from the stump to the finished product.

George A. Otto has succeeded his father, George H. Otto, as superintendent of the stain and filler department of the Standard Paint & Varnish Co., Windsor, Ont. Mr. Otto is favorably known to the American trade and brings to Canada mature knowledge and experience as a practical manufacturer and wood finished.

A. E. Clark, of Edward Clark & Sons, wholesale lumber dealers, Toronto, who has been confined to his house for the past few weeks, is again at his desk. Mr. Clark was recently elected one of the trustees of the National Wholesale Lumber Dealers' Association of New York, and is also a director of the National Hardwood Lumber Association, of Chicago.

Large Building Program

The Carborundum Company of Niagara Falls, N.Y., is to spend approximately a half a million dollars in extending and improving its mammoth plant at Niagara Falls and its two big furnace plants, one at Niagara Falls, Ont., and the other at Shawinigan Falls, Quebec.

The big building plan includes a three-storey addition to the Paper and Cloth plant at Niagara Falls in which are manufactured Carborundum Paper and Cloth, Carborundum Brand Garnet Paper and Cloth, and Aloxite Cloth. This addition, which has just been recently finished, is 432 feet long and 81 feet wide and will provide greater facilities for the storing and curing of all Carborundum, Garnet and Aloxite paper and cloth products, and for the extension of the rubber bonded wheel department.

Another addition, just completed, will extend one of the wheel making and kiln departments, the new building being two storeys high, 96 feet long and 64 feet wide. Both of these new structures are of concrete and are of the most modern type.

Other big extensions and improvements have been planned and work will be started immediately. These plans call for additions to the crushing departments and other improvements at the furnace plant at Niagara Falls, Ont., where the abrasive Aloxite is made and at Shawnigan Falls, Quebec, where is located an extensive Carborundum furnace plant. Besides these building operations the program calls for the extension of at least fourteen different departments at the big Niagara Falls, N.Y. plant of The Carborundum Company.

With the expenditure of a half a million dollars in improving its manufacturing facilities The Carborundum Company will be in a better position than ever before to meet the ever growing demand for its abrasive products.

Conservation of Forest Wealth

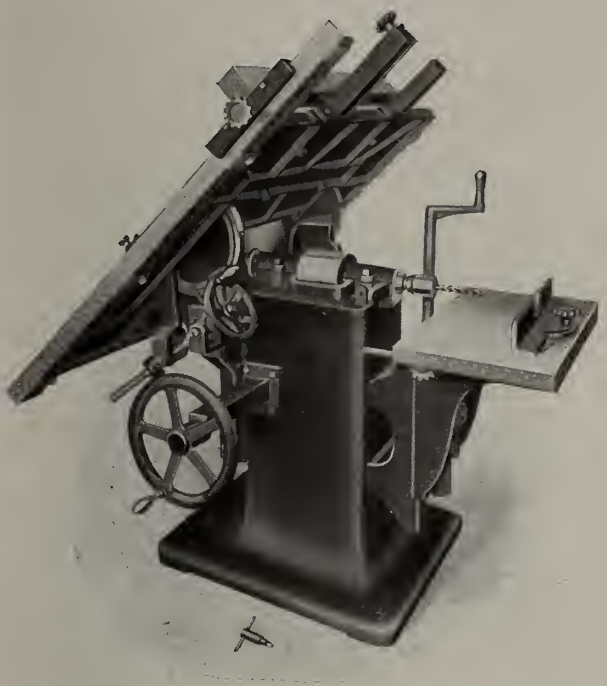
Canada has much land too poor to grow farm crops but just suited to the growing of forest trees. If this land is kept in forest it will help our farmers, manufacturers, merchants, carriers, and workingmen. But if the forest is destroyed, the land will become a barren desert, streams will dry up, and business and industry will be injured. The chief foe of our forests is fire. Most fires are caused by carelessness. Therefore, be careful with fire.

Living forests provide us with wood material of all kinds for our homes and industries, but burned forests provide no lumber for the saw-mill, no work for the workingman, no business for the merchant, and no freight for the railway or steamship. BE CAREFUL WITH FIRE.

Change in Name of Organization

The Parlor and Library Table Manufacturers met in Chicago recently and voted to change the name of their association to the Association of Living Room Table Manufacturers. Thirty-one joined under the new organization. Mr. M. Wulpi will conduct the work as commissioner.

An Excellent Machine for Furniture and Cabinet Work



The "Famous" No. 16 Variety Saw Bench with boring and mortising attachment will do much to increase your output in your furniture and cabinet shops. Accuracy is a main factor in its operation, while the roughest class of work is handled with the same degree of efficiency.

Write us for further information regarding the "Famous" No. 16 Variety Saw Bench and many other machines that you may need and are included in our complete line of woodworking machinery.

The Sidney Machine Tool Company

SIDNEY, OHIO U. S. A.

Ontario Agent--H. W. Petrie, Ltd., Toronto

"Quick Action"

is necessary to secure these

Dry Hardwoods

45 M' 4/4" No. 3 Com. Birch.

1 Car 4/4" No. 3 Com. and Btr. Beech

½ " 6/4" No. 2 Com. and Btr. Beech

½ " 8/4" No. 2 Com. and Btr. Beech

23 M' 4/4" No. 3 C. & B. Winter-cut Basswood

26 M' 6/4" No. 2 C. & B. Winter-cut Basswood

6/4" Largely No. 1 Com. and Btr.

All White Stock.

½ Car 5/4" No. 1 Com. and Btr. Maple

1½ " 6/4" No. 1 Com. and Btr. Maple

It's Selling Like Hot Cakes!

Canadian General Lumber Company, Limited

712 Bank of Hamilton Bldg.
TORONTO

MONTREAL OFFICE: 203 McGill Bldg.

Selling

Graves, Bigwood & Co.'s
Lumber, Lath and Box Shooks

Selling Hardwood Flooring

When the average purchaser asks the price of flooring, in reality he wants to know the cost in dollars and cents of enough flooring to cover a certain room.

The hardwood flooring man usually quotes $175.00 or some such price, which sounds like a lot of money, and the prospective purchaser doesn't know whether he means $175.00 for the floor. $175.00 per hundred, or $175.00 per thousand.

Always use the smallest units of price and make it easy for the customer to understand. If you are selling 2½ in. face hardwood flooring at $175.00 per thousand feet, quote $17.50 per hundred feet, or 27 cents a square foot for the space to be covered (which allows one-third for matching) or find out the size of the room and quote total price for the amount required.

In this manner you can quote the price and avoid any misunderstanding, without conveying the idea of a high price.

For houses already built talk ⅜-in. hardwood flooring. Remember it can be laid right on top of the old floor without removing casing and base. Show the buyer the advantages of having a ⅜-in. hardwood floor in the kitchen instead of some kind of floor covering. You will be able to sell many an order in this way.

Following are some of the places where you can sell hardwood floors: Store buildings, public buildings, factories, warehouses, churches, schools, garages, and other buildings. Hardwood floors withstand the heaviest kind of traffic, and they are comfortable to work on. They do not absorb dirt or moisture, and they are sanitary and easily cleaned. Follow up the big building jobs and the results will surprise you.

The Advantages of Solid Grease Lubrication

Lubrication with oil has always been open to the objection that it gives the machinery a more or less dirty and untidy appearance. This objection has lost but little of its force, notwithstanding the improved oil cans which have been introduced. The fact remains that the use of some kind of oil can is necessary and, however conscientious an attendant may be, some waste is inevitable. Then, again, oil drips from the bearings, soiling machinery, belts, walls, floor, etc., and in many cases, also goods, as in weaving mills, dye-works, laundries, carpet and paper factories, etc. Other well-known additional sources of waste and dirt are the upsetting and leakage of vessels containing oil, and overfilling of lubricators. Moreover, no attempt is made to deny that serious injury is caused to the various prats of the machinery by the resinous deposit of fatty oils. A further objection (and that one of the strongest) to the use of oil is its inflammability and the consequent risk of fire. To this cause the destruction of many factories has been traced.

Moreover, oil is very susceptible to changes of temperature. It being thus more or less liquid, according to the season of the year, its use requires unceasing attention, especially in the case of oil lubricators acting by means of a wick, where frequent filling is required according to the nature of the wick (linen or cotton) and the viscosity of the oil.

Solid lubricants are, on the countrary, non-inflammable (in the technical acceptance of the term), and are absolutely uninfluenced by climatic changes. On the one hand they do not ignite at an extremely high temperature, and, on the other, their freezing point is lower than 119 deg. below freezing point (—87 deg. F.). Their use in a good lubricator confers the great boon of simple, clean and systematic lubrication of every part of the machinery. Bearings difficult of access can be lubricated from positions within easy reach by means of tubes, to the end of which a lubricator is fixed, there being no difficulty in forcing the grease through such tubes. The soiling of belts, floors, etc., through dripping is impossible, and the grease is not thrown about by centrifugal force.

The employment of this system means also, in almost every instance, a more simple construction of the machinery, and so great is the economy of lubricating material required (11 to 16 lbs. of solid being equal to 1 cwt. of liquid oil), that the reduction of expenditure in this direction is very considerable.

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For Veneer and Veneer Drying
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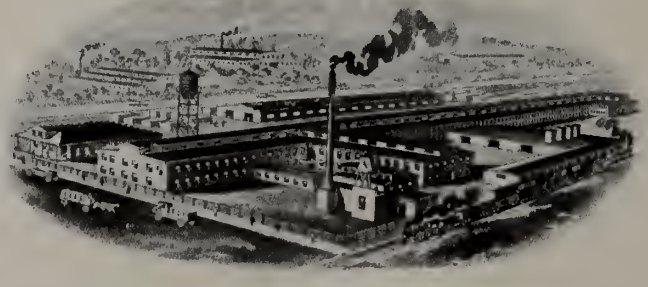

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TABLE LEGS

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A Variety Turning Machine Such as You've Long Felt the Need of

What wouldn't you give for a variety turning machine in your plant—or several of them for that matter—so designed that all heating and mandrel troubles are eliminated; all friction on the wood, after it has been turned round with the roughing knife, done away with; in fact, all troubles overcome which retard operation? Such a machine is here—the new C. W. Smith.

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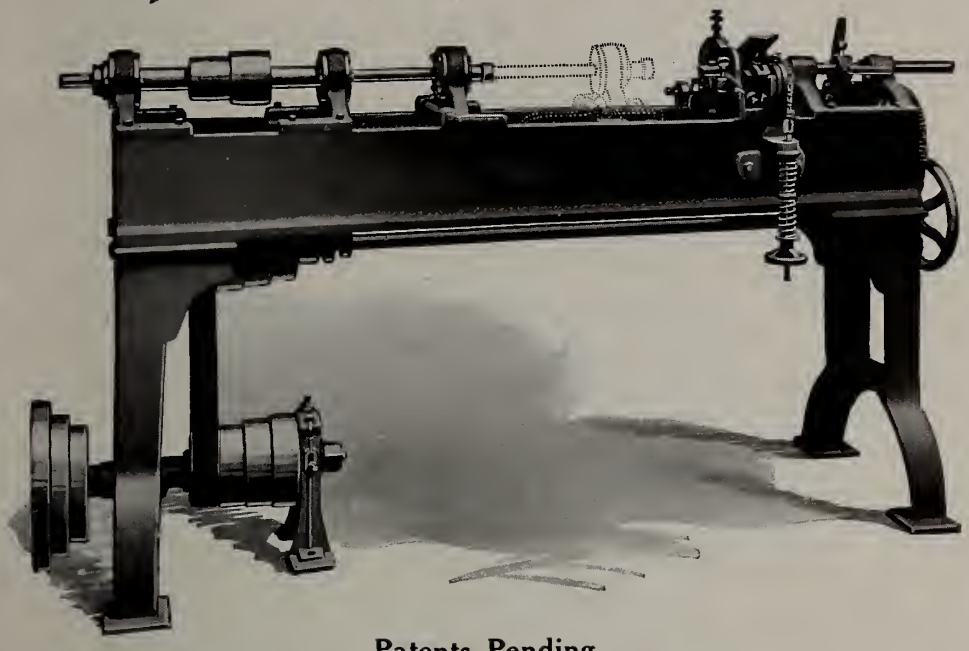


Automatic Self-feeding Variety Turning Lathe

It is the result of many years' experience in the operation, development and manufacture of wood turning machines, and now constitutes a great forward step in this class of machinery.

The feeding device is so arranged that the feed can be changed by simply moving the belts from one cone to another, covering a range of 5 strokes to the minute, from 15 to 70.

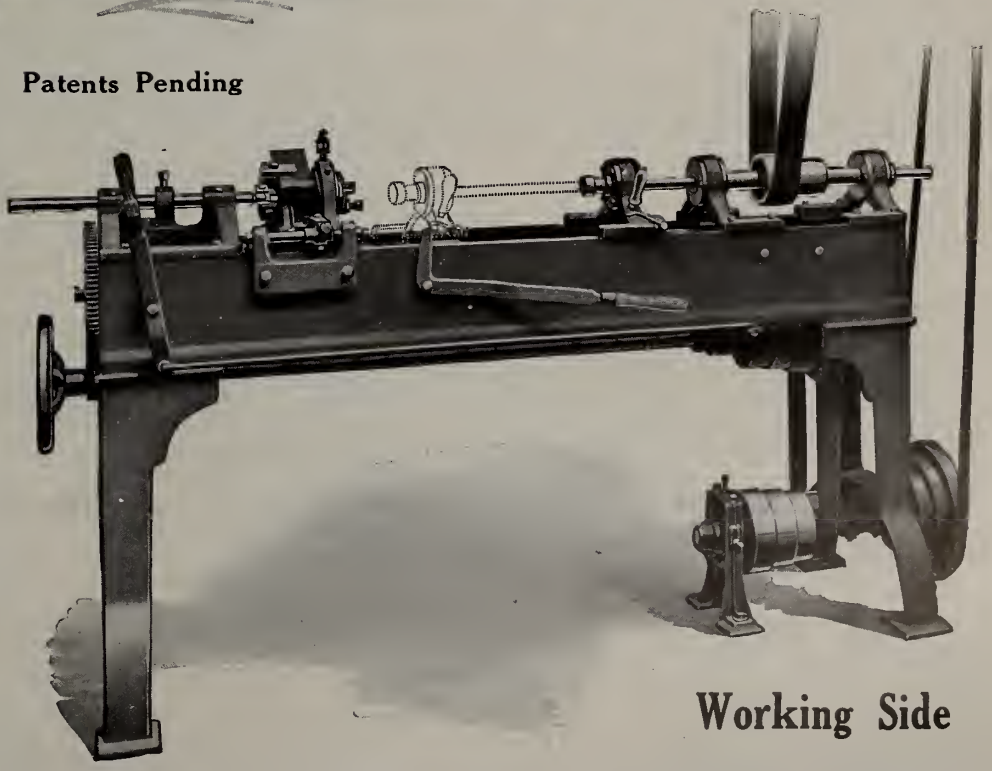
Patents Pending

The swinging cutterhead moves in all directions as well as a circular motion, thus enabling the operator to set knives where they cut the wood at all times.

Cutters are made up 7-in. long, without slots, and will turn ten times as many pieces as slotted cutters and do the work much better.

All kinds of plain and fancy work can be turned, from the smallest item up to 1¾-in. diameter and 7-in. long, in all kinds of wood.

Full details of this machine are given in pamphlet No. B-42, free on request.



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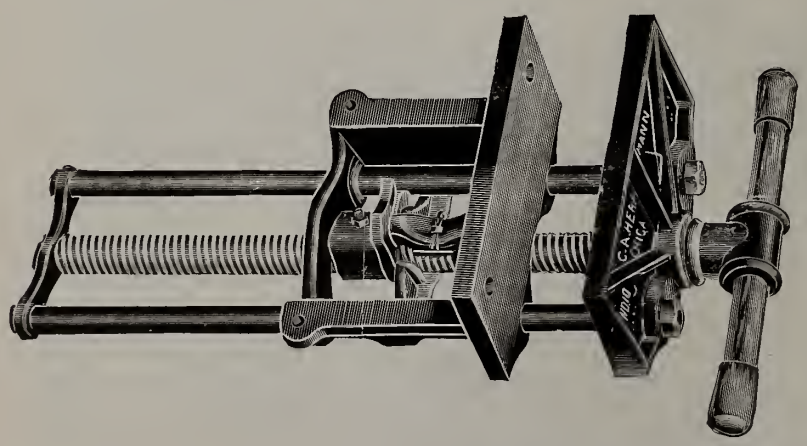

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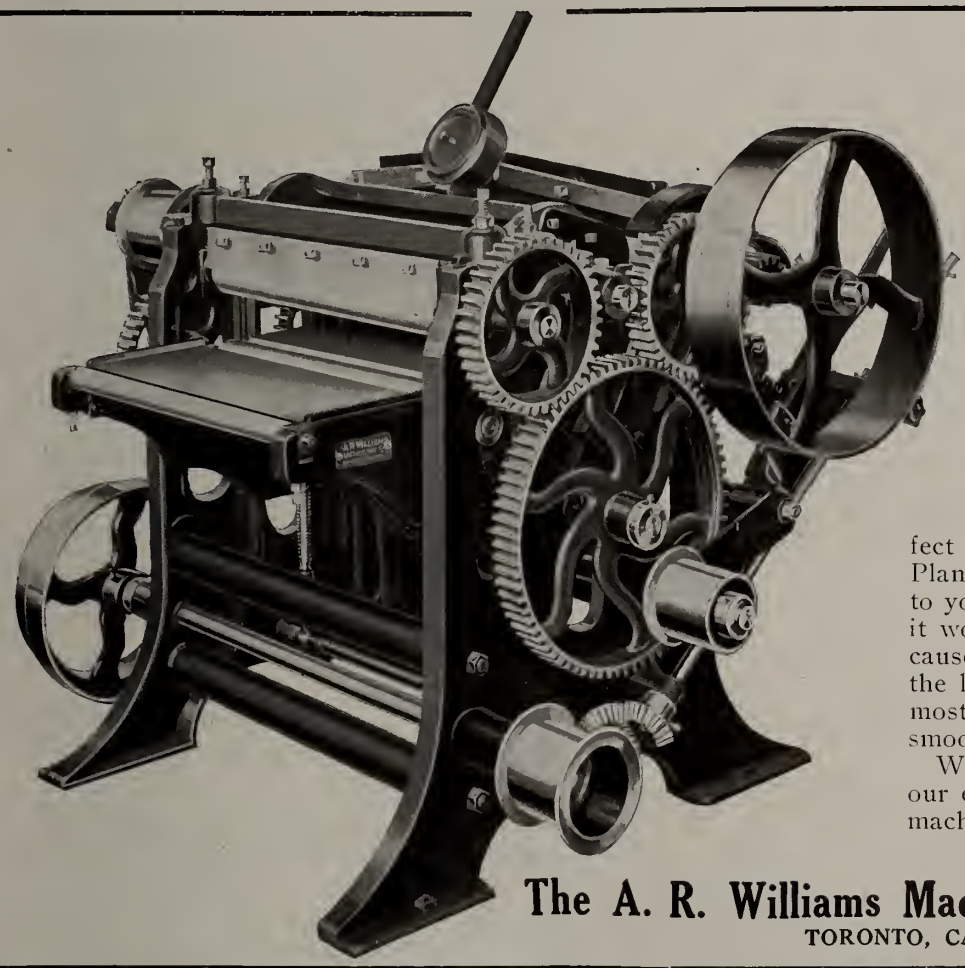

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Write us for full particulars on our entire line of woodworking machinery of all descriptions.

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The Wheel and Hole Cutting Machine has four automatic movements, all of which work in perfect unison, performing their functions in clock-like regularity.

The Hand-Hole Machine will cut hand holes in crate and box ends. It is worked by a carriage and levers, and will cut any size or length hole with either round or bevel edge in any kind of wood.

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Single Surfacer, 28 inch, Whitney pattern, in good condition. Will sell cheap. Box 67, Canadian Woodworker. t.f.

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$10.00 each
3/8, 7/16, 1/2, 5/8, 3/4, Cowan Dowel Heads.

$50.00
Hand Power Dowel Machine, six heads, from 1/4" to 7/8".

$35.00
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Good Heavy Rip Saw

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Horizontal Centre Crank Steam Engine, 6" x 8" with 7" x 30" Fly Wheel.

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We are offering for sale the following woodworking machines in very good condition, most of them practically new:

"Tannewitz" Dowel Machine 1/4 to 1-in.
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No. 99 "Oliver" 24-in. Cabinet Planer.
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43" Berlin Triple Drum Sander, Spiral Drums, excellent. Also Mershon Band Rip Saw. Also 400 H. P. Polson Cross Compound Brown Engine. Box 77, Canadian Woodworker, Toronto. 3-4

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One Baldwin, Tuthill & Bolton Machine for automatically filing rip and cut-off circular saws. Machine has never been used.

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For Sale—Cottonwood

1 car —1 "—No. 1 Common.
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Extra good thickness, widths and lengths. One year dry. Can ship immediately from Buffalo, N.Y. Will quote very attractive prices. Address Box 79, Canadian Woodworker, Toronto. 4-5

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2½ storeys, stone and brick, centrally located in Western Ontario; well equipped, floor space about 15,000 sq. ft. Good opening for the manufacture of motor truck bodies. Good shipping facilities. Box 81, Canadian Woodworker, Toronto. 4

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Good used Drum Sander, 42" or 48". Specify make, length of time used and best price.

RYAN BROS.,
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Veneer Man, capable of taking charge of veneer room in a factory manufacturing phonograph cabinets. One who guarantees to turn out the highest grade work. Apply, stating experience and wages required, to

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1 Morgan Open Back Nailer, 10 channel, 30", with clinching device, double row chucks.
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1 Reynolds Automatic Screw Driver, No. 3.
1 E. B. Hayes Door Sticker.
1 E. B. Hayes Automatic, 4 Spindle, Rail and Stile Bore.
1 Cowan & Co. Panel Raiser.
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2 Greenlee Bros. Automatic Cut-Off Saws, friction feed.
1 Box Rip Saw, iron frame and table.

These machines can be inspected at our plant.

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Cabinet Makers and Machine Hands. Apply the H. Krug Furniture Co., Ltd., Kitchener, Ont. 4

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Good wages paid. Apply Anthes Furniture Company, Kitchener, Ont. 4

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One second-hand Three-drum Sander, in good condition.

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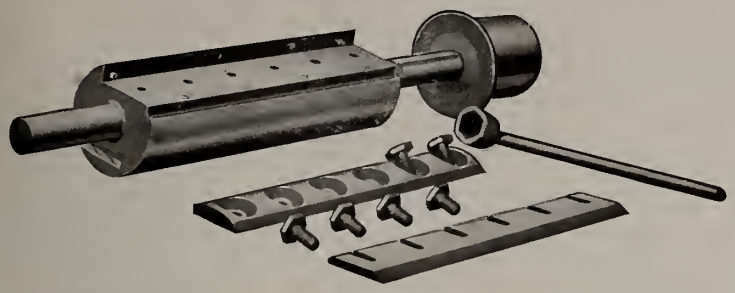

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Safety First! How often have we heard or seen this phrase, yet daily, yes, and oftener, accidents are occurring. Silver's Round Safety Cylinder will protect the operators of any of our new jointers from needless injury. They are greatly appreciated by the operators of these machines and they help wonderfully to increase production. Write us for descriptive matter regarding our complete line of machinery that will interest you.

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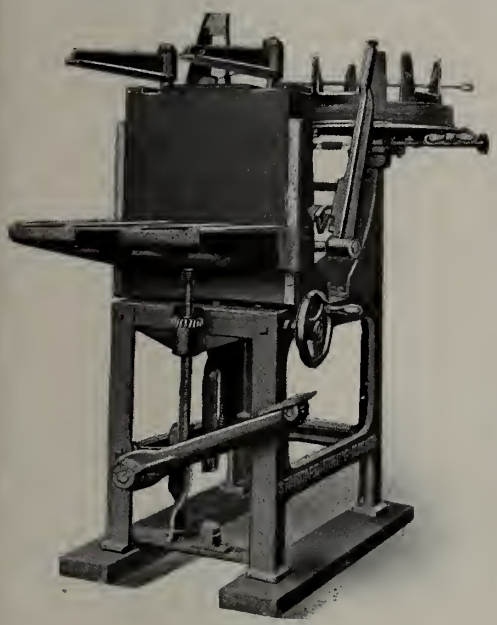

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Cabinet Makers and Trimmers Wanted. Highest wages, good factory conditions. Apply to the Bell Furniture Co., Limited, Southampton, Ont. 4

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Correspondence with furniture manufacturers desiring practical designs and details of furniture in all the prevailing periods. Address C. Theodore Eichelsdoerfer, 56 West Mechanic St., Shelbyville, Ind. 3-6

Lumber and Forests

By M. Wulpi

Just now, when lumber is soaring and scarce, when users do not know what to expect, it is interesting to note some things about it. Henry Graves, of the Forest Service Department, in an address before New England Foresters, brought out the following facts:

Ninety-seven per cent. of the United States timber used in the United States is from private owned forests.

Less than 2 per cent. of the sawmills are operated in public forests.

Private owners hold four-fifths of United States standing timber. The bulk of war timber supplies were obtained from a few large centres of original forest, often involving large hauls and high cost.

Fifteen years later most of it would have had to come from the Pacific coast, the only available public supply by then.

So pine manufacturers state the bulk of original supply of yellow pine in the South will exhaust in ten years.

Within the next five to seven years over 3,000 timber manufacturing plants will go out of existence.

This will withdraw competitive influence of Southern pine and enhance price through shift of supply.

Wood pulp manufacturers are already embarrassed through lack of supply.

For ten years new mill developments for newsprint has almost ceased.

In Canada no less than 28 mills have been built by American capital.

Pacific Coast Douglas fir is already reaching the New England market.

Lake States, up to a few years ago greatest producers of timber, to-day pay a six-million freight bill to bring lumber in.

Estimated that annual growth in New England is less than half of what is being cut.

In New England, $30,000,000 is invested in wood and forest industries employing 90,000 wage earners.

New England forest area is about 25,000,000 acres, almots that of France.

France produces annually fifty per cent. more than New England in forest growth, is proving growth constantly approaching a point to furnish most of domestic need.

England proposes to plant one million acres in forest in the next forty years, and spend first decade $17,000,000.

Would these things not point to scarcity here, high prices, long hauls and substitutes?

The great need in the United States is to stimulate forest growth, conservation of stumpage, elimination of forest fires, constructive private forest program and general protective policy on our whole forest tracts.

In face of present situation there seems little show for lumber to go back to where it was during our abundant supply and wasteful cutting.

To Restore Walnut Forests

Restoration of black walnut trees is being considered in several states for 1920, says the St. Paul, Minn., Pioneer Press. In Ohio the agricultural experiment station in Wooster has just published a pamphlet by Edmund Secrest of the forestry section on the cultivation of these trees, attention being called to the great value of the lumber in many industries and its use in the great war for airplanes and gun stocks, for which no other substitute could be found in sufficient quantities. Mr. Secrest says that with proper care trees may be grown from seed or transplanting of small trees to a state of maturity where the wood will be of as great value as that of the original forest. In Pennsylvania the state factory department has undertaken extensive seed planting in an effort to restore the black walnut. One hundred and fifty bushels of seed have been planted in specially prepared ground at Mont Alto, and should produce ten thousand seedling for next spring. Many requests have been received from owners of woodland who desire to start groves of the trees. A campaign of tree planting will begin in 1920 in Kentucky for the rejuvenation of the forests, in which walnut will be one of the special species planted.

Spruce Bud Worms Do Much Destruction

Half of the balsam fir in New Brunswick has been destroyed by the spruce bud worm this year, according to a report by Prof. S. A. Graham, of the University of Minnesota, and Prof. J. D. Tothill, of the Dominion Entomological Bureau, who have returned to Fredericton after taking a trip of 125 miles through the crown timber lands of the province in company with L. S. Webb, of the Forests S. V. C.

They entered the woods about two weeks ago at Red Bank, near Newcastle, and then went to the head waters of the little southwest Miramichi. They came south across the Renous, and out of the woods at Boietown. The trip was made on foot and practically all the balsam fir which has been very plentiful in that district, has been destroyed. In some areas the pest attacked the spruce; and on the Renous the damage to spruce has been quite serious.

Chemical-Treated Wood Will Not Burn

Wood is made virtually fireproof by a new English method, which fills the pores with a crystalline deposit of fire-resistant chemicals. The air and moisture contents of the pores is extracted, and the sap water dissipated, by a steaming and vacuum process in a closed chamber. The empty cells are then impregnated with the chemicals by hydraulic pressure. When the solution has dried, each cell of the wood remains filled with crystals, which expand on exposure to heat and prevent the entrance of air. Wood so treated will char, but not burn.

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Wood Lathes
16" x 12' American, patternmakers.

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26" Double surfacer, divided rolls.
24" Champion planer and matcher.
24" MacGregor-Gourlay.
24" Pony planer.
24" Crescent, single surfacer.
12" Petrie buzz planers, with safety heads (4).

Band Saws
36" Famous, pedestal.
36" Jackson-Cochrane, pedestal.
32" Famous, pedestal.
30" Ideal, pedestal.
60" Fay & Egan, band re-saw.

Saw Tables
No. 16 Famous, variety.
MacGregor Gourlay railway cut-off.
No. 1 Greenlee automatic cross-cut.
Galt, iron frame, cut-off.
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7' Williams, swing saw.

Mortisers
No. 2 Osborne-Baker, foot power.

Moulders
13" Clark-Demill four-side.
12" Woods four-side, inside.
10" Goldie & McCulloch, three side.
10" Houston, four-side.
8" Dundas four-side.
6" McGregor-Gourlay, three side.
6" Dundas sash sticker.

Boring Machines
No. 7 Sidney, Famous, belt driven.
Gear driven, post borer.
Fay, single spindle, horizontal.

Sawmill Machinery
2 Block portable sawmill.
Boss, automatic, shingle machine.
Vaughan, gasoline driven, drag saw.
Champion, friction, drag saw.

Miscellaneous
No. 1 Ballantine power feed dowel machine.
Fay & Egan 12 spindle dovetailer.
MacGregor Gourlay 12 spindle dovetailer.
M 120 Cowan, panel raiser.
20" American, wood scraper.
6" British-American, hand floor scraper.
Dundas, wood frame tenon machine.
Fay, iron frame, double head, tenon machine
No. 3 Defiance, rim & felloe rounder.
No. 1 Defiance, axle shaper.
No. 1 Defiance, spoke driver.
No. 21 Covel bandsaw filing clamp.
3" x 7" universal wood trimmer.
4" x 8" bench, wood trimmer.
Cowan veneer press screw.

Ask to see our large stock of used supplies—belting, pulleys, machine shop equipment, mill supplies, pipe and fittings., etc. Most of this material is as good as new, and can be bought at greatly reduced prices.

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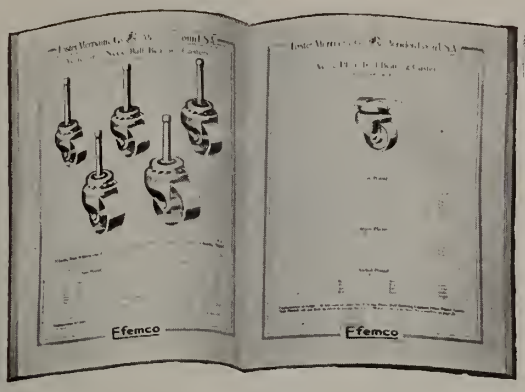

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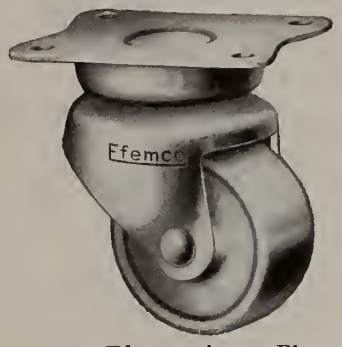

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Ball Bearing Casters

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This Caster Catalog is ready for you

It is completely illustrated—a graphic demonstration of how adequately Efemco Casters cover every need of the furniture trade.

The catalog shows full standardized line of Efemco Casters, including a new series developed and perfected since the war.

Efemco Casters embody every improved feature, finish and design demanded by America's leading artist-craftsmen in modern furniture.

Each item is illustrated in full size to give you an exact idea of its type and construction in detail. List prices are inclosed in each book.

Of course, the edition is limited, so it is important that you write for your Efemco book at once.

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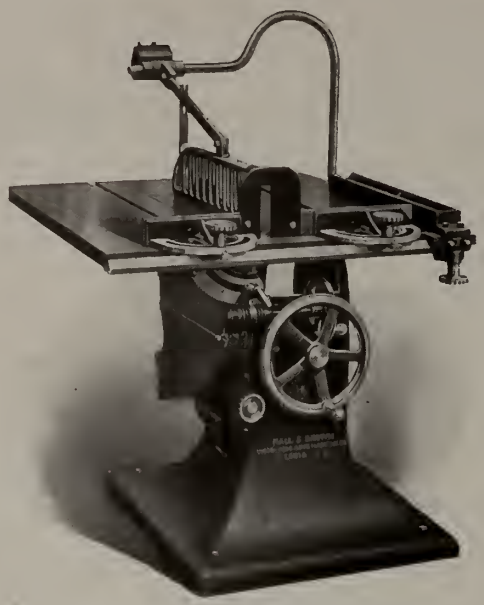

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Write for a large circular which gives complete details.

Hall & Brown Wood Working Machine Co.
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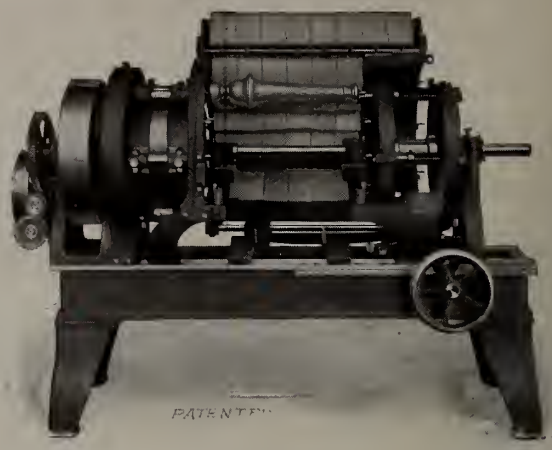
SAINT LOUIS, U.S.A.



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"The Sander is giving us perfect satisfaction. In fact it is doing a great deal more than we expected. as we are able to sand as many table legs in **one hour** as we formerly did in **one day** by hand."
—From a prominent manufacturer.

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Our Uniflax Seaming Cord for Upholstered furniture is unexcelled. It serves the purpose perfectly and lasts indefinitely. Prices for these materials are commensurate with the quality and are withal very reasonable.

GRAND RAPIDS FIBRE CORD COMPANY

1101-1157 Elizabeth Ave. **Grand Rapids, Michigan**

NAPCO WATERPROOF GLUE

No wastage

Applied cold—and mixed cold

Profitable in its saving

Consistent in all grades of work

Odorless in the glue room

NAPCO is absolutely uniform. It eliminates waste, is easily applied, is impervious to water, and never lets go.

NAPCO joints are as strong as the wood.

H. LEFEBER

Lewis Building, Montreal, Que.

SOLE AGENT FOR CANADA

Deliveries made from either Montreal or Toronto Warehouses.

Vegetable Glue

We are desirous of opening correspondence with woodworking firms in Canada who are now using or contemplating using vegetable glue for veneer work, box and furniture panels, etc., from the finest type of furniture, cabinet or piano case work to barrel heads and other common work.

We make Vegetable Glues to fit all purposes, also a special more fluid Vegetable Glue suitable for joint work and application by brush.

IF YOU ARE ALREADY USING SOME OTHER MAKE OF VEGETABLE GLUE AND IT IS GIVING YOU SATISFACTION, WE WOULD NEVERTHELESS LIKE TO HAVE YOUR INQUIRIES AS WE CAN MATCH THE WORKING QUALITIES OF ANY VEGETABLE GLUE NOW ON THE MARKET AND PROBABLY GIVE YOU A CONSIDERABLE ADVANTAGE IN PRICE.

We are prepared to furnish all equipments necessary for the making up and application of Vegetable Glue on a rental basis affording you easy means of payment.

WE BELIEVE IN THE FUTURE OF YOUR GREAT COUNTRY AND TO SAVE YOU THE PAYMENT OF THE PRESENT WHOLLY EXORBITANT AND UNWARRANTED RATES OF EXCHANGE, WE ACCEPT CANADIAN GOVERNMENT BONDS AT PAR FOR ALL SALES WE MAKE TO CANADIAN MANUFACTURERS, THEREBY PUTTING YOU ON THE SAME ADVANTAGEOUS FOOTING ENJOYED BY THE WOODWORKING TRADE IN THE UNITED STATES.

If you have any problems to work out in the Glue line, we can assist you.

We have expert Demonstrators we can send you at short notice qualified to set you right on any proposition dealing with the use of Glue in woodworking.

We can start you right and keep you right after starting; give us an opportunity to prove this to you by opening correspondence with us.

It will cost you nothing to investigate no matter what Vegetable Glue you are now using and we believe we can give you a better product for the same money, or an equal product for less money.

Isn't it worth your while to test out this proposition?

Write us for particulars.

Victor G. Bloede Co.

BALTIMORE, M.D., U.S.A.

Perkins Vegetable Glue

The Glue of No Regrets

Process and Product Patents covering Perkins Glue were granted July 2nd and March 19th, 1912, and have been held valid and infringed by the United States Circuit Court of Appeals. Patents have also been granted in Canada, Great Britain, Germany, France, Belgium, Italy and other foreign countries.

Perkins Glue Company

Factory and General Offices:
LANSDALE, Pennsylvania.

Sales Office:
SOUTH BEND, Indiana

MAKERS AND DISTRIBUTORS OF

PERKINS 183

TRADE MARK (Reg. U.S. Pat. Office).

ITS FIRST COST IS ITS LAST COST.

The Magazine Feed Produces Greater Results

Greater security, production and saving in time, labor and money is the result of installing Reynolds Automatic Magazine Feed Screw Driving Machines. The screws are driven revolvingly their entire length, thus insuring a holding power forty-nine per cent. stronger than the hammer driven screws. The magazine feed enables each machine to do the work which formerly required three to six hand operators—reduces your labor costs and increases your production considerably.

Write us today for literature which gives a full description of these machines, also a list of users.

Simply dump a gross of screws (either wood or machine) into the hopper. The machine does the rest.

The Reynolds Machine Co.

Department C

Massillon, Ohio - U.S.A.

BOOKS FOR SALE

The following books are offered at special prices subject to previous sale:

Saw Fitting Manual, a treatise on the care of saws and knives. Deals with everything in the saw and knife alphabet, from adjustments to widths. Price $4.25.

Common-Sense Handrailing, by Fred T. Hodgson. Published by Frederick J. Drake & Company, Chicago. 114 pages, illustrated. Price 50c.

"Boy Activity Projects," by Samuel A. Blackburn, published by the Manual Arts Press, Peoria, Ill. 144 pages, including 64 illustration plates. Price $1.25.

Handrailing Simplified, by An Experienced Architect. Published by William T. Comstock, New York. 52 pages, illustrated. Price 50c.

"Woodwork Joints," by Evans Bros., London England; 214 pages, with 430 illustrations and a complete index of eleven hundred references. Price $1.50.

"Carpentry," by Ira S. Griffith. Published in 1916 by The Manual Arts Press. 188 pages, illustrated. Price $1.00.

"Details of Cabinet Construction," by Evans Bros., London, England; 203 pages, fully illustrated. Price $1.50.

Utilization of Wood-Waste (Second Revised Edition), by Ernst Hubbard. Published in 1915 by Scott, Greenwood & Sons, 192 pages, illustrated. Price $2.00.

Seasoning of Wood; A Treatise of the Natural and Artificial Processes Employed in the Preparation of Lumber for Manufacture, with Detailed Explanations of its Uses, Characteristics and Properties, by Joseph Wagner. Published by D. Van Nostrand Co., in 1917. 274 pages, illustrated. Price $3.00.

"Staining and Polishing," including varnishing and other methods of finishing wood, with a complete index of 1500 references, published by Evans Bros., of London, England. 218 pages, price $1.50.

"The Kiln Drying of Lumber," a Practical and Theoretical Treatise, by Harry Donald Tiemann, M.E., M.F. Just published, by J. B. Lippincott Co. 316 pages, illustrated. Price $4.50.

The Woodworker Publishing Co., Limited

345 Adelaide Street West, Toronto, Ont.

HOW DO YOU DRIVE WOOD SCREWS?

The Automatic Electric Screw Driver is small. It weighs only 6 pounds and everything larger than this is impracticable for driving wood screws.

With an automatic your men can drive screws all day long and not get tired out and it will do the work so much faster than the hand brace, that you will be putting two-thirds the men now driving screws on to more profitable work where their skill will count.

Ask for Bulletin 1 now and learn how to drive wood screws the MODERN way.

GEO. C. McKAY & COMPANY

1046 St. Clair Avenue, Cleveland, Ohio

Canadian Agents: James J. Buckley Co., St. Nicholas Street, Montreal, Canada.

35 Years of Experience

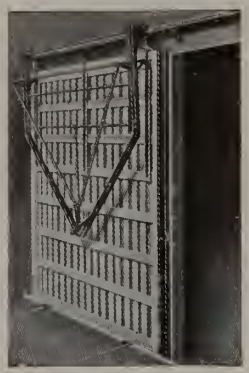
coupled with unusual facilities and most modern shop practice warrant us promising you a quality of workmanship, materials and service that you will not readily find surpassed.

Engineering & Machine Works of Canada, Limited

St. Catharines, Ont.

Eastern Sales Offices: Birks Bldg., Montreal, and Hall Machinery Co., Sherbrooke.

The Door Carrier System



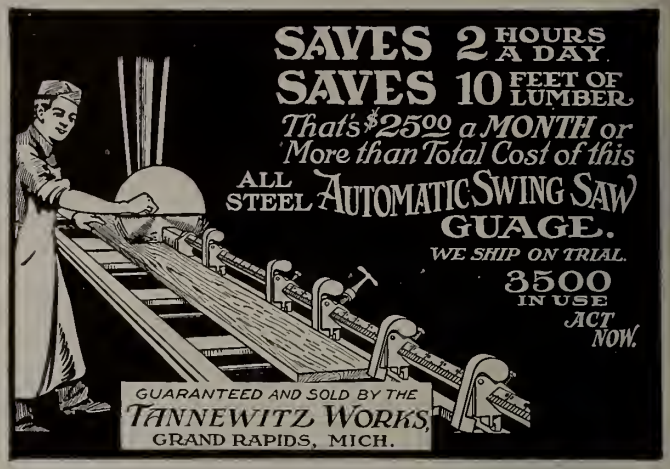
Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

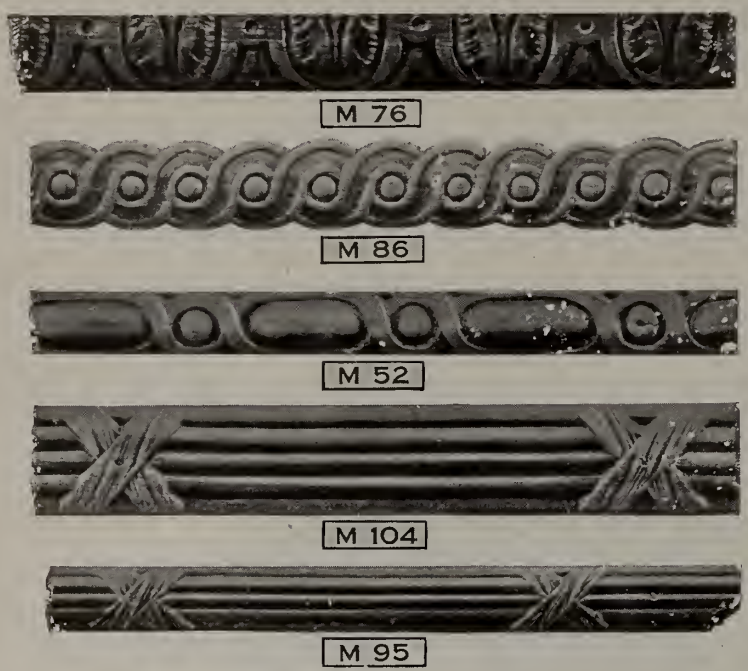
Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

Ask for catalogue.

DRY KILN DOOR CARRIER CO.

1117 Cornell Ave.
INDIANAPOLIS, IND.

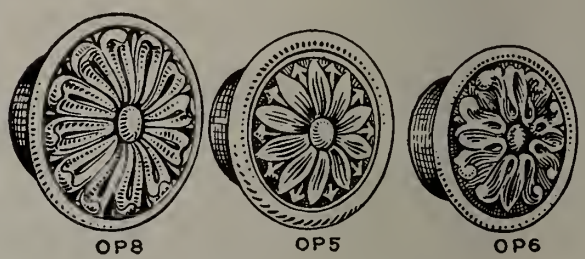

SAVES 2 HOURS A DAY.
SAVES 10 FEET OF LUMBER.
That's $25.00 a MONTH or More than Total Cost of this
ALL STEEL AUTOMATIC SWING SAW GUAGE.
WE SHIP ON TRIAL.
3500 IN USE
ACT NOW.
GUARANTEED AND SOLD BY THE
TANNEWITZ WORKS,
GRAND RAPIDS, MICH.



MOULDINGS We are making more Period Mouldings than ever before. Orders should be placed early to assure your supply when needed.

KNOBS The Period Knobs we placed on the market a few months ago are proving very popular. If you have not received samples ask for them now.

ROSETTES A new Period item to accompany the knobs.



Waddell Manufacturing Company

Coldbrook and Taylor, N. W. **Grand Rapids, Mich.**

The Peter Hay Knife Co., Ltd.

Manufacture the Best

PLANER KNIVES and CUTTERS

OF ALL DESCRIPTIONS

The Peter Hay Knife Co., Limited
GALT, ONTARIO

BOX NAILS and WIRE for Every Use

We manufacture a complete line of nails and wire in every style and size. Your special needs can be supplied. Write us today. We manufacture special styles to order.

Laidlaw Bale-Tie Co., Ltd.

A. T. Diggins, Toronto, Ont. H. E. O. Bull, Montreal, Que.
Harry F. Moulden & Sons, Winnipeg, Man.

Head Office and Works: HAMILTON, CANADA

The Largest Table Company
In The World

The Imperial Furniture Co.
Grand Rapids

are replacing their Dry Kilns
by a battery of up-to-date

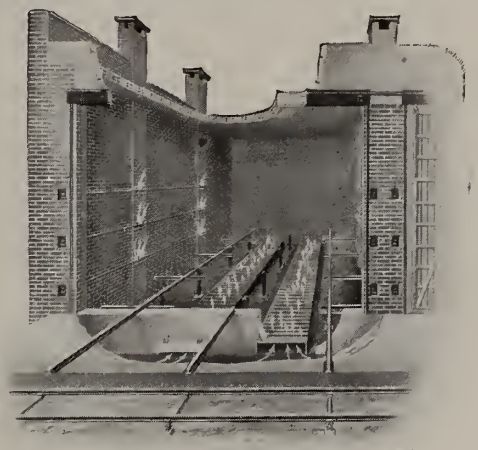
GRAND RAPIDS VAPOR KILNS

Grand Rapids Veneer Works
Grand Rapids, Mich. Seattle, Wash.

Sixteen Specified Superiorities
of
National Automatic Humidity Controlled

DRY KILNS

show why you can dry more lumber—dry it better—dry it cheaper—save time and money.



We have facts and figures for you.

THE NATIONAL DRY KILN CO.
1117 East Maryland St., INDIANAPOLIS, Indiana

If you want to know the difference between "A Boy and a Barn", ask the Teacher

BUT,

THE SIDMANS L.C.K.
Reg. Trade Mark
LONDON CANADA

If you wish to know the difference between a DRY KILN and a LUMBER CURING KILN, ask ANY user of our system, or write us, and we will be pleased to not only tell you, but if desired SHOW you.

THE SIDMANS

LONDON, ONTARIO
Heating and Ventilating Engineers and Lumber Curing Specialists

OUTLINE OF JORDAN PUMP

SPECIFIED

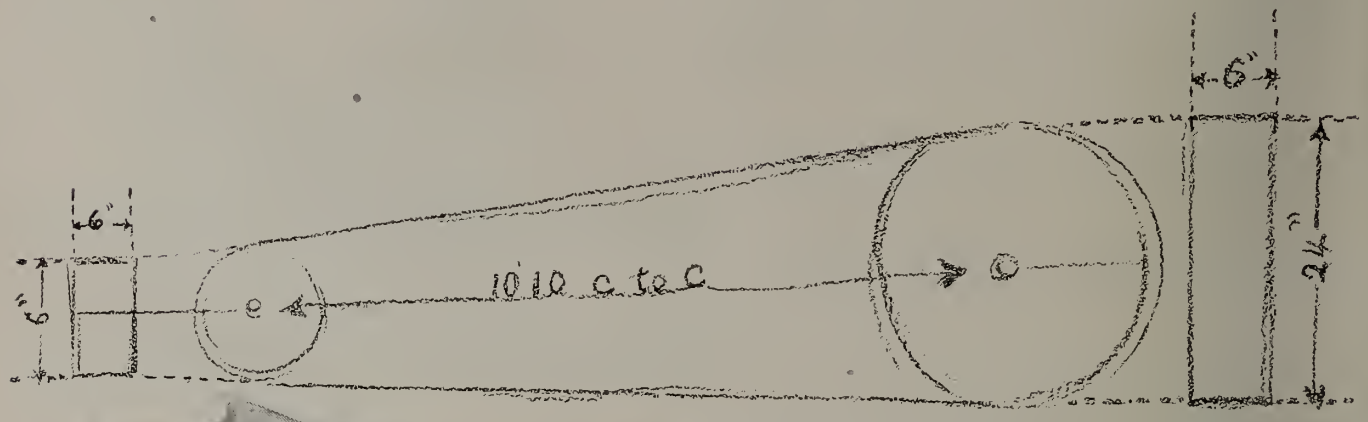
GOODYEAR EXTRA POWER

6" x 5 PLY 25'6"

PULLEY FACES 8"

R.P.M. DRIVING PULLEY 500

H.P. 10



A Goodyear Belting man will survey your plant with no obligation to you.

GOODYEAR

MADE IN CANADA

Where Belts Meet Dampness!

Goodyear Extra Power Belt Delivers Power and Lasts

Damp or wet belts usually slip more easily than dry belts.

Water and moisture form a thin film between pulley and belt.

Here "Extra Power" Belting especially displays its advantages.

Where there is water, moisture or steam—around the beaters in paper mills, for instance—Goodyear Extra Power delivers the power load just as under more favorable conditions.

Because Goodyear Belting has a rough friction surface which bites through the film of water and clings to the pulley, costly slipping is overcome.

Moisture rots belts, if it gets into them.

Goodyear Extra Power is rubber-sealed against moisture.

Not just enclosed in a rubber envelope.

The high-grade rubber in Extra Power is forced through and through the fabric, surrounding and protecting every strand, making a belt practically a solid unit.

That Goodyear Extra Power Belting is just as efficient and just as economical in damp or wet places as in other transmission uses, is proved by these satisfied users:

The Provincial Paper Mills of Thorold got 16 months' service from Goodyear Extra Power on a Jordan Pump where they had been getting about one month's service. They also say—"In the room where our beaters are located, the air is constantly damp. Here we have found Extra Power so superior that we use it exclusively."

Some other firms who will be glad to tell you of the satisfactory service of Goodyear Extra Power under damp conditions are:

Mittagami Pulp & Paper Co., Smooth Rock Falls, Ont.
Port Arthur Pulp and Paper Co., Port Arthur, Ont.
North West Laundry Co., Winnipeg, Man.
Dominion Pulp Co., Chatham, N.B.
Bathurst Lumber Co., Bathurst, N.B.
Gloucester Lumbering and Trading Co., Bathurst, N.B.

If you use belting, it will pay you to hear about the Goodyear way of supplying it. It will cost you nothing to have a Goodyear man call and show you how to overcome your problems. Phone, wire or write the nearest branch.

The Goodyear Tire & Rubber Co. of Canada, Limited

BRANCHES:

Halifax, St. John, Quebec, Montreal, Ottawa, Toronto, Hamilton, London, Winnipeg, Regina, Saskatoon, Calgary, Edmonton, Vancouver. Service Stocks in smaller cities.

EXTRA POWER BELTING

EXPLANATION *of* THE WALLACE IDEA

The Wallace Idea eliminates waste in production in the woodworking shop. It saves high-priced time consumed by making endless trips to the large machines; power wasted by running a large machine for a small job; expensive hand sawing and planing; belt expense and floor space.

Why it Cuts Cost and Speeds Production—

The mechanical principle embodied in Wallace Bench Machines is ECONOMY. They are constructed so that the workman may do from 75% to 80% of his cabinet, pattern, fitting and assembling work right at his bench.

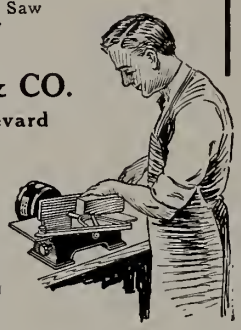
Over 10,586 Wallace Bench Machines in use

at the present time and they are demonstrating the everyday serviceable and practical application of "The Wallace Idea." Investigate for yourself. Cut out this advertisement, check the machines in which you are interested and we will send you complete information, also a list of representative users in various lines of industry.

ADOPT THE WALLACE IDEA

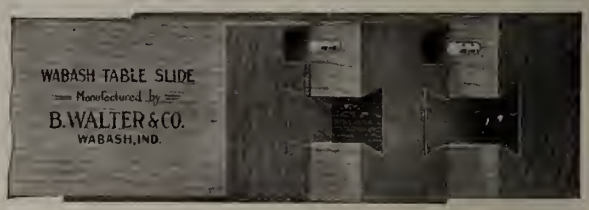
The Wallace 4" Bench Planer
The Wallace 6" Bench Jointer
The Wallace Universal Bench Saw
The Wallace Plain Bench Saw
The Wallace 14" Band Saw

J. D. WALLACE & CO.
1421 W. Jackson Boulevard
CHICAGO, ILL.



Adopt the WALLACE IDEA

THE SLIDE IS THE HEART OF YOUR EXTENSION TABLE



If the Slide Does Not Work Properly Your Whole Table is Condemned

Wabash Slides insure Satisfied Customers

SLIDE MAKING is a SPECIALTY BUSINESS

We can Furnish Better Slides for Less Cost

Eliminate Slide Troubles by using WABASH SLIDES

MADE BY

B. Walter & Company

Edsall St., Wabash, Ind.

Cut Miles without Grinding

A Characteristic Experience

Richmond, Indiana.

G. M. Diehl Machine Works,
Wabash, Ind.

Gentlemen:—

You may possibly be interested in an experience which we had recently in our factory with your Diehl Heads and Cutters.

Our Sticker man recently made a run of 10,000 stiles, each piece being 73 inches long, of hardwood, in which we cut a groove ¼ inch wide by 9/16 inch deep, and we made the entire run without taking the Heads or Bits off the machine and without resharpening, which makes a total run of a little more than 11½ miles. The Bits would, no doubt, have run quite an additional number of feet before it would have been absolutely necessary to sharpen them. We consider this a very good performance, especially in view of the fact that these stiles were all run from the rough wood and the Heads being used on a four-sided Sticker

Very truly yours,

RICHMOND FURNITURE MFG. CO.,
Per O. H. BRUBAKER, Manager.

Send for Catalogue

The G. M. Diehl Machine Works

WABASH, INDIANA - U. S. A.

On the Banks of the Wabash

Cary's SUPERIOR QUALITY Corrugated Fasteners

SAW EDGE

PLAIN EDGE

According to final decision, after long litigation, we have been granted the SOLE RIGHT to manufacture a Saw Tooth Corrugated Fastener with a continuous cutting edge. Our fastener is beveled evenly on both sides, which enables fasteners to be driven in straight, and much easier than any other fastener made. Our Corrugated Fastener is made in various widths and corrugations, also in coils wound right and left. Try our products and you will use no other.

Samples and prices on request.

CARY MFG. CO., Brooklyn, N.Y.

Greater Production
with
Less Experienced Help

The No. 370 Drum Sander is so simple and accident proof that any boy or girl can feed and take away with absolute safety.

Write for descriptive bulletin.

Patented May 6, 1919

The patented RUBBER PADS used for the bed of this sander are decidedly an improvement and are used in large quantities on every make of Endless Bed Sander. Ask for sample.

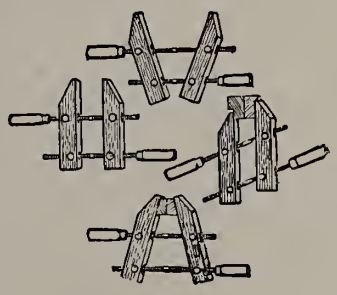
Solem Machine Company
ROCKFORD, ILL., U. S. A.

Palmer & Parker Co.
103 Medford St., Charlestown District
BOSTON, MASS.

MANUFACTURERS OF
African, Mexican and Cuban
MAHOGANY

VENEERS and Built-up Panels

TEAK and other Foreign Woods



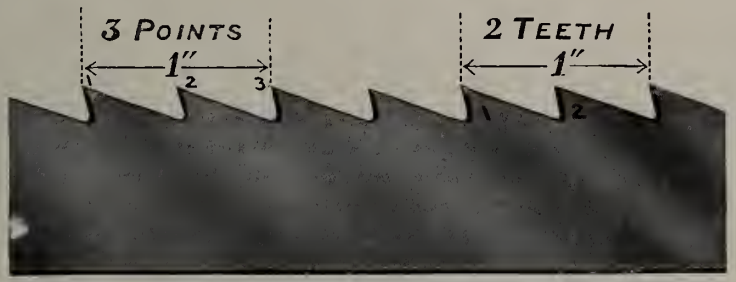
"JORGENSEN"
the Efficiency Clamp

Adjustable Steel Spindle Clamps that hold better and are far superior. Their guarantee against breakage protects you. Write for further particulars.

If you cannot buy them from your Jobber write us direct.

Adjustable Clamp Company
216 N. Jefferson St., Chicago, U.S.A.

NARROW BAND SAWS



NOTE—When measuring points count the points at each end of inch, as per illustration. 3 points are two teeth, etc.

NARROW BAND SAWS ARE FURNISHED SET AND FILED, NOT BRAZED

Give full particulars when ordering.

RADCLIFF Beaver Brand Narrow Band or Scroll Saws are Good Saws.

We use only best quality Swedish steel in their manufacture, evenly set and filed. They will give you real service under all conditions.

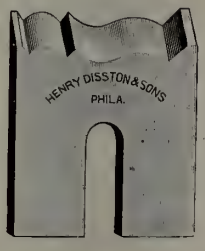
A trial order will convince you

Radcliff Saw Manufacturing Company, Limited
1550 Dundas Street West TORONTO, ONT.

DISSTON

SAWS AND KNIVES

The installation of Disston Saws and Knives—made from the famous Disston Crucible Steel—means more and better work. In the shops where cutting cost and output are carefully checked and counterchecked you will usually find Disston equipment.



HENRY DISSTON & SONS LIMITED

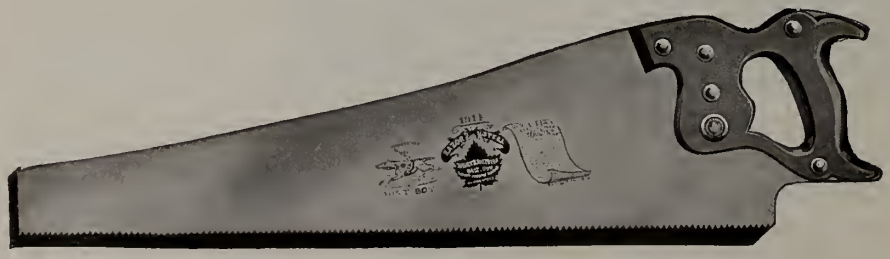
TORONTO CANADA

Branch: Vancouver, B. C.

The Same Dependability

Another of the Famous

MAPLE LEAF SAWS



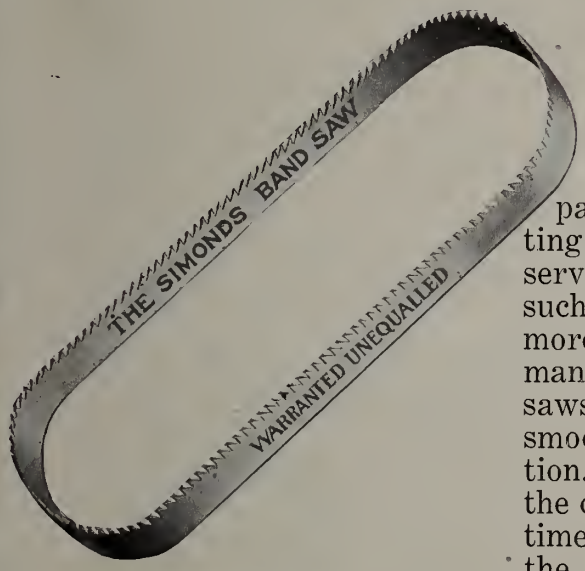
For almost half a century Maple Leaf Saws have been establishing a greater reputation for reliability in quality and service. From the heavy saws for heavy work to the light saws for the finest work Maple Leaf Saws are daily giving the utmost of satisfaction. The illustration shows the Maple Leaf Hand Saw, a sturdy, well built saw with the saw steel continuing through the handle as an assurance against the breakage of the handle. Made with the care and skill characteristic of all Maple Leaf saws—you'll appreciate the merits of this saw.

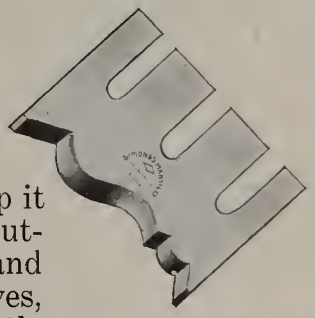
Write for a copy of our catalog today.

Shurly-Dietrich Co., Limited

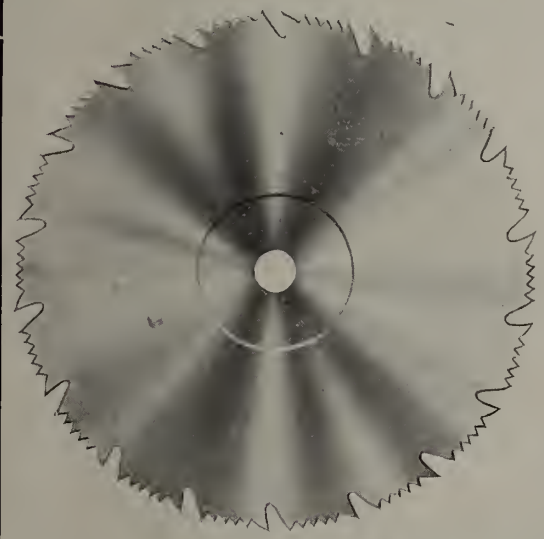
Vancouver, B. C. GALT, ONTARIO Ottawa Ont.

SIMONDS
SAWS AND KNIVES

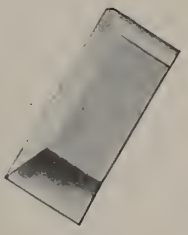


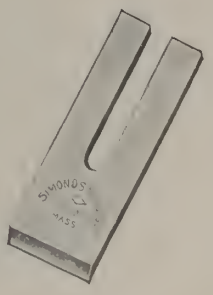


For mill or woodworking shop it pays to use the better grade of cutting tools because of economy and service. The best saws and knives, such as Simonds, may cost a little more, but in the long run they are many times more serviceable. Good saws and knives mean better and smoother work and greater production. In other words, they reduce the cost of cutting and eliminate lost time for repairs which is too often the case when inferior grades of saws and knives are used.

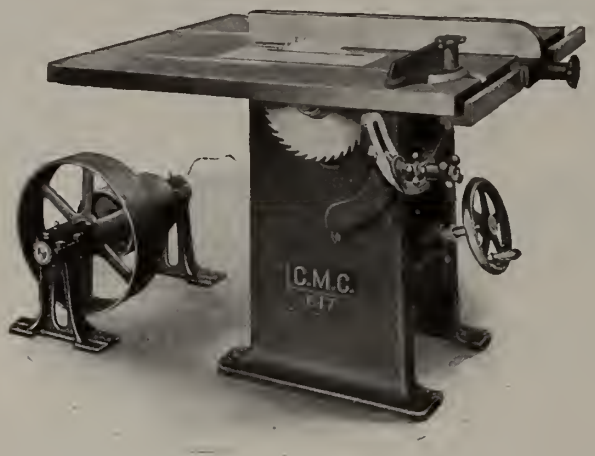


If you want the best of the good saws write to us about any style or size. Remember we make Grooving Saws, Novelty Saws, Narrow and Wide Band Saws, Web and Scroll Saws, Swage Saw Sets and Machine Knives for all purposes. Let us send you a copy of our catalog describing the complete line we manufacture.





SIMONDS
CANADA SAW CO., LIMITED
"The Saw Makers"
Montreal, Que.
St. John, N.B. Vancouver, B.C.



NO. 617 VARIETY SAW.

This Little Saw Fills the Bill

C.M.C.

Why?

It is not so small as to be a mere toy, while it is not so large as to be cumbrous—it is just the right size. Stock as wide as 18″ and as thick as 3″ can be ripped when using a 12″ blade; 14″ blades may be used, however.

Having a tilting table, double faced ripping fence and adjustable cut-off fence, all kinds of plain or bevel ripping or cutting off may be done with great facility.

It is strongly driven, having pulley power equal to that of larger machines.

The saw blade is near the table edge, so that the operator does not have to lean " away over."

There are no sore backs caused by the 617, but great production is effected.

Special attention is requested to the following partial list of users. The saleability of any machine is the best test of its merit. The 617 sells itself.

The Rolph Clark Co., Limited, Toronto, Ont.
The Christie Woodworking Co., Ltd., St. John, N.B.
A. R. Reddin, Kentville, N.S.
Willys Overland Co., Limited, Toronto, Ont.
Beatty Bros., Limited, Fergus, Ont.
Beatty Bros., Limited, London, Ont.
The Gendron Mfg. Co. (two), Toronto, Ont.
The Rubber Set Co., Toronto, Ont.
The Military Hospitals Comsn., Toronto, Ont.
The Hydro-Electric Commission, Toronto, Ont.
The Bryan Mfg. Co., Collingwood, Ont.
The Dominion Bridge Co., Toronto, Ont.
The Builders Moulding Co., Toronto, Ont.
The Lincoln Paper Mills, Merritton, Ont.
The Invalided Soldiers' Comsn., Toronto, Ont.
The Harmonic Cabinet Co., Toronto, Ont.
Goldie & McCulloch Co., Ltd., Galt, Ont.
The Hespeler Furniture Co., Ltd., Hespeler, Ont.
The Fort William Collegiate Institute, Fort William, Ont.
Acadia Gas Engines, Limited, Bridgewater, N.S.
The Wiarton Furniture Co., Ltd., Wiarton, Ont.
The Sheppard & Gill Lumber Co., Toronto, Ont.
Haley & Sons, St. Stephen, N.B.
Casavant Freres, St. Hyacinthe, Que.
Chipman-Holden Knitting Co., Hamilton, Ont.
Galt Collegiate Institute, Galt, Ont.

CANADA MACHINERY CORPORATION
LIMITED

Galt, Ontario.

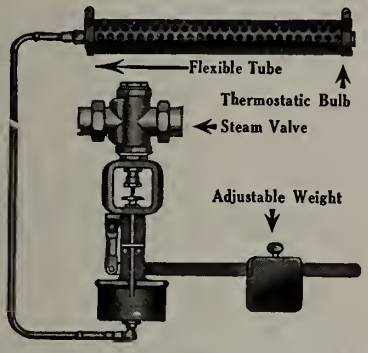
Toronto Office and Warerooms, Brock Avenue Subway

The Better Way of Controlling Kiln Temperature

The world wants finished products now. All costs are rising and your problem is to produce more. Begin by insuring your wood as it goes into the kiln. Every inch of green wood has cost you real money and represents two values—raw value and finished value. Don't allow fluctuating kiln temperature to tamper with these values. Prevent fluctuating temperatures by equipping your kilns with

Powers Heat Regulators

As long as steam pressure is maintained Powers Regulators operate. Their operation insures correct kiln temperatures, saving of fuel by using only necessary heat, saving of labor by releasing men from watching thermometers and



The Powers Regulator No. 15

Specially designed to control temperature in dry kilns, ovens, varnish and dry rooms, etc. Requires no outside power for its operation.

valves, saving of material by cutting down the loss from case hardening, warping, and checking. They also speed up the drying by fully 25 per cent.

During our more than thirty years of experience in automatic temperature control we have gathered some very profitable information for the woodworking industry. Let us show you how to save money on your kilns or other apparatus where heat is a factor. We are cheerfully at your service. Write us today.

The Canadian Powers Regulator Co.
Limited
Specialists in Automatic Heat Control
82 Chestnut Street - Toronto, Ont.

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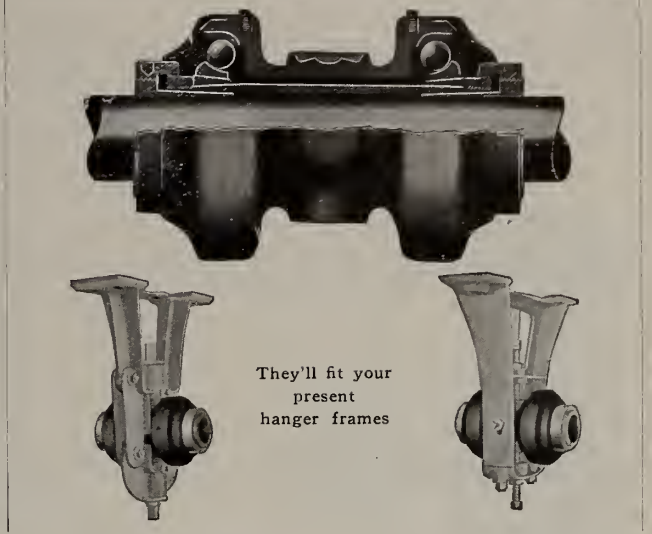

They Save Their Weight in Gold

This is not said for effect—it's a fact.

If you took the actual bearings in a Chapman Double Ball Bearing, and weighed them against the amount of money **in gold** that you would save by using them in place of the old-style babbitted hanger bearings, or roller bearings, the two would balance.

The saving works out from 15% to 40% of the power used, when running under full load. If you are using 100 h.p. at $30 per h.p. a year, that fixes the saving at from $500 to $1,200 a year.

You can buy quite a lot of gold for that.

We use this simile to stimulate your imagination sufficiently to inquire into the utility of Chapman Ball Bearings.

If you do inquire, we'll sell you also **by an appeal to your reason.**

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whether
You buy them or not"

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Shaughnessy Building, MONTREAL

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Plain, Straight and Spiral Grooved

"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co. Limited

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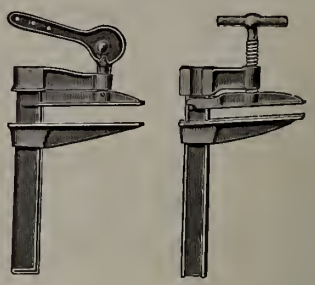
Colt's Clamps

for the

Woodworker



Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

For further information write for Catalogue No. 294.

Batavia Clamp Co.

235 Centre St. BATAVIA, N. Y.

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—will increase your production 25% to 30%. Cutting, trimming, fitting, housing, stair stringers, dadoing for shelving, etc., can be produced on Elliot Woodworkers. Their accuracy and speed will mean a saving in time, labor and money.

Elliot Woodworkers operate from the ordinary lighting circuit, 110 or 220 volts.

Our catalog will interest you —write us for a copy today.

ELLIOT MACHINERY
Company, Limited

BELLEVILLE · ONTARIO

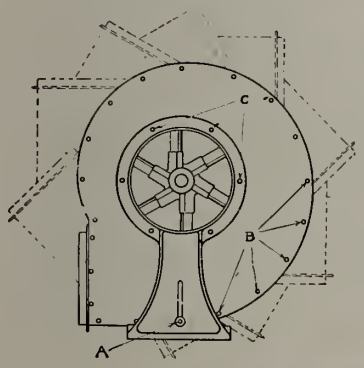
Keep Your Shop Clean

The Canadian Standard Reversible Mill Exhauster will keep your shop clean, remove sawdust, shavings, fumes, gas, or any loose materials and disagreeable odors.

Insurance rates can be reduced; floors and machines covered with sawdust, chips, or shavings, increase the fire risk.

Insurance Companies reduce the premiums where adequate precautions have been taken to prevent fires.

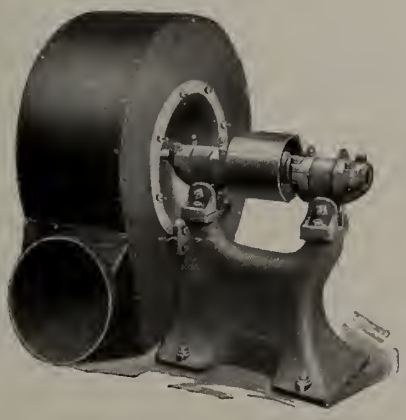
Blast Wheel--This wheel is so constructed that it will handle any kind of stringy material efficiently — such as sawdust, shavings, cotton lint. Will also handle gases, fumes, smoke, etc.



The Canadian Standard Planing Mill Exhausters have reversible housings so that the outlet can be adjusted instantly to any angle desired.

This eliminates necessity of crossed belts. Simplifies changes on alterations in piping or building.

The housing is of heavy rolled steel plate securely bolted together with angle irons. Round cast iron outlet bolted to the housing. Blast wheel mounted on heavy cast iron spider.



Every fan carefully tested by running test at speeds in excess of that required.

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Write for folder "Correct Temperature in the Glue Room."

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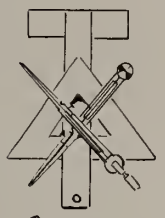

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Williams Machinery Co., A. R., Toronto, Ont.

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Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
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Preston Woodworking Machinery Company, Preston, Ont.
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Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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Yates Machine Co., P. B., Hamilton, Ont.

LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochane & Company. Kitchener. Ont.
Mattison Machine Works, Rockford, Ill.
Petrie. H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Smith, C. W., Grand Rapids, Mich.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

LEATHER (Artificial)
Fibro Mfg. Company, Beverly, N. J.

MACHINE KNIVES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

METALINE NAILS
Canada Tack & Nail Co., Hamilton, Ont.

MIRRORS
Hart Mirror Plate Co., Grand Rapids, Mich.

MITRE SAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

MOTOR TRUCK EXTENSIONS
Swedish Crucible Steel Co., Windsor, Ont.

MOULDERS
Hall & Brown Woodworking Machine Co., St. Louis, Mo.

MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.

MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

NAILS
Laidlaw Bale-Tie Co., Hamilton, Ont.

NAILING MACHINES
Morgan Machine Co., Rochester, N.Y.

OIL STONE GRINDERS
Mummert-Dixon Co., Hanover, Pa.

PANELS
Rutherford & Sons, Montreal, Que.
Waetjin & Co., L., Milwaukee, Wis.

PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago. Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PERIOD MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.

PERIOD TURNINGS
Walter & Sons, J., Kitchener, Ont.

PLANERS
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PORTABLE DRILLS
Wisconsin Electric Co., Wisconsin, U.S.A.

PRESSES (Veneer)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

RESAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A. Cincinnati, Ohio.

RIP SAWING MACHINES
American Woodworking Machinery Company Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Waddell Mfg. Co., Grand Rapids, Mich.

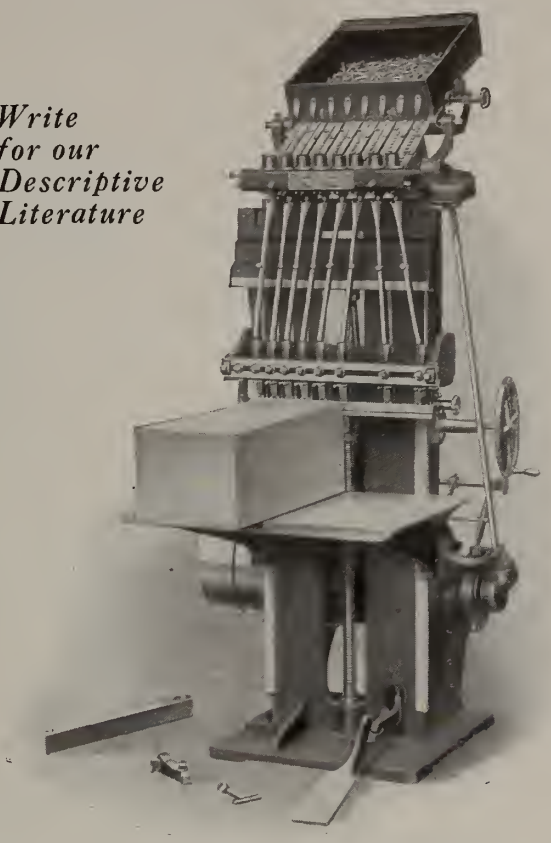
RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.

SAFETY DEVICES
Cowan & Company, Galt, Ont.

How do YOU Drive Nails?

Write for our Descriptive Literature

The Morgan Automatic Nailing Machine will prove a good investment for any woodworking plant. It drives nails anywhere and in any kind of wood, accurately, effectively and faster than it is possible to do it by hand. It makes money for Box Factories, Canning Factories, Cabinet Factories, Furniture Factories, etc.



No. 8 Plain Nailing Machine

Morgan Machine Co.

DEPT. A ROCHESTER, N.Y.

OLSON FRAME EXTENSION

Increases Service Reduces Costs

Just a Few Users—

Robert Bury Co. Canada, Limited, Toronto, Ontario.

Batts, Limited, Toronto, Ontario.

Gibbard Furniture Company, Napanee, Ontario.

Langmuir Manufacturing Company, Toronto, Ontario.

Gardiner Lumber Company, Galt, Ontario.

Irvin Lumber Company, Toronto, Ontario.

The Olson Frame Extension will mean increased carrying capacity for each of your Ford Trucks. They insure smooth running, perfect balance and easy operation that will prove ideal for the transportation of lumber, furniture, etc., for short or long distances.

Olson Frame Extensions are sold by all Ford dealers. Our nearest branch will be pleased to furnish you with further particulars.

Swedish Crucible Steel Co. of Canada, Limited, Windsor, Ont.

Branches:—614 Excelsior Life Bldg., TORONTO. 285 Beaver Hall Hill, MONTREAL.

"Canadian Woodworker" Buyers' Directory—Continued

SANDERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Solem Engineering Co., Sheboygan, Wis.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAND PAPER
Manning Abrasive Company

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Elliot Machinery Co., Belleville, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS
Atkins & Co., E. C., Indianapolis, Ind.
Elliot Machinery Co., Belleville, Ont.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Silver Mfg. Company, Salem, Ohio.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.

SAW BENCH
Sidney Machine Tool Co., Sidney, O.

SAW FITTING TOOLS
Crowell, D. J., Buffalo, N. Y.

SAW SWAGES
Cowan & Company, Galt, Ont.
Crowell, J. D., Buffalo, N.Y.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES
Canada Machinery Corporation, Galt, Ont. ..
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Company, Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont. ..
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY
Reynolds Machine Co., Massillon Ohio.

SCREW HOLES
Stine Screw Holes Co., Waterbury, Conn.

SCROLL SAWS
Canada Machinery Corporation, Galt, Ont. ..
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane, & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamiltonfi Ont.

SECOND-HAND MACHINERY
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Osborne Sexton Machinery Co., Columbus, O.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

STAINS
Ault & Wiborg, Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ohio.
Shannon Co., Ed. J., Cincinnati, Ohio.
Standard Paint & Varnish Co., Windsor, Ont.

SINGLE SPINDLE BOXING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE
Whitney & Son, Baxter D., Winchendon, Mass.

STEEL DOOR MATS
Cary Mfg. Company, Brooklyn, N.Y.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Colladay Machine Works, Indianapolis, Ind.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Tannewitz Works, Grand Rapids, Mich.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohoa.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES
Walter & Company, B., Wabash, Ind.

TEMPERATURE REGULATORS
Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Compan, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS
International Business Machines Co., Toronto, Ont.

TRIMMERS
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Preston Woodworking Machinery Company, Pretson, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS
National Dry Kiln Co., Indianapolis, Ind.

TWINES & WEBBING
Doon Twines, Ltd., Kitchener, Ont.

UPHOLSTERERS' TACKS & NAILS
Canada Tack & Nail Co., Hamilton, Ont.

VARNISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto. Ont.
Penfound Varnish Co., Toronto, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N.Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS
Astoria Mahogany Co., New York, N.Y.
Batesville Lumber & Veneer Co., Lawrenceburg, Ind.
Bury & Compny, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christmann Veneer & Lumber Co., St. Louis, Mo.
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Evansville Veneer Co., Evansville, Ind.
Freiberg Lumber Co., Cincinnati, Ohio
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Geo. Kersley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Litton Veneer Co., Rockford, Ill.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Veneer Co., New Albany, Ind.
Southern Veneer Mfg. Co., Louisville, Ky.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Underwood Veneer Co., Wausau, Wis.
Veneer Manufacturers Co., Chicago, Ill.
Waetjen & Co., George L., Milwaukee, Wis.

VENEER TAPE
Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.

VENEER JOINTERS
Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY
Garlock-Walker Machinery Co., Toronto, Ont.

VENEER PRESSES (Hand and Power)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont
Perrin & Company, Wm. R., Toronto, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Johnson Co., O. E., Chicago, Ill.

WOOD FINISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Penfound Varnish Co., Toronto, Ont.

WALNUT LUMBER
Des Moines Saw Mill Co., Des Moines, Iowa.
Pickrel Walnut Company, St. Louis.
Purcell Walnut Lumber Co., Frank, Kansas City.

WIRE
Laidlaw Bale-Tie Co., Hamilton, Ont.
Pakanship Company, Brooklyn, N.Y.

WIRE BOX STRAPPING
Cary Mfg. Company, Brooklyn, N.Y.

WOOD SCREWS
Robertson Mfg. Co., P. L., Milton, Ont.

WOOD TURPENTINE
Brown Corporation, Quebec, Que.

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Garlock-Walker Machinery Co., Toronto, Ont.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WODD LATHES
Colladay Machine Works, Indianapolis, Ind.

44 Yates No. 275
30 and 60-in. Automatic
Knife Grinders,
Brand New, at
One-half Price

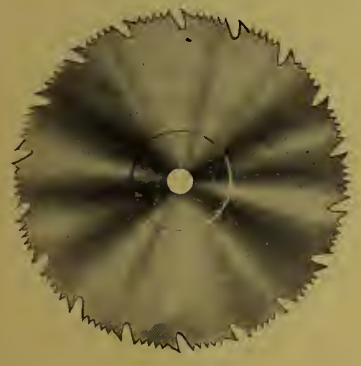
Machines arranged for Motor Application as per cut, or regular belt drive, if wanted.

8 New Andrew Mutiple Vertical Borers, 20, 30, 42 and 60-in., any number of heads.

7 New Hermance Molders, 8, 10 and 12-in., stationary and slip-on heads.

Band rip saw, Fay & Egan, 42-in.
Band saws, 32, 36 and 38-in.
Borer, Andrew, 10-ft., 13-spindle, power table.
Borers, Andrew mult. vert., 20, 42 and 60-in., new.
Carver, 5-spindle, Moore.
Door clamp, Fay-Egan, heavy.
Edgers, two, three and four saws.
Glue cookers and retainers. Glue spreaders.
Hogs, two, Mitts & Merrill.
Jointers, 8, 12, 16, 20, 24 and 30-in.
Knife grinders, two 32-in., F. & E.
Lathe, Ober spoke and handle, almost new.
Lathes, Mattison, No. 8 auto; No. 6 block mach.
Lathes, speed, eight, mounted on iron bed.
Lock-corner machine, Morgan No. 8, full set.
Matcher, American Northwest, 24x8-in., 3 sides.
Matcher, end, Sherman, fine condition.
Matcher, 24x6-in., 3 and 4 sides.
Automobile spoke machines, Defiance, complete set.
Band resaw, 50-in., Fay & Egan, tilting rolls, full set of filing room tools.
Molder, Smith 14-in. outside, latest style, practically new.
Molders, 4-side, 9, 10 and 12-in. American.
Molder, Fay & Egan No. 184, 12-in. outside.
Molders, inside, 13-in. American and Woods.
Mortiser and router, Fay & Egan No. 124.
Mortiser, chain saw, New Britain No. 1, 25 chains.
Mortiser, chain saw, New Britain No. 7, new.
Mortisers, F. & E. vertical, hollow-chisel; also plunger type.
Nailers, two, Morgan No. 8, used three months.
Nailing machines, 2 closed back, 4-track, 4d, 15-in. spread.
Pony planers, 16, 20 and 24-in.
Relisher and mortiser, Greenlee.
Rip saws, self-feed, Hoosier, F. & E., Greenlee.
Router for stair stringers, H. B. Smith, flexible arm with adjustable table and forms.
Sand belt, closet seat and similar work.
Sander, H. B. Smith, spindle and disc, practically new.
Sanders, 30 and 42-in. Columbia; 30, 42 and 48-in. Invincible; 30-in. double Invincible.
Saw, 8-ft. double cut-off, roller table.
Saws, combination and variety, single and double arbor, also tilting arbor, stationary and tilting table, 24 and 30-in. circular resaw.
Saw, circular re-slab, 40-in. blade, power feed rolls.
Shapers, Fay single-spindle reversible, also Shimer single with overhead routing attachment.
Surfacer, 30-in. double, cabinet, B. & M., practically new.
Surfacer, Whitney 30-in. double, sectional roll and sectional chipbreaker; American No. 4½, 36-in. sectional and solid; Fay & Egan No. 140, 27 and 30-in. double divided rolls; also 18, 20, 24 and 30-in. single cylinder panel planers.
Tenoners, B. & M. double-end, also several single-end tenoners with and without copes.
Timber sizer, Fay-Egan 84s, 17x12-in.
Window frame machines, Smith & Phillips combination.
Wood-worker, universal, Fay & Egan and Bentel & Margedant. One lot of glue room machinery.

The Osborne & Sexton Machinery Co.
Re-manufacturers **COLUMBUS, OHIO**



100% Production

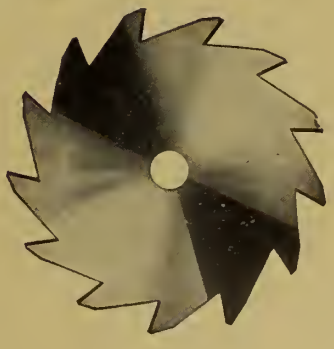
will be necessary to meet the demand for all wood-working material and furniture that will be required for the 4,000,000 buildings that must be erected in 1920.

ATKINS

STERLING QUALITY

SAWS and KNIVES

will make it possible for you to meet this demand in producing your share.



The high grade material and expert construction of Atkins Saws and Knives make possible the superior service they render.

Let Their Efficient Performance Tell You the Atkins Story of Perfection.

Write to-day for our Knife Booklet "CW" and Pattern Template Paper.

E. C. ATKINS & CO., ***Makers of Sterling Saws***

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

-getting results!

On the MATTISON LATHE, it does not matter whether the shape to be turned is plain or complicated. The most difficult square, oval, octagon, or hexagon pattern can be produced just as easily as the plainest round turning.

The work comes from the machine smooth and uniform without any of the grain in the stock being torn out, or the corners or fine members being broken off.

You are invited to send for a circular of the new Model "Mattison." It describes the heavier construction; the new cutterhead, and other improvements.

Mattison Mach. Works

Rockford, Illinois, U. S. A.

Volume Twenty TORONTO, MAY, 1920 Number Five

CANADIAN
WOODWORKER
and
Furniture Manufacturer

C.M.C. ANNOUNCEMENT

NEW C. M. C. No. 500 DOUBLE END TENONER

For some years past the Canadian Woodworking Trade has been compelled to go outside of this country to purchase a modern Double End Tenoner. Feeling that the Trade would prefer to purchase a Canadian made machine of this type, especially so in view of the recent adverse exchange on Canadian money, we are developing and placing on the market the only up-to-date Double End Tenoner being built in this country.

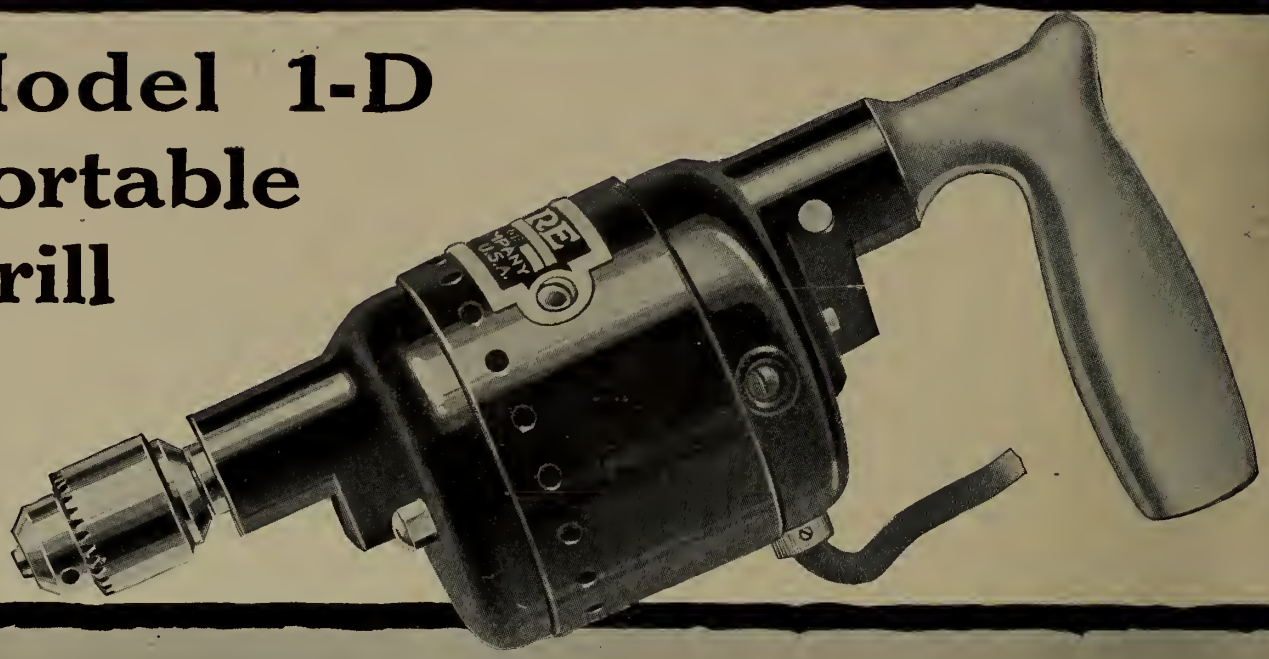
The machine, we feel confident, will be quite the equal, if not the superior, of any imported Tenoner. It will excel in convenience and effectiveness of operation and will be built with that thoroughness which characterizes C.M.C. Wood Tools.

Pending receipt of our printed descriptive matter on this machine which is in the course of preparation we would be pleased to furnish parties interested with full description in detail.

CANADA MACHINERY CORPORATION, GALT, ONTARIO
LIMITED
Toronto Office and Warerooms: Brock Avenue Subway

Alphabetical Index to Advertisers, Page 12

Model 1-D Portable Drill



HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—4¾ pounds.

Capacity—Steel, 0 to $\frac{3}{16}$". Wood and alloys, 0 to $\frac{1}{4}$".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3⅜ inches.

Spindle—Offset from center $\frac{3}{32}$".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

Jacob's Chucks used as a regular equipment.

FOR speed in drilling and countersinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

Wisconsin Electric Company
7123 Sixteenth Street, Racine, Wisconsin, U. S. A.

DUMORE GEARED ELECTRIC DRILLS

First in Quality

Two New Catalogs

One for the Teacher of Manual Training and one for the Furniture Manufacturer

Which do you want?

The Manual Training book is comprehensive in that it is not only a catalog but a manual for students and teachers.

The book for Furniture Manufacturers is a catalog—nothing more—containing the American line of machines for Cabinet Shops—beautifully illustrated and clearly described.

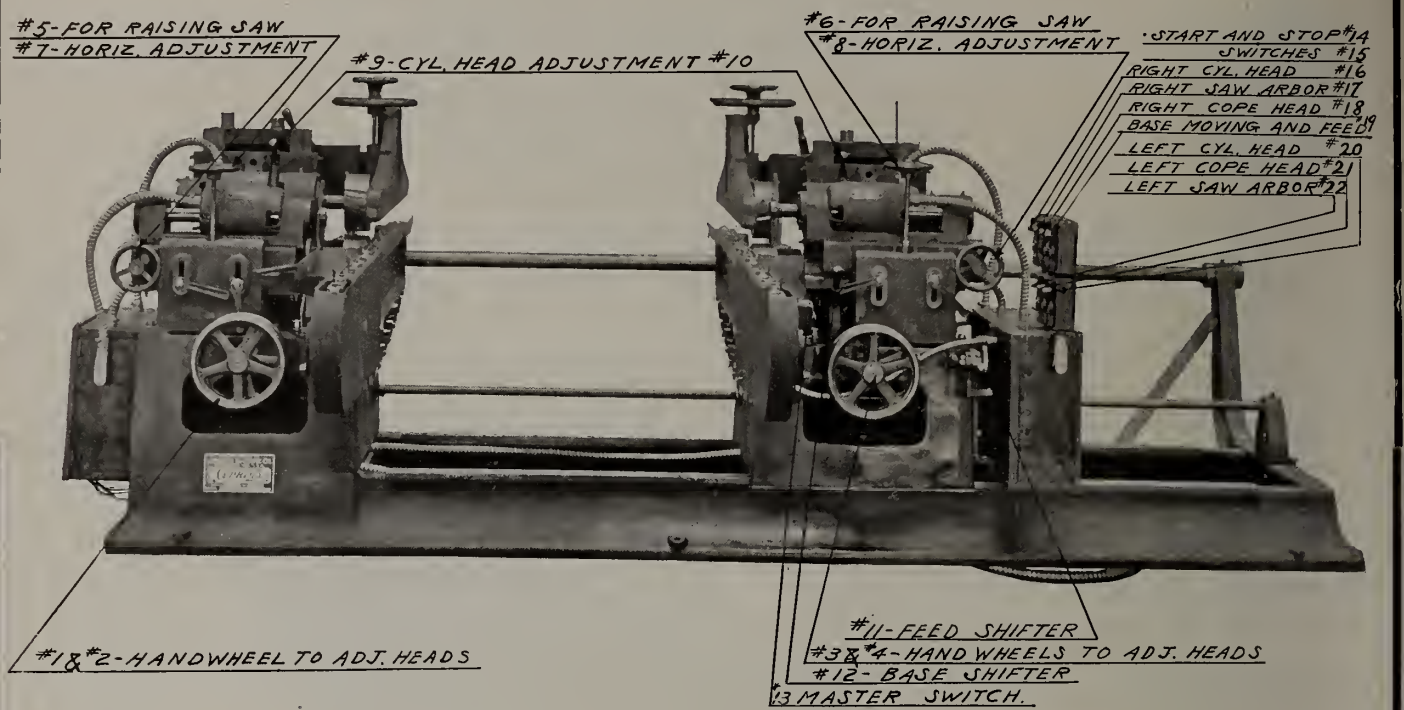
Write today for the one you desire.

Garlock-Walker Machinery Company, Limited

MONTREAL TORONTO WINNIPEG

"JENKINS"

Double End Tenoning Machine



THE LATEST IMPROVED MODEL

The re-designed model of the Hayes Standard Double End Tenoner embodying many practical improvements.

Uses—Cutting tenons on furniture, sashes and doors, phonographs and piano stock. It is also used in automobile body plants for halving, cutting off and tenoning stock.

This machine has a capacity for all lengths between 5 and 90 in. and widths between 1 and 60 in. The range of tenon sizes is: length ¼ to 7 in.; thickness ⅛ to 4 in.

It is exceptionally well designed, and constructed to withstand long and constant service. A very desirable feature is that of adjustments, all of which except the cope spindles, are made from the front end of the machine.

Made in motor driven model or belt driven model, shipping weight 9000 lbs.

The Jenkins Machine Company

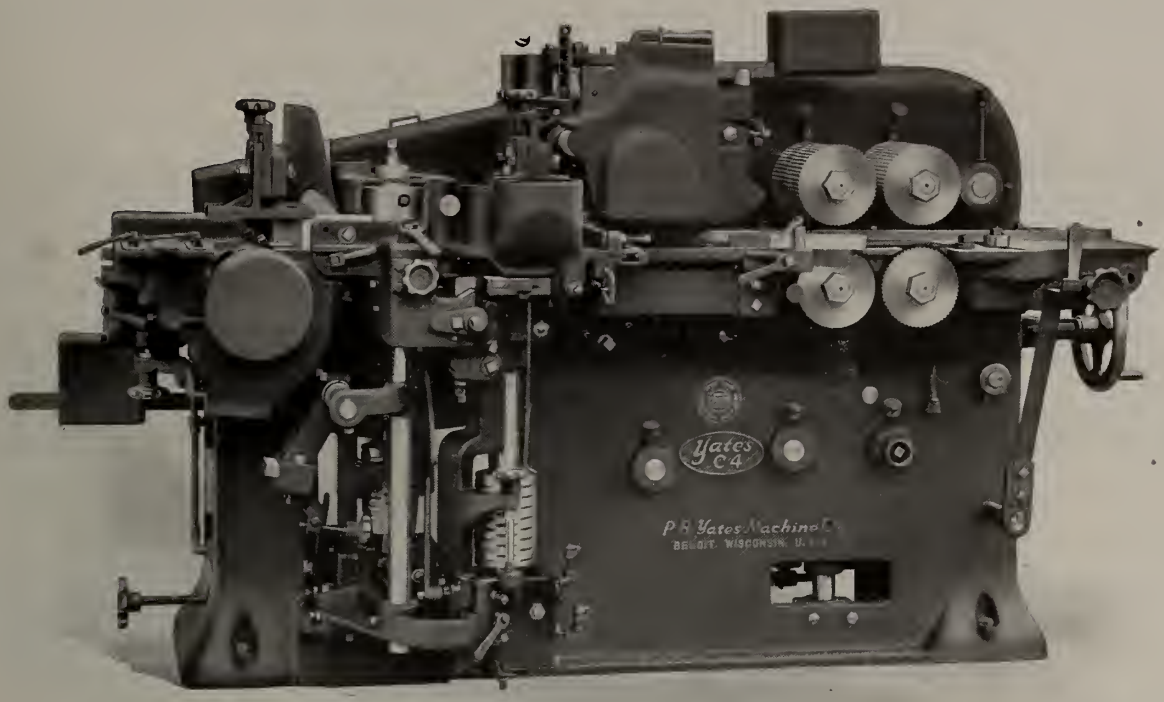
(Successors to Hayes Machine Co. and Falls Machinery Co.)

SHEBOYGAN FALLS, - WIS., U.S.A.

Canadian Sales Agents

Garlock-Walker Machinery Company, Limited

MONTREAL TORONTO WINNIPEG



Production!

The world's great need to-day is production. The world's great shortage is that of the hands to do the producing. The shortage of hands must be off-set by a greater use of machinery. The Yates C-4 Moulder is one of the most useful machines known to the woodworking trade. Look it up. You'll be glad that you did.

P. B. Yates Machine Company Ltd.

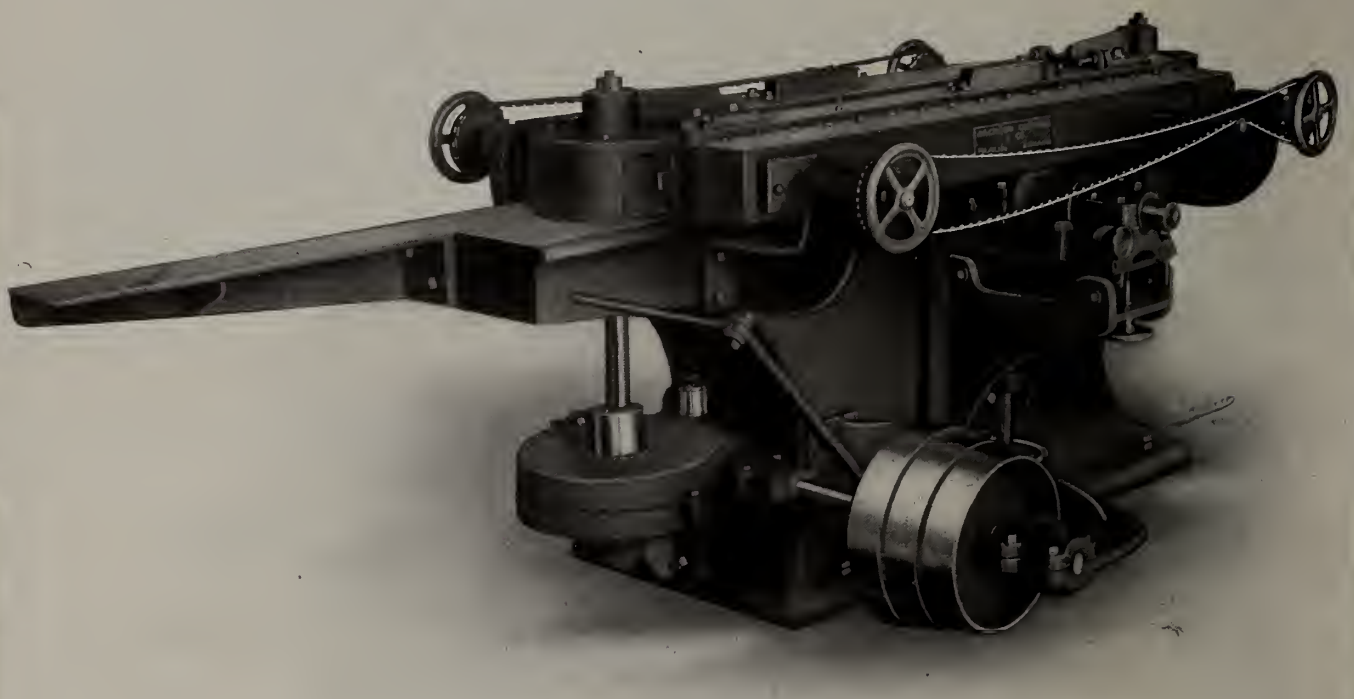
HAMILTON, ONT. CANADA

U. S. Plant, Beloit, Wisconsin

Will do the work of Five Hand Jointers in making Glue Joints

This is the guarantee given with our

No. 4 Continuous Feed GLUE JOINTER



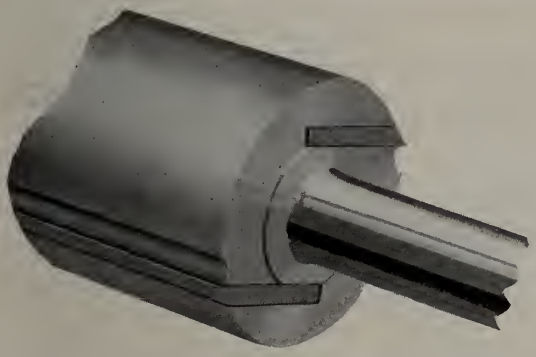
Strongest and most complele machine on the market.
Any part may be readily removed or renewed.
Feeds in opposite direction, giving 100 feet per minute.
Works material from six inches up to any length desired.
Also from one quarter to 3 inches thick, and from three-quarters of an inch wide up to any width.
1 set Shimer Special Jointer Heads supplied with machine.

Investigate the merits of this machine—it will pay you!

Jackson, Cochrane & Company

KITCHENER - CANADA

The Shimer Round Safety Cylinder With High Speed Knives



A Round Safety Cylinder that will appeal to the buyer and the user for three reasons:

The first is our adjusting nut for setting the knives. It is the only cylinder with properly located adjusting nuts for setting the knives, which, with our way, can be set to 1/1000 of an inch.

The second is our way of holding the knife without tapping into the head.

The third is the correct angle of cut for the knives.

Made for any of the different makers' machines and in any length of cylinder.

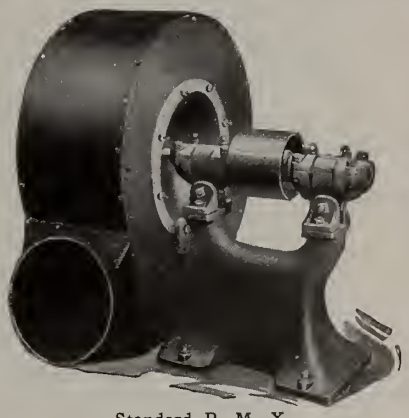
Write for prices

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

GALT, ONTARIO

"Canadian" Mill Exhausters

Handle Any Loose Material



Standard P. M. X.

The Canadian Standard Mill Exhausters will handle any kind of material efficiently, such as sawdust, shavings, cotton lint, or stringy material, gases, fumes and smoke.

They are adjustable to any angle of discharge—have universal type of wheel and carefully constructed self-aligning oil-ring bearings.

Catalog 410-13 gives technical data and prices. Write for a copy.

Canadian Blower & Forge Co., Ltd.

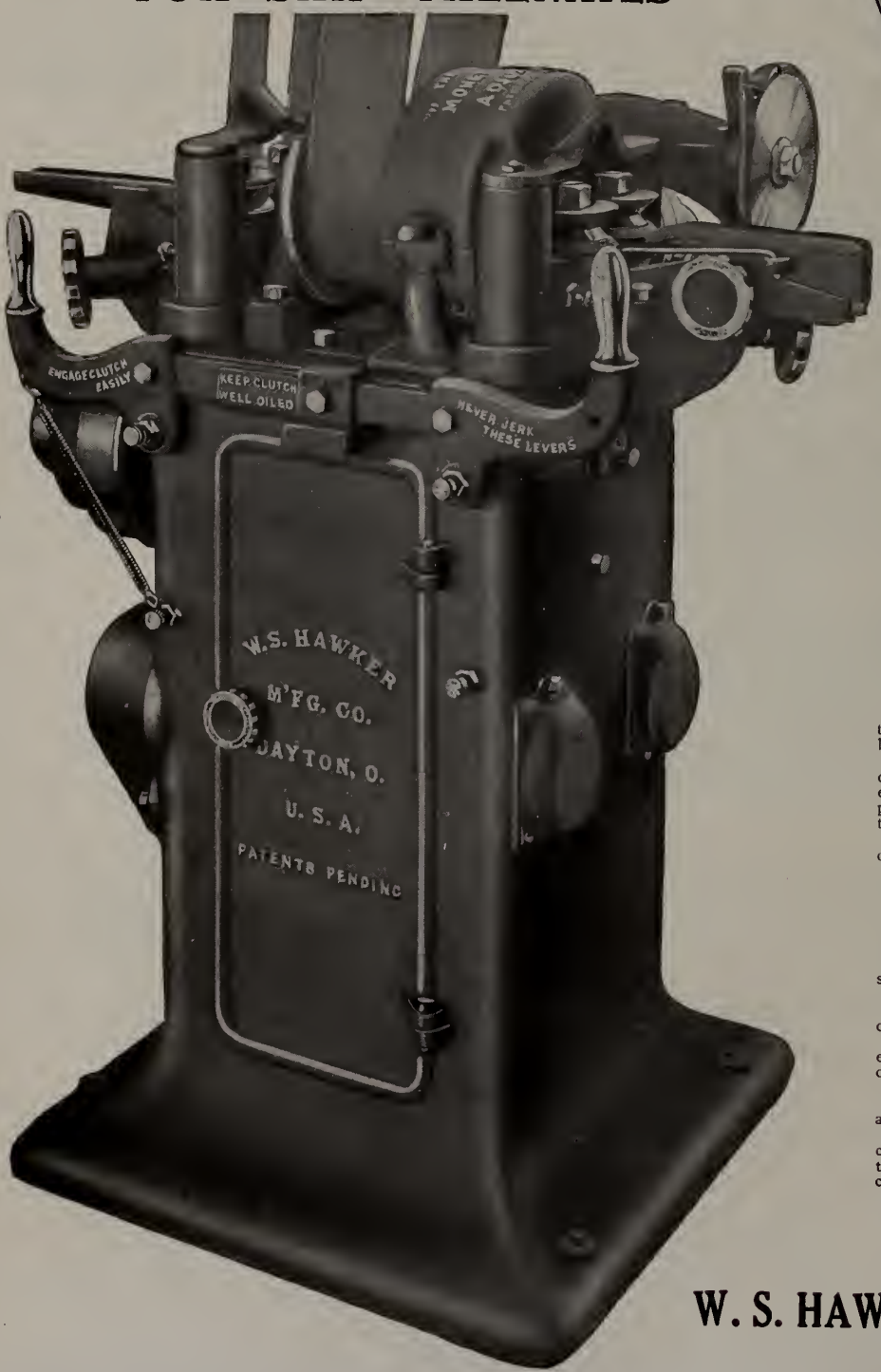
KITCHENER, ONT.

UNIVERSAL ADJUSTABLE CUTTER HEAD Patented
Infringements (maker or user will be vigorously prosecuted.

Two Heads

that have put 100% more profit in the production of Dowel Stock.

FOR SHIP TREENAILS



W. S. HAWKER.

Inventor and Designer of the World's most efficient Tubular Turning Machinery

THE

Money Maker Adjustable Rod

and

Dowel Machine

The machine that is sent under a guarantee to show you a gain of from 100 to 400 per cent. before you buy it.

The improved dowel machine that 90 per cent. of the largest and oldest machinery builders and dealers now endorse and recommend in preference to the solid chuck machines they themselves previously built.

One cutter head turns from 1/4 in. to 2 in. diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

Works stock as short as five inches.

Rolls automatically centre variations in squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid chuck dowel machine.

We can save you from one dollar out of every two, to four out of every five, that the operation of solid chuck machines costs you.

Engagements for competitive test solicited.

Formal orders not solicited. All sales made after demonstration.

The only question is, are you willing to cut cost of your dowel turning to one-half or one-third of what it costs with any make of solid chuck machine?

Machine delivers the goods before you buy.

State conditions of stock closely.

Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY

DAYTON, OHIO.

Efficiency Counts

IN

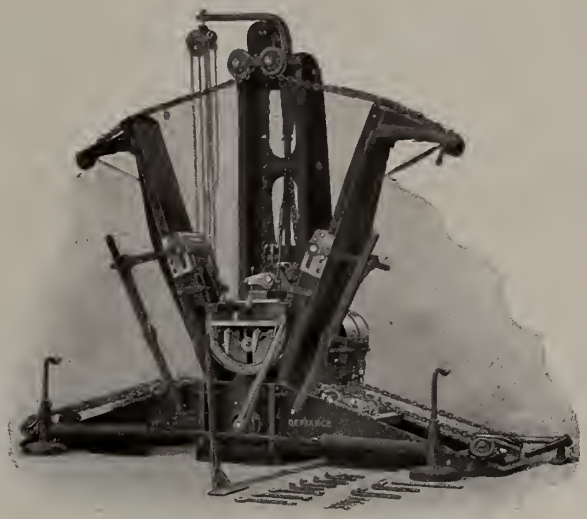
Wood Bending Methods

The Defiance Bending Machines

will increase your present output and reduce your losses in breakage to a minimum. Wood Benders throughout the world are using **Defiance Bending Machines.**

The Defiance High Productive Wood Bending Machinery

is built in various designs and sizes, and is particularly adapted to bending rims for artillery wheels, automobile, auto-truck, wagon and carriage wheels, table rims, plow and truck handles, hames, bows for vehicle tops and steering wheel rims.



12" Patent Rim, Felloe and Hound Bending Machine

Write for illustrated and descriptive circular on this machine

THE DEFIANCE MACHINE WORKS

New York City ***DEFIANCE, OHIO, U.S.A.*** *London, England*

HART MIRROR PLATE CO.

IMPORTERS AND MANUFACTURERS OF

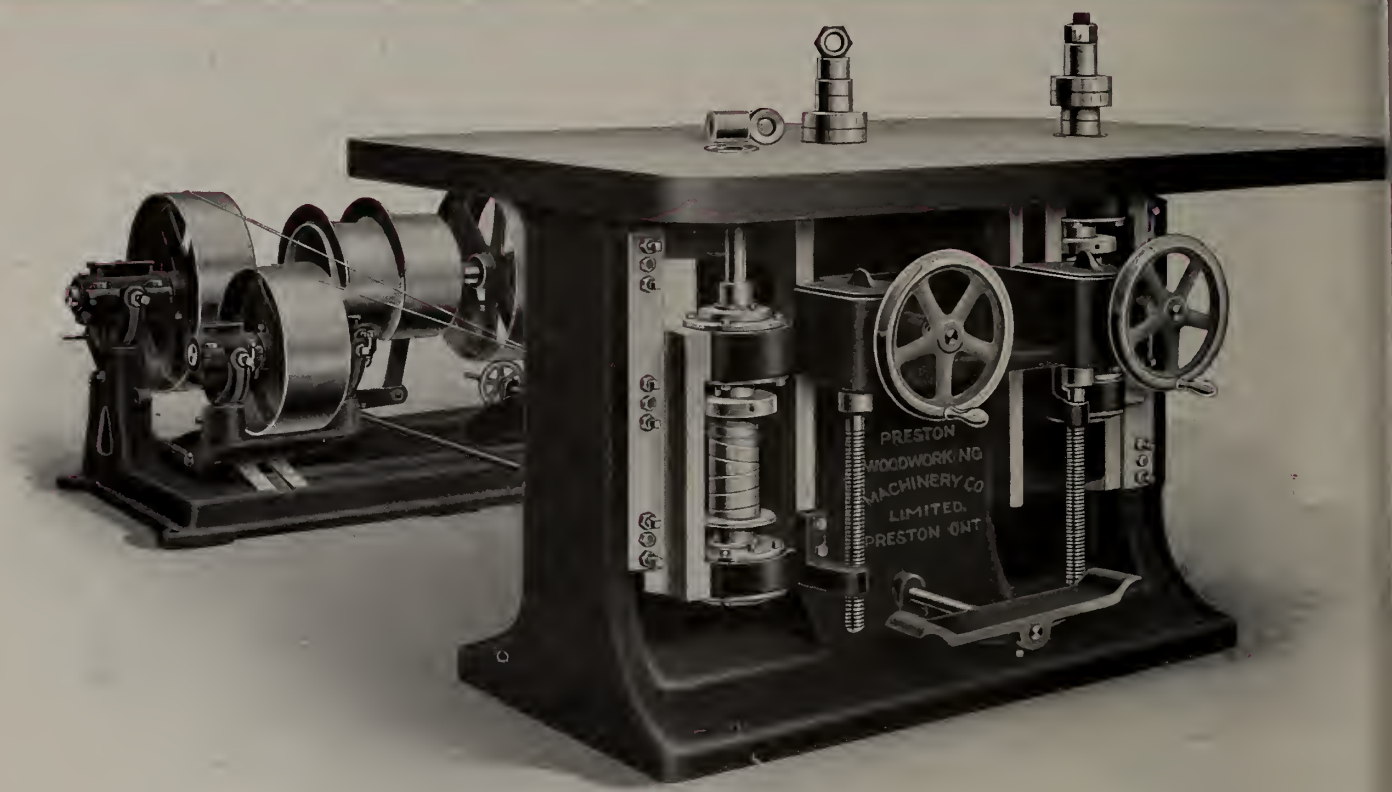
MIRRORS

GRAND RAPIDS QUALITY

Grand Rapids, Mich.

Largest manufacturers of high grade mirrors in America serving the furniture trade exclusively.

"PRESTON"



You Can Double Your Output

WITH OUR NO. 162

Heavy High Speed Ball Bearing Shaper

It's a giant for work and built for heavy service. Made with either single or double spindle, according to your particular needs.

Get these predominating features—
7000 to 8000 R. P. M.
SKF Ball Bearings.
Weight 2,750 lbs.

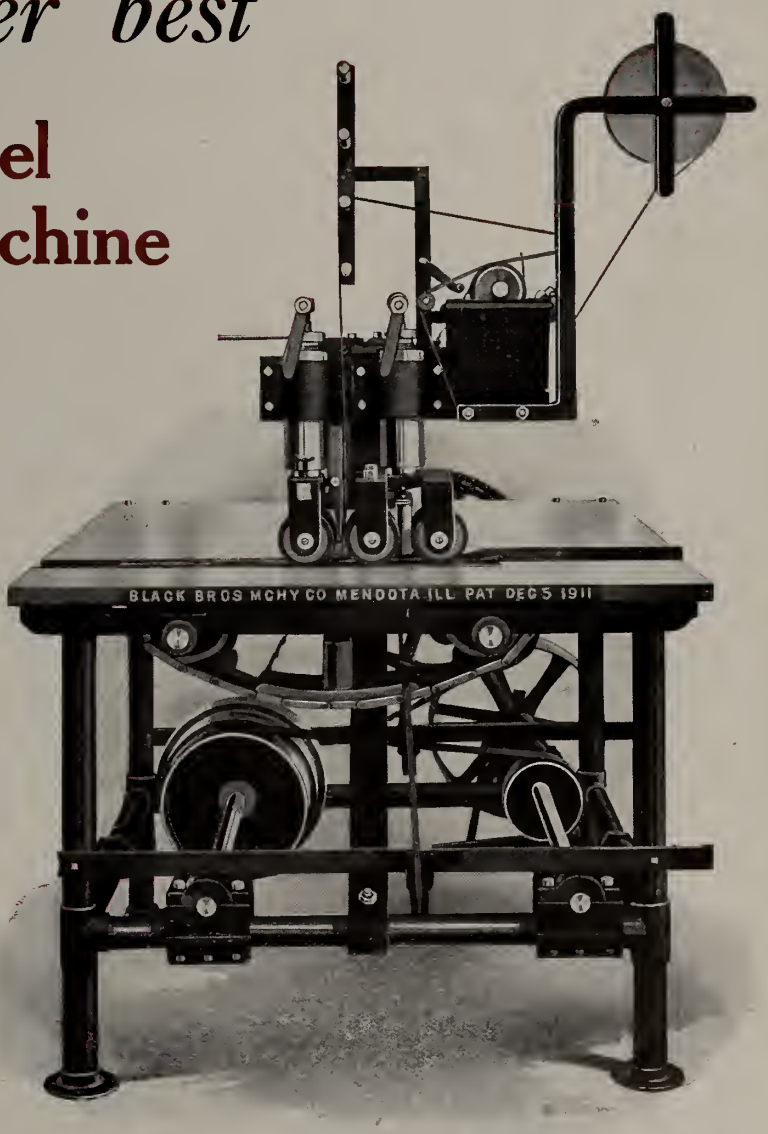
Let us give you the full particulars or help you with any difficult problem that affects your woodworking machines

The **Preston Woodworking**
PRESTON

Woodworking Machinery carries a Greater Production Guarantee with it

There is no other best

Black Bros. Model Veneer Taping Machine leads them all



It is the "peer" of all taping machines. The fact that it is in daily use in many of Canada's largest factories and giving the best of service speaks volumes for its efficient work. It will reduce the labor-costs of your veneer room and increase the volume and quality of the work.

We do not make these unusual claims without standing behind them. We will put one of these machines in your factory on trial to prove that it will do all we claim for it.

Machinery Company Ltd.
ONTARIO

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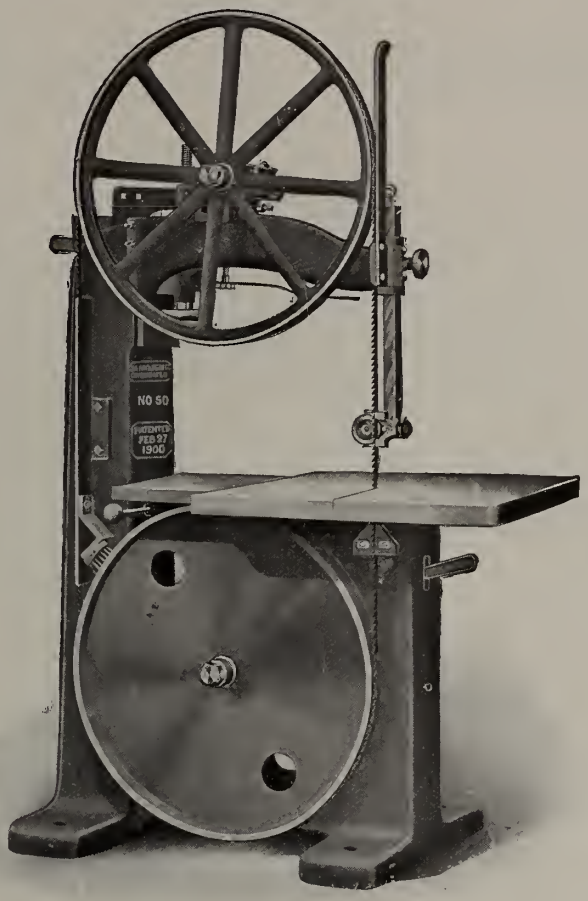
Wood Working Machinery

BELT SANDER 319

CONVENIENT, SIMPLE, SUBSTANTIAL, EFFICIENT. TABLE 5½′ or 8′.

COWAN & COMPANY OF GALT, LIMITED, Galt, Canada



Save 25% to 50% of Blade Upkeep and Power Cost

Get Two, Even Three Times As Much Work

It's not the blades that wear out that cost, it's those that break.

It's the broken blades that cut down productive time and cost to repair and to replace.

Blade breakage is reduced to a minimum on Fay-Egan No. 50—36" **Square Column "Lightning Line" Band Scroll Saws.**

The Fay-Egan "Knife Edge" Blade Tension, made on the principle of a fine laboratory balance scale, is so sensitive that it compensates for changes in atmospheric conditions—yet, so flexible, you can pass a block between blade and wheel, while running, without breaking the blade. Folks tell us blade expense on "No. 50" averages 50 to 75 per cent. less than on the old timers.

The solid lower wheel acts like the fly wheel on your engine, its momentum carrying the load, so that the power consumption is reduced fully one-half, while at the same time it controls the light-spoked upper one, preventing over-running and choking down on a heavy cut.

The heavy square column eliminates vibration and permits the wheels to be revolved at 50 to 100 per cent higher speed, increasing the cutting capacity to double, and in some cases, triple that of the ordinary band saw.

As a user of saws, you cannot afford to ignore what Fay-Egan Square Column Band Saws are doing for others and can do for you. An investigation does not obligate you.

Write for Bulletin M-4

J. A. FAY & EGAN CO.

153-163 W. Front St. **CINCINNATI, O.**

What Does SKF Mean?

To say that SKF denotes a standard of quality in a ball bearing is to recount that which has been proven and obvious for years.

To even say that SKF is a mark denoting a kind of bearing is to omit its more important significance.

For years this SKF mark has been the device of a business, pioneering in all fields of industry, championing the application of the ball bearing to mechanical design.

So that to the extent that it has overcome precedent in machine design, or upset traditions in bearing practice, SKF means more than a kind or type of bearing; it is a brand of service—working in the cause of better machine practice.

CANADIAN SKF COMPANY, LIMITED

412 St. James St.
MONTREAL

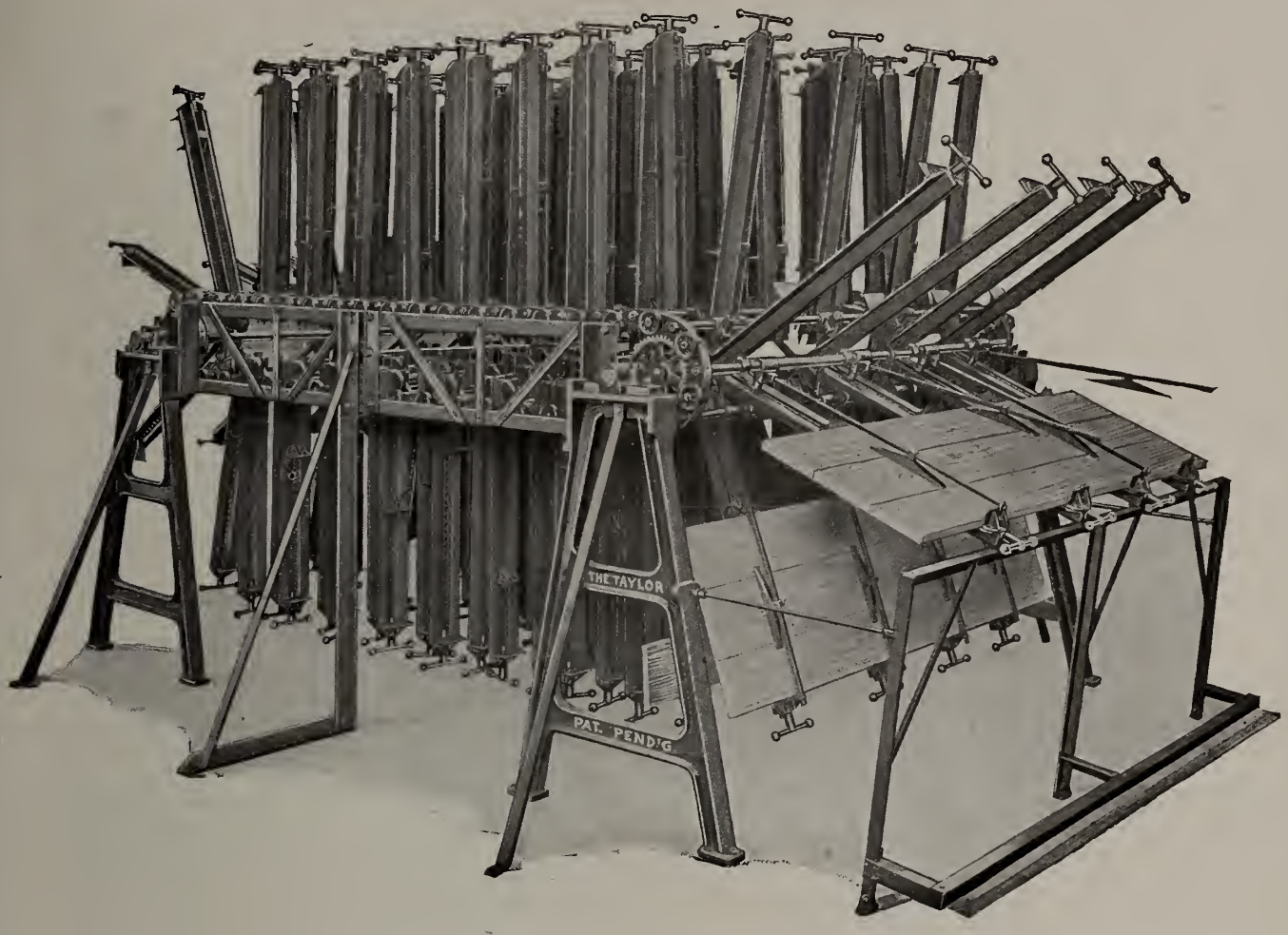
83 King Street W.
TORONTO

SKF INDUSTRIES

Hess-Bright Ball Bearings
S K F Ball Bearings
Atlas Steel Balls
Gronkvist Chucks
Transmission
Hangers

CLAMP The Taylor CARRIER

REG. U.S. PAT. OFF. TRADE MARK



Forty section machine carrying 160 clamps, measuring 8 ft. 2½ in. between shaft centers.

The clamp is one of the most interesting features of the clamp carrier. A remarkable strain can be applied with greatest ease; the work it turns out—both thick and thin stock—is 100 per cent. perfect.

An Engineering concern recently wrote:

"I am recommending Taylor clamps to the Germain Mfg. Co. because I have proven the clamps more efficient through scientific time studies on both and all existing types of gluing-up machines and devices."

As a result of the above recommendations, The Germain Mfg. Co. referred to bought two Taylor carriers. They installed them, and tested them and have since purchased two more. We can tell you numerous instances where customers are using from two to nine Taylor carriers each as a result of similar experiences.

Let us prove the truth of these claims by showing you one of these carriers in operation, or you can try the clamps out on your own work. Ask for C. C. Folder and further information.

A. R. Williams Machinery Co., Toronto, Canada — Representatives

James L. Taylor Manufacturing Co.

POUGHKEEPSIE, N. Y.

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DRY AND PARTLY DRY STOCK

Ready for Shipment

RED GUM

1 car 6/4 FAS Qtd.
3 " 6/4 No. 1 Com. Qtd.
1 " 6/4 No. 2 Com. Qtd.
3 " 6/4 FAS Plain
10 " 6/4 No. 1 Com. Plain
3 " 6/4 No. 2 Com. Plain
2 " 4/4 FAS Plain
10 " 4/4 No. 1 Com. Plain
3 " 4/4 No. 2 Com. Plain

SAP GUM

8 Cars 6/4 FAS
10 " 6/4 No. 1 Common
8 " 6/4 No. 2 Common
1 " 6/4 No. 3 Common
2 " 5/4 FAS
½ " 5/4 No. 1 Common
½ " 5/4 No. 2 Common
13 " 4/4 FAS
10 " 4/4 No. 1 Common
10 " 4/4 No. 2 Common
2 " 1 x 13-17 FAS
3 " 1 x 13-17 Box Boards
3 " 1 x 9-12 Box Boards

CYPRESS

5 Cars 6/4 Select
4 " 6/4 No. 1 Shop
1 " 6/4 No. 2 Common
1 " 6/4 Dog Boards
5 " 4/4 No. 1 Common
2 " 4/4 No. 2 Common
2 " 4/4 No. 3 Common
1 " 4/4 No. 2 Boxing
3 " 4/4 Pecky

ARKANSAS YELLOW PINE—Air Dried

3 Cars 4/4 20% 6", 50% 8", 20% 10", 10% 12".

OAK

½ Car 4/4 FAS Qtd. Red
½ " 4/4 FAS Qtd. White
2 " 4/4 No. 1 Common Qtd. White
1 " 4/4 Log Run Qtd. Red
1 " 10/4 No. 1 Common Plain Red
1 " 10/4 No. 2 Common Plain Red
3 " 4/4 No. 1 Common Plain Red

OAK—Continued

2 " 4/4 FAS Plain White & Red
5 " 4/4 No. 1 Common White & Red
5 " 4/4 No. 2 Common Red
3 " 4/4 No. 3 Common Red
2 " 4/4 Sound Wormy

COTTONWOOD

2 Cars 4/4 No. 1 & 2 Common

ELM

2 Cars 12/4 Log Run, 20% No. 2 Common
4 " 10/4 Log Run, 20% No. 2 Common

LOUISIANA WHITE CANE ASH

1 Car 5" No. 1 Common & Better
1 " 4" No. 1 Common & Better
1 " 3" No. 1 Common & Better
1 " 6/4 No. 1 Common & Better
1 " 8/4 No. 2 Common
1 " 6/4 No. 2 Common
2 " 5/4 No. 2 Common
1 " 4/4 No. 2 Common

ABERDEEN LUMBER COMPANY, Pittsburgh, Pa.

Tennessee Aromatic Red Cedar

STRAIGHT CARS OR MIXED WITH HARDWOODS

Quartered Sap Gum

4 cars 4/4" Common & Better
3 " 6/4" Common & Better

Plain Sap Gum

3 cars 4/4" 1st and 2d, 13/17" w.
10 " 4/4" No. 2 Common
5 " 4/4" No. 3 Common
5 " 4/4" No. 2 & 3 Common
2 " 6/4" Common & Better
1 " 6/4" No. 1 Common
10 " 6/4" No. 2 Common
5 " 6/4" No. 2 & 3 Common
5 " 6/4" No. 3 Common
1 " 4/4" 9/12" Box Boards

Plain Red Gum

3 cars 4/4" 1st and 2nd
3 " 4/4" No. 1 Common
2 " 4/4" No. 2 Common
1 " 6/4" No. 2 Com. & Btr.
1 " 8/4" No. 2 Com. & Btr.
2 " 8/4 No. 3 Common

Quartered Red Gum

2 cars 4/4" 1st and 2nd.
2 " 4/4" No. 1 Common
2 " 6/4" Common & Better
2 " 6/4" No. 2 Com. & Btr.
1 " 8/4" 1st and 2nd
1 " 8/4" No. 1 Common

Red Gum Figured Wood

2 cars 4/4" Com. & Btr. Plain
2 " 4/4" 1st and 2nd—Qtd.
2 " 4/4" No. 1 Common Qtd.
1 " 8/4" Com. & Btr. Qtd.
1 " 10/12/4 Com. & Btr. Qtd.

Plain Red Oak

2 cars 4/4" Common & Better
3 " 4/4" No. 1 Common
1 " 6/4" No. 2 Com. & Btr.

Quartered Red Oak

1 car 4/4" No. 1 & 2 Common

Plain White Oak

2 cars 4/4" 1st & 2nd
5 " 4/4" No. 1 Com. & Btr.
5 " 4/4" No. 2 Common

Quartered White Oak

1 car 4/4" Common & Better
1 " 4/4" No. 1 & 2 Common
1 " 4/4" 2" to 5½" Clear Strips Snd.

Miscellaneous

5 cars 4/4" No. 3 Com. Mixed Oak
1 " 8/4 & 10/4 No. 3 Com. & Btr. Mixed Oak
1 " 4/4" L. R. Pl. Black Gum
1 " 4/4" L. R. Qtd. Black Gum
1 " 8/4" L. R. Elm
1 " 10/4" L. R. Elm
2 " 6/4" No. 3 Common Elm
1 " 8/4" No. 3 Common Elm
1 " 10/4" No. 3 Common Elm
1 " 4/4, 5/4 & 6/4 No. 3 Com. Ash
1 " Shop & Better Cypress

St. Francis Basin Hardwoods

GEO. C. BROWN & COMPANY

Mills — PROCTOR, Ark., COSGROVE, Ark., GRENADA, Miss.

Main Office — MEMPHIS, Tenn.

Canadian Representative: M. E. Cummings, 814 Richmond Ave., Buffalo, N. Y.

QUALITY LUMBER

in

Oak - Poplar - Gum

Quarter-Sawn or Plain
All Thicknesses

ADVISE US YOUR REQUIREMENTS

QUALITY SERVICE

Memphis Band Mill Co.
Memphis, Tenn., U.S.A.

Boland Lumber Company

Murray Bldg., Grand Rapids, Mich.

Manufacturers and Wholesalers Northern and Southern Hardwoods

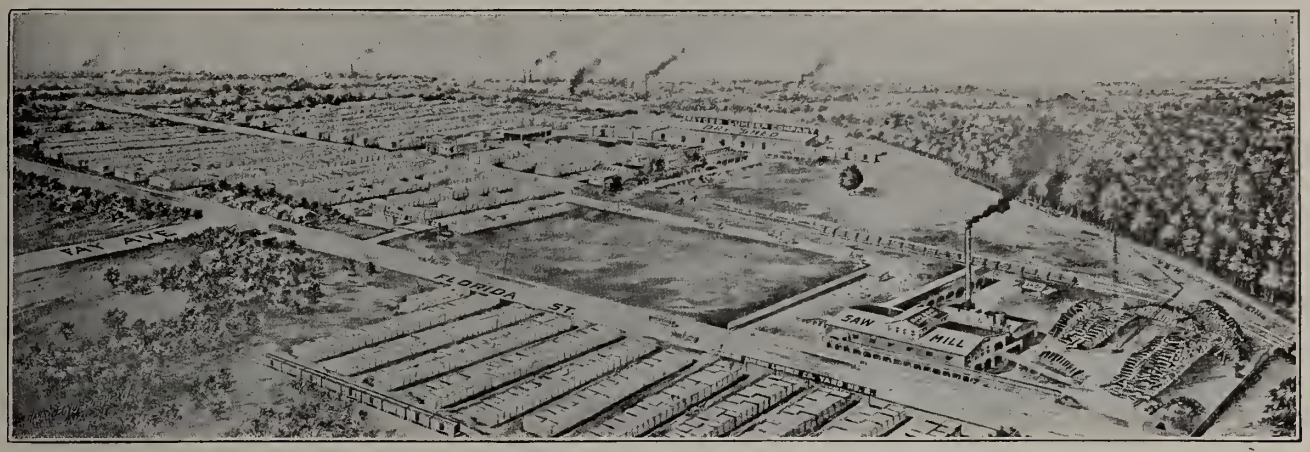
Northern Woods:

Ash, Basswood, Beech,
Birch, Hard Maple,
Quartered Maple,
White Maple, Soft Maple,
Soft Elm, Rock Elm.

Southern Woods:

Cherry, Chestnut,
Cottonwood, Cypress, Gum,
Hickory, Magnolia,
Oak, Poplar, Sycamore,
Walnut, Willow.

Please send us your inquiries and it will be a pleasure to quote you and describe our stocks



Band Mill and Yards, Memphis Plant.

WE ARE SPECIALISTS IN

Q. S. R. G. S. N. D.

QUARTER SAWN RED GUM, SAP NO DEFECT

We are a dependable source of supply for this stock in thicknesses of 1½", 2", 2½" and 3", and will take pleasure in making you delivered prices at all times.

If you are not familiar with the merits of Quarter Sawn Red Gum, Sap no Defect, ask us to tell you about it.

We manufacture all the lumber we ship, and operate two band mills on our own timber, which enables us to ship stock of even grade, color and texture.

Manufacturers of all kinds of high grade Southern Hardwoods.

"DIRECT FROM PRODUCER TO CONSUMER"

GAYOSO LUMBER COMPANY

P.O. Box 1097 MEMPHIS, TENNESSEE U.S.A.

Reese Sheriff Lumber Co.

WILLIAMSPORT, PENNSYLVANIA

Manufacturers of

Northern and Southern Hardwoods White Pine, Spruce and Hemlock

With special attention to **Oak, Chestnut, Poplar, Cherry, Walnut, Gum and Basswood.**

OUR MOTTO

REASONABLE PRICES—that you can afford to pay.
EFFICIENT SERVICE — that you have a right to expect
FAIR TREATMENT — that you can depend on getting

We would appreciate an opportunity of furnishing a portion of your lumber requirements.

Are You Prepared "To Ride the Crest" of the Steadily Rising Tide of RED GUM *Popularity?*

Manufacturers of Desirable Grades of Furniture, those who have their fingers on the pulse of public taste, are rapidly *increasing* their lines of good

RED GUM

"Slow beginners" (known as the ultra-conservatives)—those who follow public taste at a safe distance behind—are *also* using a most unaccustomed quantity of **Red Gum**.

*This is the final proof that "***Red Gum** *has COME."*

HOW IS YOUR LINE? ARE YOU "TO BAT" or on the bench, "waiting"?

The appropriate grades of **Red Gum**, "America's Finest Cabinet Wood," for good furniture (and trim), for every sort of use, are READY for PROMPT DELIVERY—and at prevailing prices are "the wisest buy for wise buyers" in the whole list of high-class furniture woods today.

Up-to-date architects and "interior landscape artists" are waking up and "giving their clients what they want"—i. e., **Red Gum**. (*ARE YOU?*) IT WILL PAY YOU TO *RIDE THE TIDE.*

WRITE US FOR ANY INFORMATION YOU WANT. WE'LL GIVE IT TO YOU RIGHT.

ADDRESS: RED GUM DIVISION,
AMERICAN HARDWOOD MANUFACTURERS' ASSOCIATION
1314 Chamber of Commerce Bldg., Memphis, Tenn.

I offer the following West Virginia stock for immediate shipment:

100,000 Ft. 4/4 Sound Wormy Chestnut.
100,000 " 5/4 " " "
75,000 " 6/4 " " "
70,000 " 8/4 " " "

No. 1 Common and Better Chestnut

100,000 Ft. 4/4
100,000 " 6/4
100,000 " 8/4 60% 14 and 16 feet long, 50 to 60% 10" and wider.
15,000 " 4/4 FAS Plain White Oak.
75,000 " 4/4 No. 1 Com. Pln. Wh. Oak.
100,000 " 6/4 No. 1 Com. Pln. Wh. Oak.

I have also a car of 4/4 No. 1 C & B Tennessee Red Cedar in transit.

I can make immediate shipment of Crating Lumber, Excelsior and Wood Wool.

Write, Wire or Phone for Prices.

PERCY E. HEENEY
202 Weber Chambers, KITCHENER, ONT.

H. W. Darby Hardwood Lumber Company

Manufacturers of

Hardwood Lumber

Red and Sap Gum a Specialty

Gum, Oak, Tupelo, Poplar
Ash, Elm, Cypress

Rooms 1531-33 Bank of Commerce & Trust Bldg
MEMPHIS, TENN.

Mills at:
Sidon, Miss Money, Miss.
Greenwood Miss.

"YES!" IS THE WORD FOR AMERICAN OAK TODAY!

to ALERT FURNITURE MAKERS: "A WHISPER IS ENOUGH"

From FILING CABINETS and other Office Furniture to "the bones of great ships"—OAK is **OAK.** (Supreme.)

From ***DELICATELY CARVED FURNITURE*** for the ***DILETTANTE TASTE*** to the sills and ribs of great structures whose nobility is in their sheer strength (and to the historic beams of Westminster Abbey) OAK is **OAK.** (Supreme.) ***GOOD*** **OAK FURNITURE is "COMING *IN.*"**

Without a rival, without an apology, without a substitute, OAK is indeed

"*The* WORLD'S PREMIER HARDWOOD"

(has been, is and ever shall be), AND EVERYBODY KNOWS IT.

Nature will never grow another wood as good as OAK for the uses for which it is historically appropriate.

No need to mention Economy—*you know it.*

AMERICAN OAK is PLENTIFUL, ECONOMICAL, INDISPENSABLE.

ADMIRE IT. TRUST IT. INSIST ON IT. ***SPECIFY*** *IT. USE IT.* WRITE us. TELL us. ASK us. *We will give you a Straight Personal Letter in prompt reply—WITH ALL THE FACTS.*

Address: Oak Division,
AMERICAN HARDWOOD MFRS. ASSOCIATION
1408 BANK OF COMMERCE BLDG., MEMPHIS, TENNESSEE

I O W A
BLACK WALNUT

NO cabinet wood responds as fully to the art of the furniture designer or the skill of the workman, as American Black Walnut. It meets every requirement.

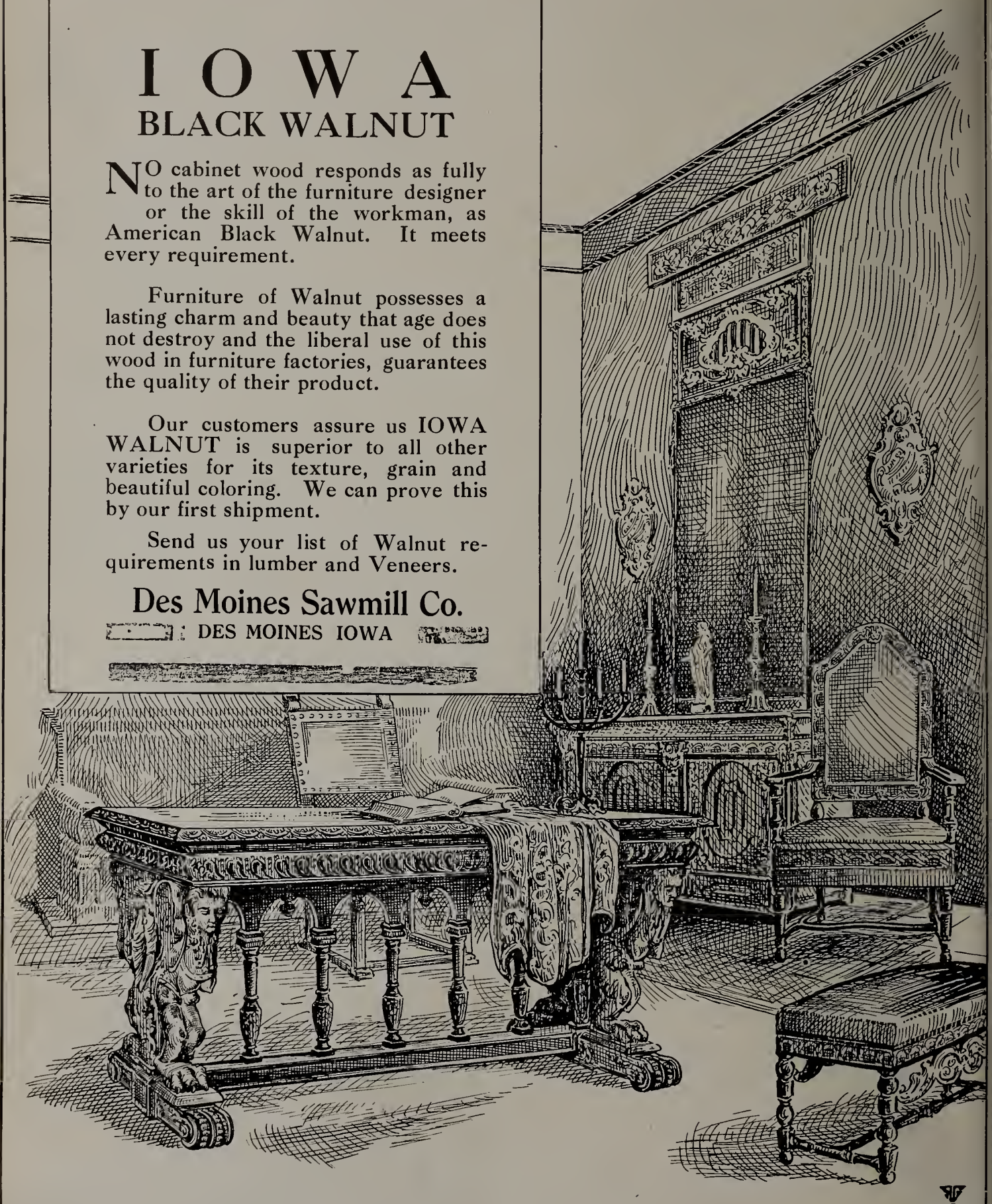
Furniture of Walnut possesses a lasting charm and beauty that age does not destroy and the liberal use of this wood in furniture factories, guarantees the quality of their product.

Our customers assure us IOWA WALNUT is superior to all other varieties for its texture, grain and beautiful coloring. We can prove this by our first shipment.

Send us your list of Walnut requirements in lumber and Veneers.

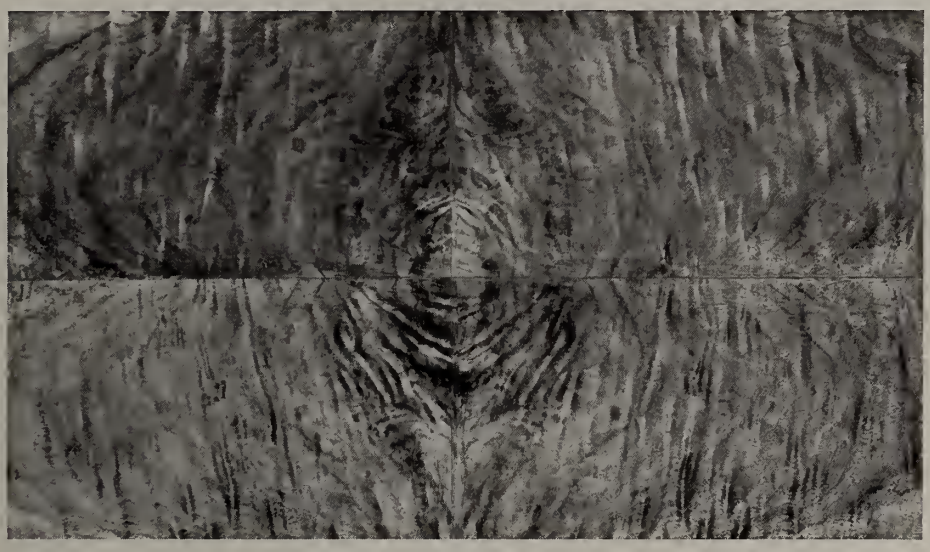
Des Moines Sawmill Co.

DES MOINES IOWA



"Hartzell" Lumber and Veneers "Hartzell"

American Walnut Exclusively



"Hartzell's Choice Walnut"

Furniture manufacturers will do well to note that we produce only American Walnut, and therefore can be classed as the logical source of supply in this wood, and our years of experience in handling American Walnut will prove valuable to you if you desire to take advantage of it.

By saying that our long experience will prove advantageous to you we mean that you should by all means take time to examine our line before purchasing, because the quality will be far superior to the average line and the price no greater.

We study your particular interests and produce veneer of the kind and quality that is best adapted to your work, and whatever class of figure you are using we can give you a complete uniform line of just the wood you want for your selection, and it will not be necessary for you to handle a great lot of all sorts of samples and then find only a few stocks suitable for your needs.

When you purchase our line you can rest assured that you can duplicate your purchase just as near as it is possible to do so in Veneers, that is our part in serving you and we see to it that you are served right.

"SEND YOUR INQUIRIES FOR VENEERS TO US."

"Hartzell" Piqua, Ohio "Hartzell"

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

WHITE ASH

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	22,000	3,800	60,000	95,000
1¼ in.	78,000	5,500	108,000	35,000
1½ in.	26,900	1,200	10,000	36,000
2 in.	85,300	500	19,000	58,000
2½ in.	50,500	.....	10,000	5,500
3 in.	59,500	.....	15,500	7,500
4 in.	500	.....	1,000	500

BUTTERNUT

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	12,300	35,800	23,600	.....
2 in.	8,400	17,000	10,000	.....
2½ in.	3,000	3,000	.....	.....

CHERRY

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	13,500	210,200	94,500	62,000
1¼ in.	11,500	9,600	18,500	41,900
1½ in.	22,000	20,700	78,300	36,000
2 in.	4,100	22,200	31,900	5,500
2½ in.	4,500	2,100	1,200	.....
3 in.	20,700	2,500	2,300	.....
4 in.	9,900	.....	.....	.....

CHESTNUT

	1 & 2	Clear Strips	No. 1 Com.	S.W.& No. 2 Com.
¾ in.	.....	.....	.....	.....
1 in.	15,900	1,500	49,300	180,500
1¼ in.	149,800	1,800	68,200	125,200
1½ in.	116,500	.....	86,000	29,000
2 in.	33,200	.....	54,300	91,200
2½ in.	4,000	.....	1,150	500
3 in.	2,800	.....	1,300	500
4 in.	1,500	.....	300	.....

PLAIN RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
⅜ in.	30,200	.....	.....	.....
¾ in.	43,000	.....	30,400	20,200
⅝ in.	2,500	.....	87,000	53,600
1 in.	193,200	.....	38,000	73,400
1¼ in.	94,700	2,400	4,000	1,200
1½ in.	157,900	4,300	39,200	40,000
2 in.	83,100	.....	92,800	20,000
2½ in.	61,100	.....	10,000	2,100
3 in.	28,800	.....	14,500	11,000
4 in.	16,600	.....	8,900	.....

PLAIN WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
⅜ in.	1,000	.....	.....	.....
½ in.	.....	.....	.....	.....
⅝ in.	25,150	.....	2,000	16,900
¾ in.	37,900	.....	95,000	6,000
1 in.	29,300	1,200	75,000	60,200
1¼ in.	73,300	.....	6,000	8,000
1½ in.	48,500	.....	21,000	9,000
2 in.	47,000	.....	80,000	50,000
2½ in.	166,800	.....	47,500	3,000
3 in.	75,800	.....	51,800	14,400
3½ in.	5,500	.....	3,000	1,500
4 in.	72,000	.....	18,500	2,000

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	300	.....	3,700	200
1 in.	20,200	2,300	500	.....
1¼ in.	2,000	.....	.....	.....
1½ in.	150	.....	500	.....
2 in.	1,000	.....	7,400	.....

QUARTERED WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
½ in.	5,500	.....	.....	.....
¾ in.	18,500	.....	44,600	9,000
⅝ in.	5,800	.....	6,500	.....
1 in.	41,400	9,000	22,400	17,000
1¼ in.	6,000	.....	400	1,300
1½ in.	9,500	.....	8,000	.....
2 in.	31,500	.....	25,100	4,700
2½ in.	1,000	.....	.....	.....

POPLAR

	1 & 2 18" & up	1 & 2	Box Boards 13" & up	Bright Saps
⅝ in.	.....	17,600	.....	.....
1 in.	.....	45,000	4,600	11,200
1¼ in.	2,800	9,300	.....	2,000
1½ in.	4,300	.....	.....	9,000
2 in.	.....	13,600	.....	1,000
2½ in.	.....	44,800	.....	11,000
3 in.	.....	27,900	.....	20,600
4 in.	.....	6,000	.....	7,300

POPLAR (Continued)

	Stained Saps	No. 1 Com.	No. 2 Com.	No. 3 Com.
⅝ in.	10,800	22,300	2,600	.....
1 in.	40,600	160,900	171,000	40,000
1¼ in.	7,600	23,600	8,000	.....
1½ in.	6,700	41,000	9,500	4,000
2 in.	4,000	118,500	27,500	.....
2½ in.	3,700	2,000	500	500
3 in.	1,500	21,000	47,000	10,000
4 in.	700	17,750	5,000	.....

Also Large Stock of BEECH, BIRCH and MAPLE

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

The Canadian Wood Turpentine – made at our mills at La Tuque, P.Q. is an excellent diluent and solvent and contains no free rosin ~

This Turpentine is made by an improved laboratory process from Canadian wood and its distinctive odor clearly indicates that it is a different product from that given by the older methods of distillation ~

Further information gladly furnished upon request

Brown Corporation
Sales Office 56 St. Peter St.,
Quebec, P.Q.

HAVE you considered contracting for 1920 Hardwood requirements?

Edward Clark & Sons, Limited
807-9 Bank of Hamilton Bldg.
Toronto, - Ont.

If Dryness Counts-- You Can't Beat This

Bone Dry Plain Oak

402,500′	2	″	No. 1	Com.	White and	Red.
239,600′	2	″	No. 2	“	“	“
106,800′	2½	″	No. 1	“	“	“
12,400′	2½	″	No. 2	“	“	“
83,900′	3	″	No. 1	“	“	“
15,600′	4	″	No. 2	“	“	“

We also have a good stock of dry Oak in other thicknesses of both Plain and Quartered. Prices on request.

James E. Stark & Co., Inc.
MEMPHIS, TENN.

Canadian Hardwoods

Good Stocks, Right Goods,
Prompt Shipment

C. A. SPENCER, Limited

LUMBER MERCHANTS

Offices—500 McGill Building
MONTREAL - - Quebec

WARREN ROSS LUMBER CO.

JAMESTOWN - N. Y.

Please let us quote you on the following:—

455′	3/4″ 1s and 2s Tanguile Mahogany.	2,000′	6/4″ No. 1 C. Cherry
		4,000′	8/4″ 1s and 2s Cherry
156,000′	4/4″ 1s and 2s Tanguile Mahogany	2,000′	8/4″ No. 1 C. Cherry
		7,000′	4/4″ No. 1 C. Walnut
468′	5/4″ 1s and 2s Tanguile Mahogany	2,000′	5/4″ No. 1 C. Walnut
		2,000′	6/4″ No. 1 C. Walnut
450′	10/4″ 1s and 2s Tanguile Mahogany	12,000′	8/4″ No. 1 C. Walnut
		7,000′	8/4″ No. 2 C. Walnut
360′	12/4″ 1s and 2s Tanguile Mahogany	12,000′	4/4″ 1s and 2s Pl. Oak
		4,000′	5/4″ 1s and 2s Pl. Oak
6,900′	4/4″ No. 1 Com. Mhog.	4,000′	6/4″ 1s and 2s Pl. Oak
1,300′	5/4″ No. 1 Com. Mahog.	20,000′	8/4″ 1s and 2s Pl. Oak
20,000′	4/4″ 1s and 2s Cherry	4,000′	5/4″ No. 1 C. Pl. Oak
12,000′	4/4″ No. 1 C. Cherry	4,000′	6/4″ No. 1 C. Pl. Oak
4,000′	6/4″ 1s and 2s Cherry	10,000′	8/4″ No. 1 C. Pl. Oak

J. H. Bonner & Sons

Memphis, Tenn.

Mills:
Jonquil and Ruffwood, Ark.

Manufacturers

Band Sawn Hardwood Lumber

Write or wire for prices on

Gum, Oak, Elm, Etc.

Hardwood Lumber

Wire collect, or write for delivered prices on any or all of the following DRY STOCK

100	M′	4/4 No. 2 Com. & Btr. Soft Maple.
50	M′	10 & 12/4 No. 1 Com. & Btr. Soft Maple.
12	M′	8/4 No. 1 Common Ash.
30	M′	6/4 No. 2 Com. & Btr. Beech.
75	M′	4/4 Sound Wormy Chestnut.
85	M′	5 & 6/4 Sound Wormy Chestnut.
30	M′	8/4 Sound Wormy Chestnut.
50	M′	8/4 No. 2 Com. & Btr. Sap Gum.
35	M′	6/4 No. 1 Common Sap Gum.
50	M′	5, 6 & 8/4 No. 1 C. & B. Pl. Red Gum.
17	M′	8/4 No. 1 Com. & Btr. Qtd. Red Gum.
15	M′	12/4 No. 1 Com. & Btr. Hackberry.
75	M′	12/4 No. 1 Com. & Btr. Sycamore.
90	M′	4/4 No. 2 Com. & Btr. Sycamore.
15	M′	4/4 No. 1 C. & B. Pl. & Qtd. Tupelo.
28	M′	12/4 Bone dry No. 1 C. & B. Pl. Oak.

The Woodruff-Powell Lumber Co.

South Bend, Indiana

J. R. EATON & SONS, LIMITED

MANUFACTURERS OF HIGH GRADE WOOD PRODUCTS

Wood Turnings, Hardwood Dowels, Turned Table Legs, Kitchen Tables, Kitchen Cabinets, Oak Extension Tables, Oak Library Tables, "Empire Brand" Hardwood Flooring in Maple, Birch, and Plain or Quarter Cut Oak, Solid Pine and Veneered Hardwood Doors.

A Large Factory equipped with up-to-date machinery is at your service to furnish "WHAT YOU WANT"— WHEN YOU WANT IT."

YOUR ENQUIRIES SOLICITED

Orillia Ontario Canada

E. SONDHEIMER CO.

MEMPHIS, TENN., U.S.A.

Manufacturers and Exporters of

AMERICAN HARDWOODS

Specializing in RED GUM and SALIX

Dry Stock for Immediate Shipment

3 Cars	5/8"	Com. & Btr. Sap Gum.	1 Car	3/4	No. 1 Com. Plain Red Gum.	6 Cars	4/4	No. 1 Com. Plain Red Oak.
2 "	3/4	No. 1 Com. Sap Gum.	3 "	4/4	1s & 2s Plain Red Gum.	3 "	2½ & 3"	No. 1 Com. Plain Red and White Oak.
3 "	4/4	9" to 12" Sap Gum Box Bds.	10 "	4/4	No. 1 Com. Plain Red Gum.	2 "	4/4	1s & 2s Qtd. White Oak.
5 "	4/4	13" to 17" Sap Gum Box Bds.	3 "	5/4	to 8/4 No. 1 Com. & Btr. Plain Red Gum.	4 "	4/4	No. 1 & 2 C. Qtd. White Oak.
10 "	4/4	1s and 2s Sap Gum.	6 "	4/4	No. 1 C. & B. Qtd. Red Gum.	3 "	4/4	1s & 2s Qtd. Red Oak.
5 "	5/4	1s and 2s Sap Gum.	2 "	5/4	and 6/4 No. 1 Com. & Btr. Qtd. Red Gum.	1 "	5/4	1s & 2s Qtd. Red Oak.
2 "	6/4	No. 1 Com. & Btr. Sap Gum.	3 "	8/4	No. 1 C. & B. Qtd. Red Gum.	4 "	4/4	No. 1 Com. Qtd. Red Oak.
10 "	4/4	No. 1 Com. Sap Gum.	3 "	10/4	No. 1 C. & B. Qtd. Red Gum.	2 "	4/4	No. 2 Com. Qtd. Red Oak.
10 "	4/4	No. 2 Sap Gum.	3 "	12/4	No. 1 C. & B. Qtd. Red Gum.	1 "	4/4	No. 1 Com. Magnolia.
5 "	4/4	No. 1 C. & B. Qtd. Sap Gum.	3 "	4/4	to 8/4 No. 1 Com. Quartered Figured Red Gum.	10 "	4/4	to 8/4 Shop & Btr. Cypress.
2 "	5/4	No. 1 C. & B. Qtd. Sap Gum.				10 "	4/4	to 6/4 No. 1 Com. Cottonwood.
5 "	8/4	No. 1 C. & B. Qtd. Sap Gum.	6 "	4/4	No. 2 Com. & Btr. Willow.	10 "	4/4	to 6/4 No. 2 Com. Cottonwood.
3 "	10/4	No. 1 C. & B. Qtd. Sap Gum.	10 "	5/4	No. 2 Com. & Btr. Willow.	5 "	4/4	to 6/4 1s & 2s Cottonwood.
3 "	12/4	No. 1 C. & B. Qtd. Sap Gum.	5 "	6/4	No. 1 and No. 2 Com. Willow.	5 "	4/4	No. 1 Com. Ash.
½ "	½"	1s & 2s Plain Red Gum.	3 "	8/4	No. 1 Com. & Btr. Willow.	2 "	5/4	No. 1 Com. Ash.
1 "	3/4	1s & 2s Pl. Red Gum, 12" & wdr.	3 "	4/4	1s and 2s Plain Red Oak.	5 "	4/4	to 6/4 Log Run Soft Elm.
						3 "	12/4	No. 2 Com. & Btr. Soft Elm.

Also Pecan, Hickory, Sycamore, Black Gum, Poplar, Tupelo, Circassian Figured Red Gum

Distributing Yard and Sales Office
McLean & Chelsea Ave., Memphis, Tenn. U.S.A.
Cable Address : "Sonderco"

We have Four Band Mills :
Sondheimer, La., Tallulah, La., Ferriday, La., Baton Rouge, La.

Walnut Lumber with Mahogany

Straight or Mixed Cars

WALNUT VENEERS

Plain---Striped---Figured---Circassian Effect

Let Us Know Your Requirements

The Kosse, Shoe & Schleyer Company

Eastern Branch
Baltimore, Md.

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British Columbia Forest Products

British Columbia Lumber Commissioner

No. 1 Adelaide St. E., Toronto
(Street Floor)

Personal calls or correspondence cordially invited from Dealers and others interested in British Columbia Woods

Telephone Main 6872. Note: We do not quote prices.

Bone Dry

Right now dry lumber is scarce. Here's a list of dry stock ready for prompt shipment. Remember there's 30 years' experience back of every board.

1 car 5/8 FAS Plain Red Oak.
1 car 5/8 No. 1 Com. Plain Red Oak.
10 cars 4/4 No. 2 Com. and Btr. Plain Red Oak.
1 car 5/4 FAS Plain Red Oak.
1 car 5/4 No. 1 Com. Plain Red Oak.
2 cars 6/4 FAS Plain Red Oak.
2 cars 6/4 No. 1 Com. Plain Red Oak.
1 car 8/4 FAS Plain Red Oak.
1 car 8/4 No. 1 Com. Plain Red Oak.
3 cars 10/4 FAS Plain Red Oak.
1 car 10/4 No. 1 Com. Plain Red Oak.

Write for our Complete List with Prices

North Vernon Lumber Co.

NORTH VERNON, IND.
LOUISVILLE, KY. DYERSBURG, TENN.
Every Board Branded "NVLCO." Quality Guaranteed

Overseas Reed and Cane Co.

Manufacturers

WHILE OVERSOLD, WE INVITE YOUR INQUIRIES WHICH SHALL HAVE OUR PROMPT ATTENTION

Ionia - Michigan

Mercerau-Hawkins Tie Company

Huntington - W. Va.

Manufacturers and Wholesale Dealers

West Virginia and Southern
HARDWOODS

We specialize in

Oak Tie Siding
White and Red Oak
Yellow Poplar
Basswood
Chestnut and
Gum Lumber.

Canadian Sales in Charge of

C. W. PETERS

Vice President and Manager of Lumber Dept.

The Hyde Lumber Co.

Band Mills: LAKE PROVIDENCE LA.
Southern Office: MEMPHIS, TENN.
Bank of Commerce Bldg.
Northern Office: SOUTH BEND, IND.

MANUFACTURERS

Plain Red Gum
Quartered Red Gum
Plain Sap Gum
Quartered Sap Gum
Cottonwood, Cypress
Tupelo, Ash, Elm, Oak

CHARLES O. MAUS
Canadian Representative

An American Walnut Tree Selected For Our LUMBER

The years of experience of our buyers and the time and care used by them in selecting the raw material, for our output, terminates in the high character and quality of our lumber.

ALL GRADES AND THICKNESSES
American Walnut Exclusively

Pickrel Walnut Company
St. Louis, Missouri

A name that should be on your inquiry list for Hardwood Lumber

American Column & Lumber Co.

Brunson Building, COLUMBUS, OHIO

—Manufacturers of—

West Virginia

Soft Yellow Poplar
Plain White Oak
Plain Red Oak
Quartered White Oak
White Oak Timbers and Plank

Chestnut	Butternut
Basswood	Ash
Maple	Cherry
Hickory	Walnut
Beech	Sycamore
Buckeye	Black Gum
Birch	Hemlock

Oak and Hardwood Dimension Stock

American Hardwood Lumber Co.

St. Louis, Mo.

Large stock of—

Dry Ash, Quartered Oak Plain Oak and Gum

Shipments from — NASHVILLE, Tenn., NEW ORLEANS, La., and BENTON, Ark.

Aromatic Tennessee Red Cedar

CAR LOAD LOTS OR LESS

Earthman Lumber Co.

Murfreesboro, Tenn.

Steele & Hibbard Lumber Co.

ST. LOUIS, MO.

52 Years in Business

We carry a large stock of dry

Hardwood Lumber

25 Different Kinds
Quick Shipment
Write or wire for Prices

We specialize Oak cut from Mild Texture Missouri Timber with thin sap both plain and quarter sawed.

We ship also from Sawmills direct ; Red as well as Sap Gum and Poplar, both plain and quarter sawed Sound Wormy Chestnut, Cypress and Ash.

F. Huntington Smith

Canadian Representative.

Here's a Suggestion

Did you ever try keeping a file of your back copies of the "Canadian Woodworker"? Try it. Start with this issue. There are many articles that are worth keeping, as they offer valuable suggestions that will help you in your business.

30 Million Feet Hardwoods Yearly

Manufactured by

Darnell-Love Lumber Co.

Leland, Mississippi

We own and operate two large band mills with sufficient timber to supply these mills, at present capacity, fifteen to twenty years

Cutting

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Our Specialties are—

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8/4" Quartered Red Gum Sap No Defect

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Let us have your inquiries for—

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Quartered White Oak
Quartered Red Oak
Elm
Tupelo
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Plain Red
Quartered Red
Sap
Qtd. Red, Sap
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GUM

GUM

Our Specialty is DELTA GUM

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SOUTHERN HARDWOODS

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Quartered Gum (Sap No Defect)

1 Car ... ... 6-4 No. 1 Common and Better

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4 Cars ... ... 4-4—9 to 12'

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2 Cars ... ... 6-4 No. 2 Common and Better

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Plain Red Gum

2 Cars ... ... 4-4 1s and 2s
2 Cars ... . 4/4 No. 1 Common and Select
5 Cars ... ... 4-4 No. 2 Common
1 Car ... ... 5-4 Common and Better
2 Cars ... ... 6-4 No. 1 Common and Select
2 Cars ... ... 8-4 No. 1 Common and Select

Quartered Red Gum

3 Cars ... ... 4-4 No. 1 Common and Select
2 Cars ... ... 6-4 1s and 2s
1 Car ... ... 8-4 No. 1 Common and Better

Plain Red Oak

2 Cars ... ... 4-4 1s and 2s
2 Cars ... ... 4-4 No. 1 Common and Select
1 Car ... ... 4-4 No. 2 Common

Quartered Red Oak

3 Cars ... ... 4-4 No. 1 Common and Better

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1 Car ... ... 4-4 No. 2 Common

Quartered White Oak

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Quartered Red and White

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ALSO PLAIN OAK AND ASH

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QUARTERED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.

PLAIN SAWED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.
5 " 1¼" Common.

QUARTER SAWED OAK

10 cars 1" No. 1 Com. and Btr., White.
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Prompt Shipments any Time

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We sort it to meet all requirements. **Tough** texture and **Medium** texture. Can furnish **Special Widths** and **Lengths** one to four inches thick. Write or wire when needing WHITE ASH.

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KILN DRIED AND AIR DRIED SOUTHERN HARDWOODS

We operate five mills and Memphis yard, specializing in KILN DRIED Sap Gum, Elm, Maple, Ash. *Send us your inquiries.*

Will quote low prices on following to points not embargoed:

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1 " 4/4 Fas Qtd. Red Oak.
1 " 4/4 No. 1 Com. Qtd. Red Oak.
2 " 4/4 Fas Plain Red Oak.
5 cars 4/4 No. 1 Com. Plain Red Oak.
3 " 8/4 No. 1 C. & B. Qtd. Red Gum.
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Johnson Brothers Hardwood Co.

(OUR NAME IS EASY TO REMEMBER)

Sales Agents:
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Double Band Mill
Capacity
100,000 ft. per day

Manufacturers and Wholesalers

Southern Hardwoods

3,000,000 ft. dry stock on hand and 5,000,000 in process of drying—all thicknesses, ½" to 4", plain and quartered.

White and Red Oak—Red Gum—Sap Gum—Tupelo—Black Gum—Cottonwood—Salix—Willow—Pecan—Sycamore—Elm—Soft Maple—Magnolia.

We offer for Quick Sale the following Bone Dry Stock:

3 cars 4/4 Fas ¼ S. White Oak.
3 " 4/4 No. 1 Com. ¼ S. White Oak.
1 " 4/4 Fas ¼ Red Oak.
1 car 4/4 No. 1 Com. ¼ Red Oak.
4 " 8/4 Com. and Btr. ¼ S. Sap Gum.
2 " 10/4 Log Run Sycamore, 40% Fas.

Wire us at our expense for quotations

Frank Purcell
Walnut Lumber Co.

Plenty of logs like the portion of our stock shown above have made possible the million and a half foot stock of well manufactured American Walnut Lumber which we now have to offer.

Prompt shipment
All grades and thicknesses
Guaranteed Inspection

12th AND BELT LINE
Kansas City - Kansas

Wake-up, Mr. Furniture Man!
Walnut is Plentiful!

AMERICAN WALNUT

"The Cabinet-wood Superlative."

"Plenty of Walnut"

is the happiest kind of news to all lovers of really good furniture.

Notwithstanding the general belief in its scarcity, there is a lot of it left. Enough to supply with superior furniture all the discriminative people of the American Continent for several generations to come!

Of course, this means moderate prices—notwithstanding Walnut's superlative traits as a cabinet-wood—non-shrink, non-swell(n o n - w a r p (drawers slide easily, for 300 years if properly made)—and notwithstanding the rapidly growing insistence on American Walnut by the best American people.

The Brochure, de luxe, on American Walnut has been prepared for your library table. On your request it will come, with our compliments. Drop us a card, please. Thank you.

AMERICAN WALNUT
MANUFACTURERS' ASSOCIATION
Room 1019, 616 South Michigan Boul.—Chicago.

ALL BRANCHES OF THE FURNITURE TRADE

are feeling strongly the Effects of the series of tributes to our American Walnut which are running Continuously in most of the Best Publications in America. Above is an example.

There are still a few Furniture Houses in the Country.

who are giving some of their better-posted competitors a great advantage over them with the Best Trade. WHY? Simply because they "heard somebody say" that American Walnut was getting scarce. Let them ask us for THE FACTS! (See address above.)

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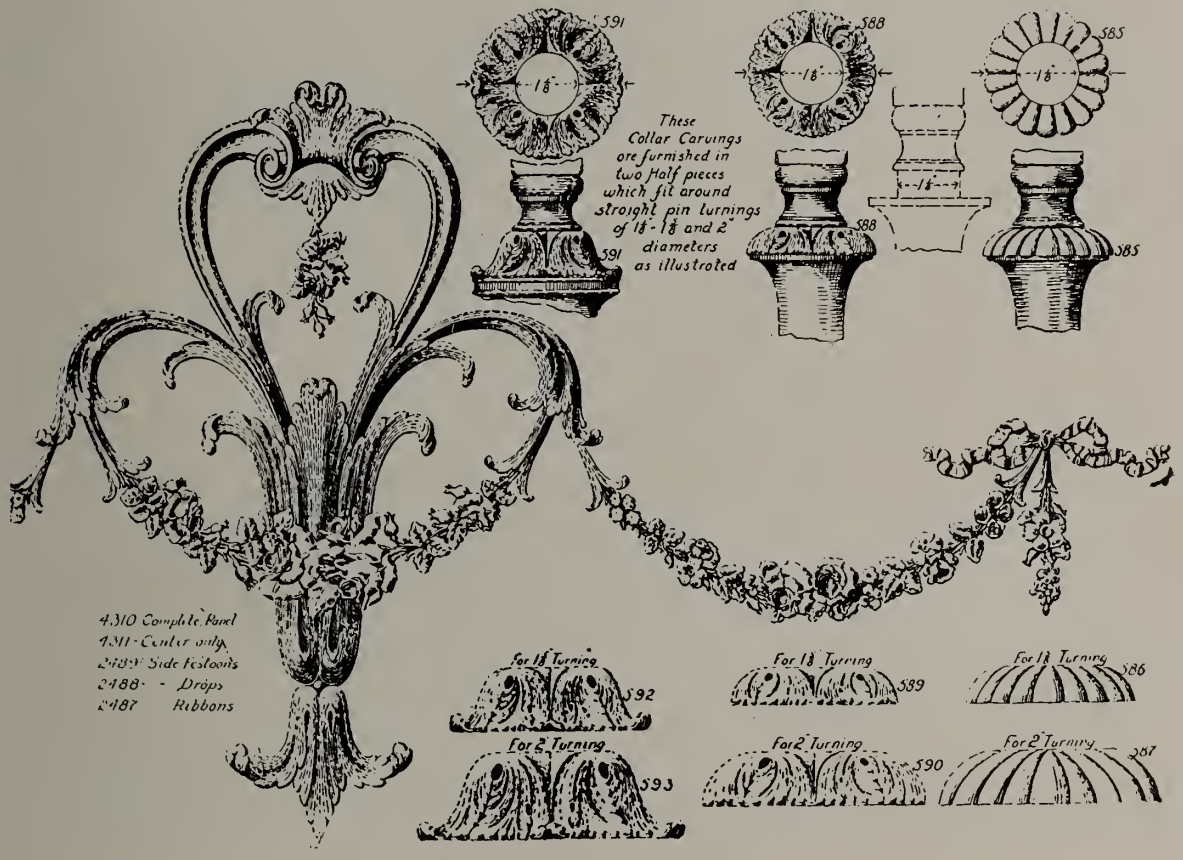

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Wood Fibre Ornamentation

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J. WALTER & SONS

KITCHENER - ONT.

Shall We Divide Canada?

IN 1867 our fathers consummated at great price a union of all the provinces and interests of Canada. For over half a century the provinces of Canada have developed together, each the component of the other.

Canada must be bound together as it is to-day, not so much by the machinery of government as by ideas held in common by all and freely exchanged, so that all sections sympathize with each other. This result has been accomplished primarily by the press, particularly the weekly and monthly periodicals and business papers.

They have no local or sectional bias.They go to all parts of the Dominion. They serve all parts alike. Their service is in bringing all provinces close together into one great nation through one common understanding.

Canada must not be split into half a dozen sections—weak with the evils of sectionalism, disastrous in the extreme—overflowing with narrow provincialism.

Emanating from we know not whither, comes an idea that will rip asunder all the good done in over half a century of patient building.

It is proposed to tax the very thing that has bound Canada into one—to place on the nation-binding press a zone postal tax which would increase the postal charge upon national periodicals as high as 800 per cent. It means loss to you personally and a loss to your country. It will weaken, cripple and in some cases destroy Canadian national periodicals. You will be deprived of papers that have kept you informed on your country's problems, your business problems—that have helped you in your work. Such magazines as do survive will cost you much more.

The publishers are not trying to evade fair taxation. They will gladly accept any fair tax upon their profits.

But is it fair that you should be taxed out of getting journals, papers and magazines that have helped you build your business and in turn built the business of the country?

If you believe in national ideals and national periodicals, sign attached form.

Tear off and mail to-day

CANADIAN WOODWORKER,
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I am opposed to any zone postal law which would mean charging higher subscription rates to subscribers, according to distance from office of publication.

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Efemco Acme Grip Neck Casters improve appearance and increase mobility. Because of their smooth, free action, strong axles and compact, sturdy construction, they meet the demands of furniture manufacturers and all users of good casters.

Acme Grip Neck Casters are one of the biggest selling items of the **Efemco** line. They are made in sizes 3, 4, 5, 6, and 7, with Maple, Lignum Vitae, Steel, Iron and Fibre wheels—brass-plated, nickel-plated or non-plated —for furniture of all styles and grades.

Write for catalog showing new lines of improved **Efemco** Casters.

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Efemco PRODUCTS

Grip Neck Casters	Truck Casters	Piston Rings
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SOUTHERN HARDWOODS

Well Manufactured from Good Timber

Unexcelled Quality and Service

For twenty-five years Paepcke Leicht quality hardwoods have satisfied the most exacting users in the wood-working industries of the United States, Canada and Europe.

Strict uniformity of inspection and quality year after year, with a truly superior service, have consistently kept old customers on our books.

Your interest, also, lies where you can get the most in satisfaction and value.

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Mahogany (250,000 ft. in stock, all kinds)
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Gum
And all U. S. A. Hardwoods

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And all other Canadian Hardwoods.

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Qtd. Red Oak
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Birch, Poplar, Ash, Gum
Walnut, Basswood, Maple

SLICED

Mahogany, Walnut
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Three Ply Fir Panels - Crossbanding

We have now purchased the kilns of The Toronto Kiln Co. and can ship kiln dried lumber promptly.

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Vol. 20 Toronto, May, 1920 No. 5

Selling at Prices Prevailing

The uncertainties which surround the manufacture of furniture have virtually forced the furniture makers to adopt the policy of accepting all orders with the prices left open and billing for the goods at the prices prevailing at the time of shipment. That this policy is just and equitable is admitted, yet it has in many instances aroused considerable resentment on the part of the retailer.

The dealer thinks he is being treated unfairly and in some cases even discriminated against, that selling at prices prevailing is harsh and unjust. This is not the case and it will be found that the majority of the furniture producers are treating their customers with absolute fairness and all their dealings are prompted by a spirit of justice.

On the other hand isn't the retailer worthy of a certain amount of consideration? He is the mainstay or backbone of the industry and the furniture makers should make every effort to retain his good will and make his problems as simple as possible.

While selling at prices prevailing is admittedly just and equitable—it was suggested in the March "Canadian Woodworker" that selling at sixty days was a better method—it none the less works a hardship on the dealer. He does not know what he will have to pay for the goods ordered and what is even worse, he does not know the real replacement value of the stock on his floor.

If the goods on order were to be shipped at a fixed price he would then have an accurate basis on which to value his stock, but under present conditions such a guide is lacking. While he may know that values are steadily rising he does not know what the increases represent or when they went into effect.

Under these circumstances it would appear as if the furniture producer should adopt the policy of advising the trade of every advance in values. When manufacturing costs reach a point that makes an increase in the selling price imperative he should figure out the new selling price and immediately issue a price list indicating the increased values.

If this were done the retailer would not be working in the dark. He would know the replacement value of his stock and would also have a slight idea of what the goods on order will likely stand him. With this information he would be in a position to conduct his business on a more intelligent basis and one of his chief grievances would have been removed.

It is very gratifying to learn that one Quebec furniture maker has adopted this policy. The last price list issued by this concern carried the following notice: "Owing to unsettled conditions and continually rising prices for all kinds of materials, we regret exceedingly to be compelled, like other manufacturers, to stipulate that all orders will be accepted only with the distinct understanding that prices current at the time of shipment will be charged.

"You will be immediately notified when these prices are withdrawn. Then you can have an opportunity of further advising, if necessary, in reference to any orders unshipped. We are anxious to give you every possible advantage that can be had under present conditions."

This is the spirit that should prevail throughout the industry as a whole. If other manufacturers were to adopt a similar policy it would go far to regain the goodwill of the retail dealers and this same goodwill might prove a very valuable asset should the present demand ease off.

Value of Dry Kiln Not Realized

Partly due to the insistent demand for large quanities of thoroughly seasoned lumber for war requirements and to the fact that the real worth of the dry kiln is becoming more widely recognized, the artificial drying of lumber has made huge strides during recent years. In spite of this, it is doubtful if the majority of those operating dry kilns, or those drying stock by the slower air-seasoning method, have ever stopped and figured out just what an efficient kiln, skillfully operated, will do, what it will save and how it may be used to the best advantage.

Today green hardwoods of any thickness can, with proper predetermined treatment be kiln-dried right from the saw with better results and a smaller percentage of loss than if the material had been air-dried. Not only are better results secured and part of the ordinary losses eliminated, but it is no longer necessary to have thousands and thousands of dollars tied up for months, and even years, in large stocks of expensive lumber while air-drying. The interest on the capital thus tied up would more than pay the interest on and the upkeep and operation of a modern dry kiln.

We Should Be of Good Courage

With Great Faith in Canada and the Splendid Opportunities Which Lie Before Us

By Wm. Cawkell, Toronto, Secretary Furniture Manufacturers' Association.

Directly peace was assured in 1918, general statements were circulated that cost of living and prices would come down. In May 1920 we find that prices for almost every commercial article have increased enormously and are still increasing.

Again we are told that wheat and steel were the basic products and that when they came down other articles would quickly follow. We find now that wheat and steel are still advancing in price. Wheat is bound to have an important influence on the cost of living and general prices in Canada. Let us therefore consider as to the world's visible supply of wheat and as to what we may expect from this year's crop.

The present situation is that European countries are all wheat hungry and will require to import at least 760,000,000 bushels.

The Government report on conditions of winter wheat in the United States as at April 1st estimates the crop at 75.6 per cent. of normal, compared with 99.8 per cent. a year ago. It is too early for an accurate estimate for the final crop of 1920, but present conditions give a yield of 483,617,000 bushels. In 1919 production was 731,636,000 bushels.

It has been stated recently by reliable authorities that the new crop of wheat in Canada will fetch around $3.00 per bushel as against $2.55 for the last crop. The food minister in Britain recently stated that the world's food shortage was still a serious factor and he stated that the nations were faced with the prospect of a considerable reduction in the world's supply of wheat, and he feared a rise in prices would be reflected in every other commodity. The supply of butter he stated to be only half the pre-war standard with no early likelihood of improvement.

Bank clearings in April show an average gain for the month in 26 Canadian cities of 30.4 per cent. The April figures for customs receipts show an increase of more than $6,000,000 due to all round business and would have been a great deal more but for the adverse American exchange.

Several banks have signified their intention to make new stock issues to shareholders. This means that further funds will be drawn out of savings deposits and will be permanently at the service of the banks for the purpose of financing business activities.

Building trades activities for February show a substantial increase and comparing the average of 1920 with the average of 1919 for the same period it shows 129.6 per cent. increase calculated on the returns from 35 cities. The figures for March show a gain of 145.5 per cent. over March 1919.

The foregoing facts do not look anything like a slump in business or a reduction in prices, but quite the contrary and support the opinion that has recently been expressed by good authorities that present conditions are the logical result of supply and demand and are normal in the proper sense of the word.

The present high prices are the result of definite causes and are legitimate. Money is an article that we barter or exchange for commodities. If commodities were as plentiful to-day as they were in 1914 and the quantity of money in existence in like proportion, then excepting for the natural increase in the comforts of living, prices would have remained much the same, but as I have endeavored to show there is a world wide shortage of commodities and foods.

Now we will turn to money. In 1914 the total money of the world, exclusive of Russia, was $7,000,000,000, at the present time it is stated to be $56,000,000,000. In addition to which one must take into consideration the world's debts which have grown from $40,000,000,000 to $265,000,000,000 now. The ratio of gold to the paper currency of the world was in 1913 70 per cent., it is now approximately 12 per cent. I wish to particularly call your attention to the fact that the paper money increased $33,000,000,000 during the war period of 50 months and has increased $16,000,000,000 since in a period of 18 months. Is it any wonder that with this plentitude of money and scarcity of commodities that prices have risen and is it not reasonable to expect that prices will continue much the same as they are now until the relation between the supply of commodities and the supply of money changes in their proportion to each other?

Until wheat and other necessities of life become more plentiful the cost of living is going to remain much as it is at the present and if wheat advances as expected, the cost of living is going to go higher still, therefore, wages cannot come down and the cost of production of furniture and other articles is going to remain as high or higher than they are at present.

Distribution is one of the four economic factors of business, and the cost of freight is a factor to be recognized in costs because

(Continued on page 48)

Use Cased and Columned Openings

Effective When Well Planned—Carefully Worked Out Details Help Cheapen Construction—Stock Patterns and Designs Desirable Where Possible

By W. H. Shaw

The cost of building is undeniably higher than it has ever been before. Moreover, the increase still goes on. It does no good to deplore this condition. Certainly, what were normal pre-war prices will not likely return again in our time. Many believe that building costs will go still higher. As a matter of fact many items of building cost have not advanced in anywhere near the same proportion as general prices.

Reductions for some years are problematical. It is reasonable to believe that they will only come very slowly and be of slight amount, for there is a vast amount of prospective building that has been merely postponed and there is no corresponding accumulated supply of material to meet it.

Home Building to Continue

The fact that in these times of reconstruction along some lines, even manufacturing concerns are expending vast sums on the housing of their employees, says more than mere words can express as to the desire of each individual to give his family the advantages of a home.

Many families need better homes and many who did not have money to build with before, have it now. If the cost is high, thousands have the increased means to meet it. The need of a home and the ability to finance it should decide the matter. Future reductions of cost will not pay for the continued extra maintenance cost of the old home, the outlay for rents, if renting, or deprivation of the satisfaction of the home of one's dreams.

It is well within the truth to say that if prospective home builders would give as careful attention to the economical planning and designing of houses as lately has been given to the economy of foods and other necessities, the cost of building would be only slightly higher than three years ago.

Careful Planning Necessary

The man who builds now should put unusual study on the plan to see that every stick of timber and every hour of labor put into the building shall do its full duty, that the house shall be so built as to reduce the upkeep, and even beyond these the mistress of the house must be assured—and should know that not one extra step shall be required in the keeping of the home.

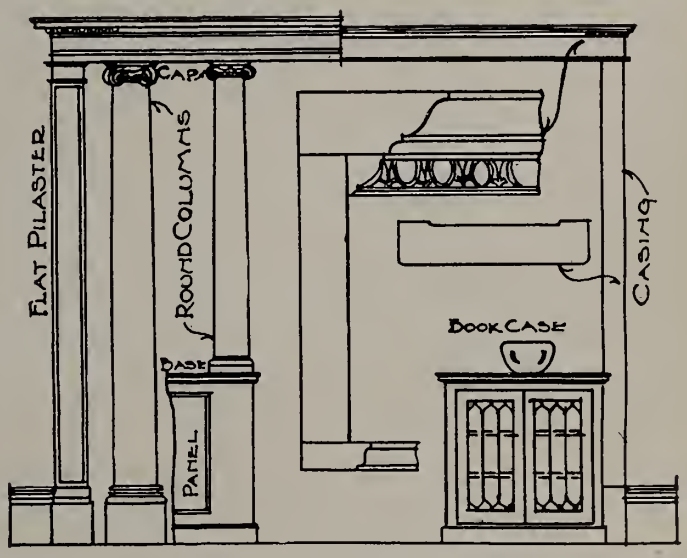
By this careful planning is meant: economy of actual building operations, due to having plans and details definitely figured out—the old custom of expecting the house contractor to be both millman and builder is wasteful in the extreme, as he has not the equipment nor the time to build special fittings on the job; making every square foot of space serve some useful purpose; making every dollar of investment show its worth in the attractiveness of design; planning for a minimum of housekeeping work and a possible elimination of the help question—this may be counted under the head of lower upkeep cost; neutralizing the high cost of furnishing by eliminating the need for so much of it—moderate size rooms of a compact, convenient arrangement will do this.

Probably nothing is more economical, and at the same time artistic, than the proper treatment of cased or columned openings between rooms, especially where living room and dining room are thus connected.

Suitable Openings between Rooms

The term cased opening refers more particularly to wide openings between rooms, but actually every door or window is a cased opening. In a well designed house the tops of all doors, windows and wide openings are kept upon the same horizontal line and the finish will be the same design for all in a given room if not throughout the whole house. This is a general statement as to the finish applying to very important work and must be allowed some latitude in a house of ordinary cost. There is no reason, however, why the heights should not be kept even, because an even width of frieze is then obtained, making the decorative scheme much more effective.

Small windows in single sash, leaded effects, may be placed without regard to the above rule, provided



Treatment for cased openings, with details of trim

they cannot be readily kept even, but they should never be put high enough to cut into the frieze.

Details for Cased Opening

Several methods of treating a wide opening, such as might occur between hall and living room, or living room and dining room, are shown in the first illustration. On the right is a simple casing with an entablature effect for the cap and a plain plinth and base mould, at the floor. This would make a dignified and effective trim for all doors and windows. A bookcase is shown in connection, which is 30 inches high, the most it ought to be when placed in an opening 7 feet high. The doors contain leaded glass and the back, facing the adjoining room, is panelled.

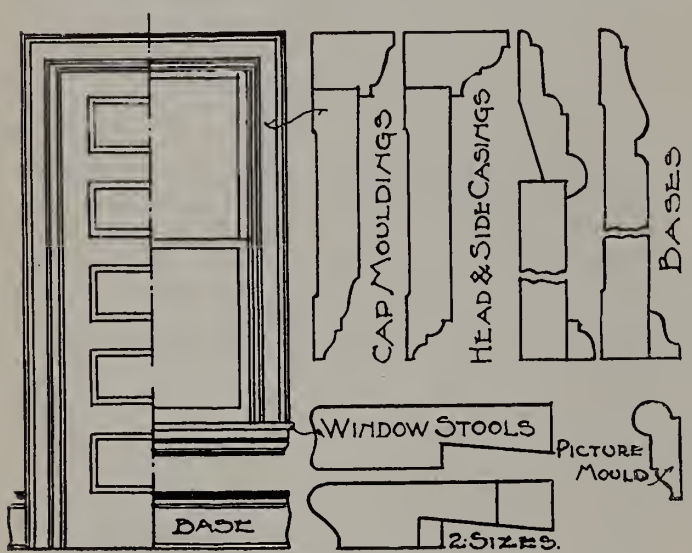
At the left is shown a flat pilaster with a panelled face and simple cap and base. The cornice above is similar to that at the right but a little heavier, with an additional plain piece of board just above the open-

ing. This gives extra height and brings it into proportion with the pilaster, which is wider than the casing described. This would be very effective, but it could be made more ornamental by the addition of the round column shown adjacent to the pilaster. The base is shown in line with the base of the room and in good proportion. The cap in this case is known as Ionic, but could be Corinthian, Composite, Doric or Tuscan in design.

These names refer to the five orders of architecture and, properly speaking, only the cornices and other portions belonging to a given order, should be used with its column, but it is customary to disregard some of the least important of these details, in the moderate priced house. In a costly house these matters should be absolutely correct. The caps of the columns may be carved in wood, but composition in beautiful modellings is now obtainable, that can be finished to represent any of the well known woods, and is in universal use.

Construction under Column

A smaller column is shown supported by a panelled pedestal which is continued to the pilaster, form-



Half elevations of door and window, showing designs for trim

ing a shelf that will hold a vase or potted plant. Note that the panel does not extend under the column. The plain surface is in much better taste. The space occupied by panels could be arranged for books with good effect. The pedestal will be best if kept not over 30 inches high. Sections of casing and cap are shown in larger scale.

Half elevations of a five panelled door and an ordinary two-part window, with trim of a different character from that in the previous figure comprise the second sketch. This would be very appropriate for a colonial house. Two sections of trim are shown at larger scale that would give much the same appearance. These are of stock design and could be obtained anywhere, or at least something very close to them.

Stock Designs Lower Costs

Any means of reducing the cost of building, without reducing the practical value of the structure, should prove welcome. One of the big items of cost is the outlay for trim and interior woodwork. In structures of even moderate cost the interior trim frequently is made to order.

"Making trim to order" means that the owner pays for the "set-up" for a run of a few hundred lineal feet of casing, base, and moulding, and possibly 150 to 200 feet of window sill and apron. Under such circumstances, the set-up costs vastly more than the run. The owner secures the benefit of a slightly different form of trim—he cannot tell wherein it differs from that in the next house if asked—any pays a very heavy premium for "something different" which is difficult and expensive to produce and of no value greater, intrinsic than other trim after it has been produced.

For the benefit of both millman and builder it should be known and understood that the milling on stock patterns of trim—the machine work—is equal if not superior to that on special patterns. The only advantage gained by paying three or four prices for special designs is the design and there is not one person in a hundred who can distinguish between special and standard patterns. Here is an excellent opportunity to lop off a part of the "high cost of building" without decreasing the value.

Attach Base Mould to Floor

This illustration also shows sections of cap moulds, such as would be required for a chair rail or wainscotting. Two styles of base are shown, one of two members and one of three members. The little base mould at the floor was originally devised to be nailed to the floor, independent of the base board. This allowed the floor to settle without leaving an exposed crack under the base, but carpenters everywhere nail the mould to the base, thus defeating the object for which it was devised.

Window stools are shown in two stock patterns and are made in more than one size to accommodate frames of different widths. The apron or mould used just beneath it may be of various patterns but is often made of the same detail as the upper portion of the base mould, depending on the style in which the room is carried out.

Placing Picture Moulding

The picture mould shown is a very simple stock design. Ordinarily the mould is so small that its position is of more importance than its contour. With a deep ceiling effect its place is properly at the junction of the two papers, below the frieze. In chambers and similar rooms where the wall paper is continued in one pattern from floor to ceiling, it goes very properly in the angle between the wall and ceiling. These rooms are usually on the second floor, with lower ceilings and this position for the picture mould tends to make the ceiling look higher.

Modern Merchandising

The following extract is from a letter recently received by Messrs Graham-White Co., Hendon, Eng.: Having read in the paper that you are now building furniture in the place of aeroplanes, I write to ask you whether your firm would build me a kitchen table, price not more than 12s., and please deliver same by aeroplane. I have quite a nice little garden where it might be possible to alight, but tell your pilot to be careful of my neighbor's fence, as he is touchy at times. A reply by return will oblige.

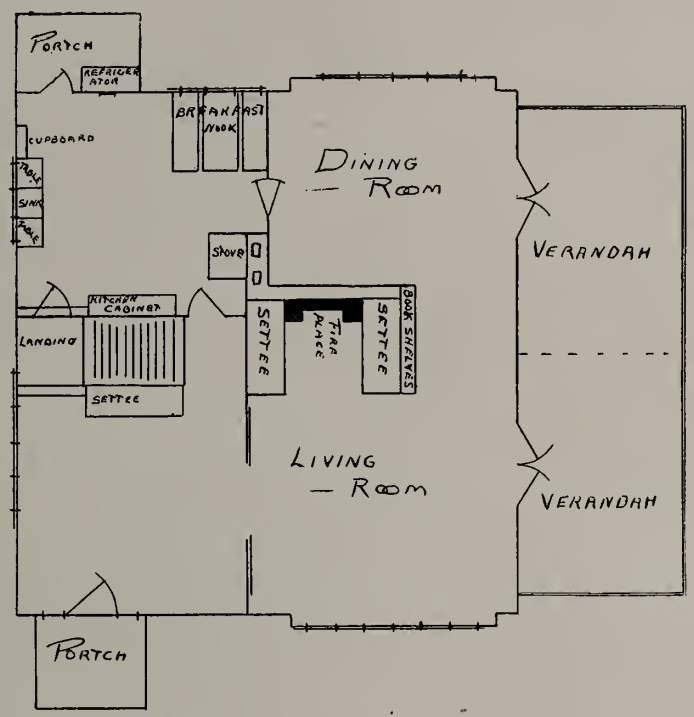
Do you prefer a slow running main shaft and a fast running countershaft, or the main shaft running at a high rate of speed?

Designing and Planning a Home

Important Items Which Are Often Overlooked—Make Provision for Adequate Ventilation—Work from Inside Out—Long Horizontal Lines Suggest Comfort

It has been said that the home a man builds is a true expression of himself. If the house were constructed according to plans and details worked out by the owner, this would, to a certain extent, be true, but if one were to judge his fellow men by the buildings seen on all sides, the result would not be any too pleasant. While a man may be striving, unconsciously, to express his personality when planning his home, yet in the majority of cases he is badly hampered through a lack of knowledge of the true principles of designing a home.

The question might well be asked:—What is a home? To those who are vain and wish to make a display, it is something that represents the size of their bank accounts; to others it is a place to eat and sleep in; to all it should be a place to live in. It should be designed to combine comfort, beauty and economy and the finished structure should suggest homelikeness.



Layout planned for comfort and convenience

There are many points to consider when preparing plans, too many to be touched on in an article of this length. The first and probably the most important is the design. The two-storey square house is supposedly the cheapest type to construct and is undoubtedly the most difficult to make beautiful. A house should not stand up on its hind legs but should cling to the ground and nestle into its surroundings. The long, horizontal line is the line of rest, and any house which embodies such lines, expresses comfort and coziness. As will be seen further on, even the square house can be given a rectangular appearance.

The roof must be given close study. It is more than a top to the building, something put on to keep out the rain and weather. It should convey the idea of substantiality and shelter. This is best suggested by a plain unbroken roof. If small dormers are added, they should not be large enough to attract attention and should be designed to repeat the line of the roof and the gable. A roof that is broken and cut-up ceases to function as a roof, that is, as far as suggesting shelter is concerned.

Decoration Out of Date

Decorations should be reduced to a negligible quantity, if not eliminated entirely. The lines and design of the building, if properly executed, should convey all that is intended without having to resort to large cornices, brackets, scroll work and heavy timber construction. These items have been used in the past, by those who did not understand designing, to overcome bad design. They have little place in modern home-building.

The eyes of the home, the windows, are most important. The old idea of a large hole in the wall filled with a single or double light sash is rapidly passing and we are experiencing a return to the small pane and mullion window. Instead of being placed at regular and stated intervals around the house, they are being arranged in little groups and so spaced that a sense of balance is obtained. Windows placed high up under wide eaves give a further suggestion of shelter and add to the attractiveness of the whole.

Planning from the Inside

A factor that is more and more determining the location of the doors and windows in the furniture and furnishings that are to be utilized in the home. The house is planned around the furniture to be installed and from the inside out. This is as it should be as it enables a person to work out many pleasing interior effects, as suitable places can be provided for the pieces necessary to complete the results pictured. Thus in the living room a length of unbroken wall should be provided for the piano. Working this way the furniture and other features can be placed to the best advantage and a very attractive interior secured.

The entrance and chimney can also be worked into the general plan so as to add to the beauty of the structure, express individuality and personality and further carry out the idea of homelikeness and coziness. The entrance in particular can be made to express both an invitation and a welcome.

Well Arranged Layout

The accompanying sketch illustrates a ground-floor plan that might be utilized for any seven or eight-roomed square type house. The upper floor is not shown as it does not contain any special features, merely showing the usual arrangement of three or four bedrooms with bath.

The lay-out of the lower floor is worthy of a little study. As will be seen, entrance is made into a hall. This may not be according to common practice as many houses are being built with the front door open-

ing into the living room, thus doing away with the hall which is considered as so much waste space. Doing away with the hall has its disadvantages, especially in winter, for, when the door is opened to admit anyone, a goodly portion of the cold outside atmosphere is also allowed in. This is not conducive to warmth or economy in heating. The hall shown can be provided with mirrors, closets and other furnishings that would contribute to the comfort and convenience of all who enter.

Entry to the kitchen is gained either through the hall or by means of the stair landing. Placing the stairway as indicated with a low landing at the bottom and a door opening into the kitchen does away with the back stairs so often included in the modern house, and thus tends for economy in construction. The basement is reached by means of a stairway under the front stairs.

Provide for Equipment in Kitchen

The kitchen is the workshop of the house and is planned and laid out accordingly. The elimination of the pantry is probably one of the most noticeable features. A good housekeeper would, probably, say that the person who built a kitchen without providing a pantry was crazy but at the same time she would likely think that a carpenter who had to run into an adjoining room for every nail, screw or other item required, had something the matter with him. Why did he not keep these things on or near his bench? The same idea is followed here. This kitchen is a veritable laboratory and the walls are virtually lined with shelves and cupboards so that everything is at hand and may be secured with a minimum of steps and effort.

The sink has a table at either end and a cupboard is provided at the far end for utensils and dishes. The other pieces installed include the useful kitchen cabinet, stove with ventilating hood over it and a breakfast alcove. The refrigerator is in the back porch and is constructed so that access to it may be had either through a suitable opening in the kitchen wall or from the back porch.

It will be noticed that a plentiful supply of light is provided at the far end for utensile and dishes. The number and arrangement of the windows. The ventilation of the whole lower floor was carefully considered. The two sets of windows in the kitchen, together with a transom over the rear door provide a cross-current of air that would keep it cool and comfortable in hot weather. In addition, the arrangement of the doors and windows allow for a current of air either from side to side of the house or from back and front.

Attractive Living room Fireplace

The living and dining rooms are not separated but a fire-place with built-in seats partially divides the two rooms. Many builders are combining the dining and living rooms into one large room, and in this respect this plan is open to criticism. The back of the inside seat, which does not go to the ceiling, is fitted up as a built-in bookcase. The base of the other seat is used for holding kindling and coal for the fireplace. This fuel box is filled from the hall through a small concealed door.

The French doors open on to a large verandah. It is becoming more and more the custom to place the verandah on the side of the house. This tends more for seclusion and quietness. Both the upper balcony, which is fitted up as a sleeping-out room and the verandah, are enclosed with glass for greater comfort. It is here where the long lines and rectangular appearance is gained as the main roof is extended right over the sleeping-out porch and verandah.

Another feature worthy of mention is the ventilation of the attic or third storey. If a window is installed at each end near the floor and provision made in the chimney near the ceiling for an opening to carry off the warm air, a circulation of air can be secured that will cool not only the attic but the whole house. This idea is used to a considerable extent in the Southern States where the heat is so oppressive and might well be embodied in all houses where comfort is one of the main considerations.

We Should Be of Good Courage

(Continued from page 42)

raw materials must be purchased and transported to the seat of manufacture and after they are manufactured they must be distributed to the consumer; a very important matter, indeed, in a country like Canade where commodities have to be carried long distances. I would therefore like to call attention to the recent annual report of the Canadian Pacific Railway in which Mr. Beatty, the president, states in part "That notwithstanding the gross earnings of the company were the largest in its history and exceeded the gross earnings of 1918 by $19,391,362, the net earnings were less by $1,669,351. The large increase in working expenses of $20,960,713, following as it does an increase of $17,191,993 in the working expenses for 1918 making a total increase in 1919 over 1917 of $38,-152,706, is a striking example of the effect of the increased cost of wages and materials in the operations of a company—even one conservatively and economically administered, as are the affairs of the C. P. R.

I have quoted these figures because they are an example of what is occurring in every furniture factory in Canada and also because if the C. P. R. fell down so much in their earnings with the largest gross receipts in the history of their company, I think we may reasonably anticipate higher freight rates, and, therefore, higher costs of production.

There are unfortunately, even in Canada, men who are always looking for trouble, men who ever since pre-war times have been expecting prices to drop and trade to become slack, in fact they almost seem to regret that such is not the case. If, however, a large number of such men in any industry were to talk in this despondent manner, they would by their suicidal action cause a depression. What is required at the present time is that every firm should go ahead in a business-like manner, not speculating, but taking conditions as they are and being full of courage in the present, with faith in the future.

Everyone in the furniture trade and in other industries in Canada, should do their utmost to encourage prosperity by working hard to make their factory or business as efficient as possible, and to advertise in a systematic manner, so that should there be a temporary falling off in the general business of the country, they will have, by their foresight, created a growing demand for their product which will then stand them in good stead.

Furniture Makers and Retailers Convene

Prices Prevailing Real Live Issue—Both Sides Present Cases—Satisfactory Solution Still to be Found — Standardized Bed Sizes and Labor Situation Touched On

The United States Retail Furniture Dealers' Association recently held a convention at Chicago, Ill. By special request a number of furniture manufacturers and representatives of the different furniture manufacturers associations were in attendance.

This meeting was called primarily for the purpose of discussing that vexatious question "Prices prevailing at time of shipment."

The first day was given over almost entirely to an open discussion on prices prevailing. An effort was made to see if this unsatisfactory clause could not be eliminated and business conducted under a fixed or guaranteed price; in fact the retailers made it clear from the beginning that this was the main purpose of the gathering. Prominent retailers and manufacturers took part in the discussion, the latter being led by Benjamin Bosse, mayor of Evansville and president of several furniture companies.

The furniture makers maintained that they were not desirous of continuing the practice and would welcome the day when the clause could be done away with entirely. They explained, however, at great length how at the present time prices prevailing was the only solution and was absolutely essential to conducting business at a profit, for the furniture manufacturer himself was forced to buy his raw material under similar terms, and, having to buy that way, it was only a case of self-preservation to sell his product the same way.

Many interesting points were brought out but nothing of a definite nature was accomplished. It was then decided to appoint a committee of three manufacturers and three retailers and let them see if they could evolve a solution that would prove satisfactory to both parties.

This committee, which consisted of Benj. Bosse, Evansville; J. L. Schnabig, Chicago; and E. P. Stephen, New York, for the manufacturers, and three prominent retailers discussed the matter for hours without reaching any agrement. R. G. Alexander, one of the retailers, then proposed a resolution to the effect that "now is the time to return to our former status of guaranteed prices with orders signed by the buyer and not subject to cancellation; this to be in force from June 25, 1920." A vote on this stood three to three and here the matter rested.

The following morning A. C. Brown of the Case Goods Manufacturers' Association took the floor and stated that the manufacturers were desirous of doing all in their power to meet the retailers, and in order to hasten the time when the prices-prevailing clause could be relegated to the past, the gentleman representing the furniture manufacturers had requested him to read the following resolutions. These were only suggestions as those present did not have the authority to do more than take the sentiment of the dealers and make representations to the manufacturers pertaining to any changes that it might be advisable to make.

WHEREAS, The buying of lumber, glass and other important materials used in the manufacture of furniture, at prices prevailing at date of shipment, is very unsatisfactory to the manufacturer of furniture; and,

WHEREAS, The buying of furniture by the retailer at prices prevailing at date of shipment is very unsatisfactory to him;

Therefore, We recommend to the manufacturer and retailer as follows:

FIRST: That the manufacturer use every means he may have or can acquire, as soon as possible to buy his materials at guaranteed price for stated periods. As soon as this is done, the manufacturer of furniture is asked, in turn, to guarantee a price on his furniture to the retailer.

SECOND: That because of over-buying by the retailer and over-selling by the manufacturer, the retailers be asked not to increase their orders with the manufacturers beyond their reasonable requirements; and that the retailer assist the manufacturer whenever asked, in checking, verifying, reducing or, in a better manner to pro rate the furniture to the retailers who may be in the greatest need of same.

THIRD: That any unfair or unbusiness like practices by either manufacturer or retailer be condemned by both manufacturer and retailer, and that every possible means be used by both to eliminate any such unfair methods, it being recognized that any unfair method is injurious to the industry as a whole.

FOURTH: That the retailer assist the manufacturer, who has too many orders on his books, in reducing them, when asked to check, reduce or confirm, by doing so and, after such reduction and confirmation, consider the orders as agreed upon not subject to cancellation without mutual agreement.

FIFTH: That in order to hasten the more stable condition desired by both retailer and manufacturers, retailers be asked to sign all orders on which the price is guaranteed, and that such orders be not subject to cancellation, if shipped within the period of price guarantee, except by mutual agreement.

SIXTH: That to do away with the possibility of dissatisfaction because of goods being shipped in a day or two after the change in price, the manufacturers be asked to invoice no goods to a retailer unless said manufacturer has placed in the mail, addressed to said retailer, at least 15 days before the day of shipment of goods, a dated price-list showing the price at which articles are to be invoiced.

Committee of Manufacturers.

The retailers then appointed a committee to report on these proposals and their findings were as follows:

We see nothing in the proposed resolution that solves the real problem of the dealers to-day—

Because—

It is our desire to stabilize business and prices now, and we are here for that purpose and feel that this can only be done by a guaranteeed price on some fair basis.

The present policy of placing orders is unfair to the dealer and, in turn, to the buying public. During the war this evil crept in, and we have permitted it to remain one-and-a-half years after the war; but we believe that we have now reached the point where it should not be tolerated longer.

The placing of orders on an open price has destroyed competition and, consequently, places the retailer at a disadvantage. Many manufacturers in every line are selling on a positive price and filling orders, which proves conclusively that it can be done.

We are told by one of your leading manufacturers in the meeting to-day that this condition will probably continue for twelve months, which assures us of more advances and which we know the public will not stand.

The privilege of cancellation at the eleventh hour is no relief.

Because of the above facts and reasons, we recommend that the proposal from the manufacturers be respectfully declined.

Committee of Retailers.

The retailers then passed the following resolution

covering the discussion,—"It is a sense of this gathering that in the interest of all concerned, we return to our former methods of doing business, and place our orders at a guaranteed price."

Other discussions took place, one centering around the standardization of bed sizes. It was generally agreed that 4 ft. 6 in. x 6 ft. 4 in. was the ideal standard size for a double bed. This question will be discussed later when the bed and bedding associations, some of the larger bedding manufacturers and a number of retailers can be brought together.

The retailers felt that the reduction of patterns and larger and improved manufacturing facilities should have resulted in an increased production without an increase in costs. The furniture manufacturers then offered to produce evidence which would show that the unproductivity of labor is alarming, the men producing only about 70 per cent. of their normal productive ability. In addition, Mayor Bosse stated that the furniture factories were losing hundreds of laborers to other industries, which were amused at the small wages paid by the furniture men. The shortage of workmen has still further curtailed production and the manufacture of phonographs has also reduced the quantity of furniture being turned out.

Uniform terms were under consideration and many dealers felt that on account of transportation delays and slow freights, a cash discount period of thirty days should be allowed on all orders.

The Retailers' Association will meet again in Chicago on June 25th, 1920.

When Planning Your New Factory

Do You Want Just a Building or an Organized Industrial Plant?—How Plans Should be Worked Out—Welfare and Comfort of Employees Important Consideration

By H. M. Marchand

1920 seems to be a year of expansion in the woodworking industry. One hears, on all sides, of new plants and the enlargement of existing operations. At the best the building of a new factory or a factory addition is a costly undertaking, but unless the new building has been planned with due regard to economical operation and the present and future expansion of the business, it may, when finished take a toll of the profits each day it is in operation. In view of this a few remarks on the planning of industrial buildings should not be amiss.

There are few investments that a manufacturer can make today that will tend to lower costs and boost the output as an efficient well-planned industrial organization. It is next to impossible to operate economically in a poorly constructed, badly arranged plant. Faced with a serious labor situation, every advantage should be taken of the latest ideas in plant construction, operation and equipment.

Promiscuous Additions Belong to Past

The past might well be called "the days of hit and miss additions." A plant was handicapped for lack of room, so many square feet of floor space was required. The amount was figured out and an addition attached that would give that badly-needed accomodation. In many instances that was all that it did give, for manufacturing costs under the new conditions were often higher than before. As other additions were tacked on, the subsequent confusion and inefficiency became more marked.

The better method and the one that should be followed in all instances is to work out a detailed plan, not only of the factory itself, but the production system to be used, the necessary equipment and the lay-out of same. If the work planned will only take care of present operations, what of the future? Is the business going to grow? If it is, is not when planning the time to visualize this growth and provide and prepare for future expansion. When this is done each unit of construction, as erected, dovetails into the existing plant and production is carried on under a prearranged plan, continuity of operations is secured and the efficiency of the plant increased with every move. This planning will probably require the services of a trained engineer.

Work From Inside Out

The best industrial engineers insist that production be studied and the lay-out of equipment and departments decided on before the building itself is worked out. In this way the building is made to conform to the product to be manufactured. Thus the proper sequence and continuity of operations is secured. The ideal method is to arrange the equipment and departments so that the work proceeds through in a straight line, every succeeding operation advancing the stock that much nearer the shipping or storeroom. This arrangement saves time, floor space, works for economical manufacturing and in other ways has a marked effect on the operation of the plant.

The choice of the type of building for woodworking usually lies between reinforced concrete and mill construction—brick-wall and heavy, slow-burning interior. As woodworking is usually a sprinkled risk, should be anyway, the mill type or some modification of that form of construction appears to be the most desirable for a furniture or similar plant. Concrete construction usually costs more and as far as the average woodworking factory is concerned, does not offer any marked advantages over mill construction.

Provide Plenty Light

The type of wall should next be considered. The old idea of solid brick walls with small windows has passed into discard. The newer method is to construct walls having brick piers 4 ft. or 5 ft. wide, with windows, usually steel sash, 12 ft. and wider, providing a window area of from 50 per cent. to 75 per cent. of the whole wall. This construction does not increase the building cost to any marked degree. In actual practice it averages about the same. As the greater glass area increases the radiation of heat, the heating plant and system in a building of this kind requires

careful planning. The increase in daylight afforded by the larger glass area tends for high production, decreased artificial lighting bills and contented workmen.

The roof should be fire resistant or, at least, fire retardant. If made of wood, the latter feature is secured by laying a solid 2 in. plank roof, covered with suitable roofing. Many fire-proof materials, such as asbestos slates, slate compositions, concrete slabs with tar and gravel, or other roofing materials, that would provide adequate protection can readily be secured and utilized. Any feature that will tend for lower insurance premiums will prove, through time, a good investment.

The welfare and comfort of the employees should always be considered. Ideal working conditions go hand in hand with contented workmen and maximum production from available equipment. This means that lighting, heating, ventilation and sanitation should always be worked out along the most approved lines. The mechanic of today shows greater discrimination than ever before and usually prefers to work in the plant which provides the best working conditions.

Lack of sufficient manufacturing space and poor arrangement of equipment are not compatable with efficiency and low manufacturing costs. The time to eliminate these undesirable features is when planning an enlargement. In addition, the manufacturer who builds without making due provision for future growth, limits his output, retards his own development and frequently imposes a serious handicap upon his successors.

What I Saw in Southern Producing Area

Lumber Manufacturers Face Serious Situation—Production Far Below Normal—Millmen Bending Every Effort to Increase Cut—Weather Conditions Continue Unfavorable—Walnut Supply Bright Spot

By Harold E. Everley*

One wonders if in the future of the industry there will ever come a time when the furniture manufacturer will experience the same difficulty of production and the same demand for his product as he is now experiencing. While he is putting forth every effort to produce more goods to fill a great and increasing need for his line, he is being harassed almost constantly by the multiplying demand of labor and the perplexing problems of obtaining an adequate supply of materials to carry on his business. The matter of finding a sufficient quantity of lumber to keep the factory going is a problem now faced by some of the furniture manufacturers.

The lumber mills located in the low lands of southeastern Missouri, part of Tennessee and Arkansas, Louisiana, Alabama, Texas and Mississippi produce approximately 80 per cent. of the total gum manufactured and nearly 30 per cent. of all the oak cut in the country. Conditions as they may exist here offer a key to the present situation surrounding the manufacture and supply of available gum and oak lumber and hence influence the market. The three states—Arkansas, Mississipppi and Louisiana—together produce approximately 68 per cent. of the total gum cut, hence any disturbance in the hardwood production of these districts greatly affects the supply of gum lumber.

Some Difficulties Encountered

There are reasons why the southern producers are unable to increase their low stocks of lumber. Undoubtedly the most important of these is the effect of the unfavorable weather conditions which have prevailed over most of the south since the fall of 1918. On the low lands the woods were in very bad logging condition when the worst rains came in October, 1919, and have continued almost incessantly since that date, making the forests impassable and lumber operations over a very large part of the low, flat territory were discontinued.

Together with the unfavorable climatic conditions came the difficulty of obtaining plenty of hands to get out the logs. It is said that more than 150,000 colored laborers left the south during the war. Those remaining were, in many cases, an inexperienced class which has not improved very much. It is claimed on good authority that the present class of labor, which is largely colored in the southern hardwood territory, is only 75 per cent. as efficient as that to be had previous to the war. Great numbers of men, who formerly worked in the lumber industry, did not return at the close of the war, which left the mills without sufficient amount of trained help at the time when production of lumber was needed to be greatly increased.

Showing result of excessive rains in southern district

Another very serious evil of the present time, which is retarding the production of lumber throughout the south and causing great difficulty in getting available stocks to the market, is the present shortage of cars. This condition is not a temporary one, and the lumber industry is face to face with what is unquestionably going to be a serious problem. It is the opinion of well-known transportation men and railroad officials that there will be no relief from the present situa-

*Extracts from report of investigation made for National Council of Furniture Associations.

tion during the year. The car shortage is due to the lack of available equipment which does not exist. Cars cannot be had owing to the fact that there is neither material, labor, nor money available to build them. In this period of unusual industrial and commercial activity, the car shortage is severely felt, and, as there are virtually no new cars being built, the shortage will gradually increase until such time as car construction is again under way. Unless relief is speedily to be obtained the shortage of lumber available for the manufacture of furniture and other products made of wood will continue to be one of the perplexing problems.

Weather Conditions Governing Factor

According to the latest reports and the writer's observations, the production of lumber in the three adjoining districts, Memphis, Arkansas and South Wester, producing largely gum and oak, is at present operating at 45 to 50 per cent. of the cut obtained at this time during a normal year. In some sections of the south it is hoped that an increased output will follow

Showing efforts that are being made to maintain production

the advent of favorable weather conditions and this will tend to help produce an easier market situation. However, it must be remembered in this connection that a heavier production will no doubt be accompanied by a corresponding expansion of demand for lumber that cannot be much longer deferred.

The rapidly waning supply of logs on hand at the mills together with the present logging difficulties over a large portion of the southern territory is being reflected in the present condition of the unsold lumber stocks, both green and dry, which now total approximately 27 per cent. of what they should be at this time in normal years.

Walnut Supply Adequate

Considering that the present stand of walnut timber in the United States at present is approximately one billion feet (government estimates) and that the annual cut based on the 1920 production, which is estimated to reach fifty million feet, the present stand of walnut timber will last for fifteen to twenty years. During that period there will be thousands of trees which will become merchantable each year, thus adding to the total supply. This stand of walnut can be very materially extended by the greater use of veneers. The ratio of one inch lumber to veneer is 1 to 20, which gives a wide field for prolonging the supply of walnut, in spite of the fact that many walnut logs are not suitable for veneer purposes.

The domestic consumption of walnut between the years of 1850 and 1875 was heavy. From the latter date up to 1900 the home consumption had decreased materially. The demand of foreign markets has since very largely taken its place and has continued to grow until just preceding the war when it is estimated that at least 85 to 90 per cent. of the walnut lumber and logs cut in this country was exported. England and Germany were the principal customers.

Amount of Export Controls Situation

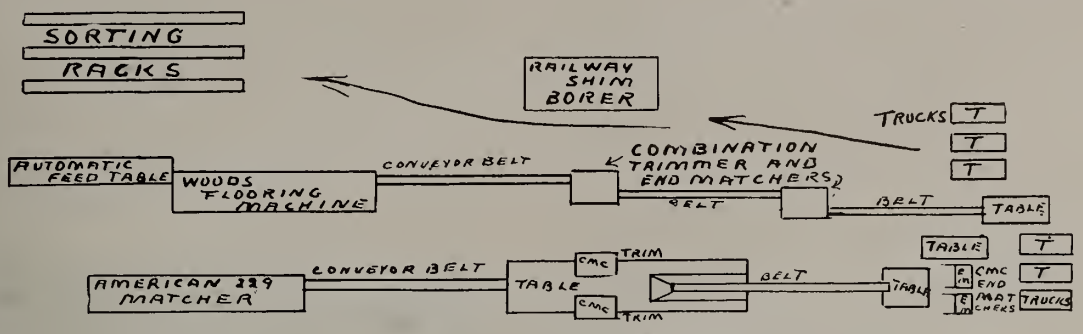
If it be kept in mind that in past years more than three-quarters of all the walnut lumber produced in this country, which annually amounted on an average to fifty million feet, were exported without apparently affecting the supply of the furniture industry, it does not appear that there need be a shortage of this lumber for the present. On the contrary, now that very little of this wood is being exported, there should be plenty of walnut available. An inspection of some mills seems to prove this supposition for they have several million feet of walnut in logs and lumber in stock. Every indication is that there should be no difficulty in obtaining a sufficient amount of good walnut lumber to care for the present and immediate future needs of the furniture industry.

The lumbering conditions around Asheville, North Carolina and eastern part of Tennessee are more encouraging. The production of lumber in this part of the country is now about 75 to 80 per cent. of that in normal times. Up to recently the shortage of labor affected lumber production considerably. With the coming of warm weather there seems to be more help available and the present indications in this territory are that there will soon be more lumber produced than during the winter months.

Every Effort For Greater Production

Just what the immediate future prospects will be for a relief from the present lumber shortage conditions found in the southern territory, no one can accurately tell. The possibility of increasing production depends mainly upon future weather conditions throughout the south. Usually the spring weather in that part of the country is favorable for increased log hauling and lumber cutting. If this be true this spring, another month or two will find the timber and logging crews again busy making preparations to begin heavy operations on all but the flatest lands. For the present, it may be considered that the lowest ebb of lumber production possibly has been reached in that territory covered by the investigation up to date. However, mill owners are putting forth every effort to increase production and there are hundreds of small mills springing up, which will tend to increase the available supply of lumber. The general outlook for improvement in the hardwood territory outside of the lowlands is very optimistic.

In general, it may be said there has not been, nor is there at present, insofar as is present, any effort to voluntarily limit or otherwise influence production, thereby increasing the shortage of lumber for the purpose of inflating prices. On the contrary, great efforts have been and are now being put forth to increase the supply of available lumber because of the insistent demand and the attractive prices.



Layout of hardwood flooring equipment and conveyor belts in Midland Wood Products factory

Quality Maintained in Midland Plant

Newest Ideas Adopted to Hardwood Flooring Production—Well Equipped Sash and Door Departments—Rust Proof Screens and Other Special Order Work

Anyone who has visited Midland, Ont., recently and walked down the track past the large grain elevator could not have failed to notice the factory of the Midland Wood Products, Limited. The modern plant is housed in a compact brick structure and is equipped with up-to-date labor-saving machines.

Probably one of the most interesting operations performed is the manufacture of hardwood flooring. Various widths and thicknesses are produced in such hardwoods as oak, birch, beech and maple. Some of the very latest equipment has been installed and an effort made to keep the manufacturing costs down to a minimum.

Lumber Stored on Trucks

The hardwood lumber is loaded directly from the railway cars to kiln trucks and either placed in the kiln or on a storage track where it stands until required. The capacity of the kiln is 125,000 ft. The storage track holds the same amount so that a quarter of a million feet may be handled on kiln trucks. After being dried the lumber is sorted and run into the factory.

The ripping is done on a Yates band resaw and a C. M. C. power feed rip. This latter machine is equipped with two saws and rips two lengths at a time, making for greater production. The stock for the thin flooring is taken and split on a Yates resaw.

The shape of the building and the layout of other machines is such that the flooring equipment could not be placed so that the work would proceed through in a straight line. This necessitates that trucks be used to move the stock for certain operations. It is possible that some form of an overhead carrer system could be used to advantage in moving this work. A very efficient installation of conveyor belts carries the flooring from the stickers to the trim saws and matchers and from there to the grading tables.

Flooring Handled to Advantage

The thin flooring is run on an American No. 229 hardwood flooring matcher. This machine is doing good work and producing a satisfactory quantity of well manufactured stock. The material falls on a conveyor belt which carries it to two C. M. C. trim saws. From here another belt conveys it to the C. M. C. end matchers. After being matched it is graded and taken to the sorting and tying racks.

The heavier stock is manufactured on an S. A. Wood's hardwood flooring machine. This machine is fitted with an automatic feeding table which carrys the pieces to the feed rolls. Using a feeding table enables the matcher to be worked to capacity and gives the operator a chance to feed his stock to the best advantage. A conveyor belt carries the work to a

American No. 229, running hardwood flooring in Midland plant

Sherman combination trimmer and end matcher which trims and matches one end and drops it on a belt which carries it to another combination matcher which trims and matches the other end. The work again drops on a belt and is conveyed to the grading table and goes from there to the sorting racks.

The finished flooring is stored in a heated warehouse. This building, in fact the whole factory, is equipped with an automatic sprinkler system. An adding machine is employed to check and keep accurate track of the bundle lengths as the flooring is loaded out.

The balance of the equipment on the main floor consists of an Yates double surfacer, a Preston power rip saw and a number of S. A. Wood's matchers. The

largest matcher is fitted with an automatic feeding table similar to the flooring machine. These machines take care of the general mill work and milling in transit.

The sash and doors are manufactured on the second floor. The stock is dressed and ripped before being taken up in a large elevator. The equipment here is modern and up-to-date in every respect. The sash making machines include a Cowan mortiser, Cowan tenoner, Cowan sash sticker, Cowan hollow chisel mortiser and a C. M. C. trim saw. A full line of stock sashes are manufactured as well as special order work.

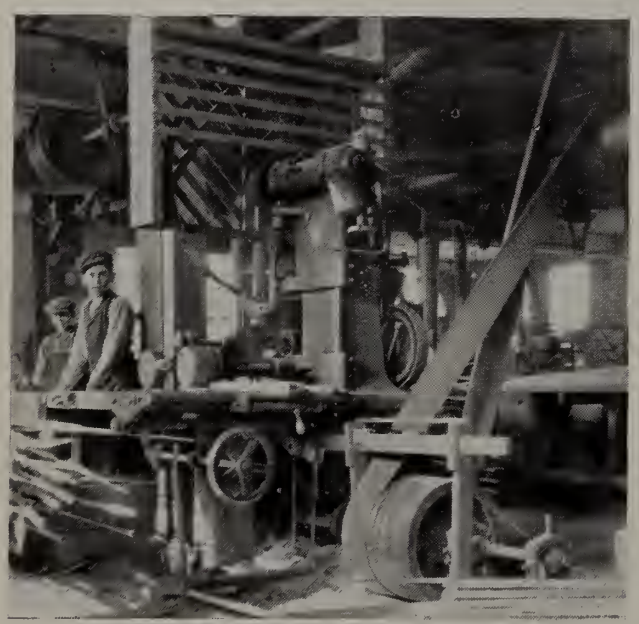
Efficient Door Making Equipment

The greater proportion of the door making equipment consists of efficient automatic and semi-automatic machines manufactured by the E. B. Hayes Co., now the Jenkins Machine Co., Sheboygan, Wis. This equipment includes such items as power door clamp, dowel sticker, dowel pointer and trimmer, dowel driver, multiple spindle boring machine, glue tank with special automatic gluing attachment, double tenoner, Hall & Brown panel raiser, Yates three drum sander, Mattison belt sander, Whitney planer, American band saw, Preston buzz planer, Cowan variety shaper, etc.

The quality of the doors is kept up to a very high standard consequently there is a considerable amount of material culled out when cutting out the door stock. This lumber is utilized in core-stock for the veneered doors. It is built up in pieces about 5 in. by 5 in. of a suitable length for a stile and then squared up and resawed into three stiles. These are dressed on two sides and are then ready for veneering.

Waterproof Glue Employed

In the veneering department, where the stock and panels for the veneered doors are laid, Napco waterproof glue is used entirely. One of the accompanying



"Yates" band rip used for sawing oak and other hardwoods

illustrations show the Francis spreader which is used for spreading the Napco glue. This glue has proved to be very satisfactory for this work and the absence of heat and odor in the glue room being a very desirable feature.

Another product of this company is a line of special made-to-order wire screens. These are very high-class and are made to last, consequently the best of material is used and the frames are strongly made, a mortise and tenon joint being employed. The screen wire, which is forced in a groove and a small dowel pressed on top of it then covered by a moulding, is of bronze and is therefore rustproof. The screens should last as long as the house to which they are attached.

A well-equipped finishing room has been provided to take care of the enamelling and painting of the

Francis glue spreader working on "Napco" waterproof glue in Midland factory

screens and other special order work. Skilled finishers are employed to handle this end of the work.

Mr. Bray, the manager, is a crank on quality and keeps a watchful eye on the various lines produced. He believes that the output of any plant should be made up to a standard rather than down to a price and maintains that the users of wood products appreciate quality and dependability. The fact that the Midland Wood Products plant is running to capacity and at that is unable to fill all the orders coming in would seem to bear out his contention.

Sawdust for Domestic Heating

The search for a fuel cheaper than coal or gas has turned the attention of investors to sawdust, and there are now being introduced in Britain special heating stoves which are designed for burning that waste product of the sawmill. The pattern is made in three sizes, respectively to burn six, twelve, twenty-four hours.

It is cylindrical in shape, stands on three feet, and has two principal chambers, that for the fuel in the centre, with an annular space for hot gases round it, the latter discharging into a bent elbow, which is provided to connect with a chimney. In the base is an air chamber, which is controlled by a damper, and the whole thing stands in a tray. To start the stove a core-stick is set upon in the bottom, round which the sawdust is rammed, and then it is withdrawn. This forms a centre flue, at the bottom of which is placed a little bit of cotton waste soaked in petroleum. When lighted this starts the combustion, which continues from the centre until the charge is burned.

Do You Guess At Your Cost Figures?

Averages Based On Past Costs Form Valuable Guide—Tables Showing Application Average Cost Tables to Newels, Columns and Mouldings

By S. J. Sutherland

(Second of series)

There have been a great many articles and books published at one time or another on woodworking estimating systems. Of these the most modern, and in the writer's opinion in the most complete and of most service to the manufacturer of odd job work, are the Mill-work Cost Information Bureau of Chicago, and the complete Odd Work Price List. This latter book is, probably, the most complete of its kind and, while the prices contained in it pertain to normal times, each item of work relating to the particular job is estimated so that with the advance of prices, these estimates can be changed; for example:—

Stair Newels

Mitred Cap and Neck Mould

1914

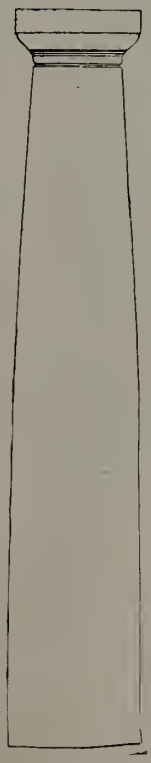
		W. Pine	Y. Pine	Birch	P. Oak & Ash	Quarter Cut Oak
5 x 5	-4	88	1.75	2.00	2.50	2.75
	5	110	1.75	2.00	2.50	3.00
	6	132	2.00	2.50	2.75	3.25
6 x 6	-4	110	1.85	2.50	3.00	3.00
	5	125	1.85	2.50	3.00	3.50
	6	150	2.00	2.75	3.25	4.00
	7	200	2.40	3.25	3.75	4.75
		..... Extras				
Solid mould panel each.		.15	.20	.25	.25	.25
Planted mould panel each.		.50	.50	.50	.50	.50
Turned drop each.		.15	.15	.25	.25	.25
Shaped drop each.		.20	.30	.30	.30	.40
Caps—machine carved.				1.50	1.50	1.50
Caps—hand carved.				2.00	2.00	2.00
Half newels 2/3 of whole.						

These prices for present use, 1920, would have to be changed, according to judgment and working conditions, to something like

Stair Newels

		W. Pine	Y. Pine	Birch	P. Oak & Ash	Quarter Cut Oak
5 x 5	-4	4.50	4.50	5.25	6.50	7.50
	5	4.75	4.75	5.50	7.00	7.75
	6	5.00	5.00	5.75	7.25	8.00
6 x 6	-4	5.25	5.25	5.75	7.25	8.00
	5	5.50	5.50	6.25	7.75	8.75
	6	5.75	5.75	6.50	8.25	9.25
	7	6.00	6.00	6.00	9.00	10.00
		..... Extras				
Solid mould panel each.		.50	.50	.50	.50	.50
Planted mould panel each.		.75	.75	.75	.75	.75
Turned drop each.		.50	.50	.50	.50	.50
Shaped drop each.		.50	.50	.50	.50	.50
Caps—machine carved.				2.00	2.00	2.00
Caps—hand carved.				3.50	3.50	3.50
Half newels 2/3 of whole.						

Another table shown is a chart in reference to special built-up columns. It must be borne in mind that the prices shown are those which applied in 1914, and the readers of this article will have to use their own judgment as to the prices to make on each of the operations shown in the list so as to meet conditions as existing to-day. The one disadvantage of using a price book is that with ever-varying changes in value, both of material and labor, one is apt to make the same old mistake of guessing at different operations without investigating costs.



Details of Column Costs 1914

Diam.	6/4 per ft.	8/4 per ft.	10/4 per ft.	12/4 per ft.	Base	Cap	Neck	Plug	Fluting	Weights Cap lbs.	Weights Base lbs.
6	.26				.40	.30	.15	.10	.55	4	5
7	.28				.45	.30	.15	.10	.65	5	7
8	.30				.50	.30	.25	.20	.75	6	9
9	.33				.55	.30	.25	.20	.90	7	10
10	.37	.48			.60	.40	.25	.20	1.00	8	12
11	.41	.52			.75	.50	.30	.20	1.25	10	16
12	.44	.57			.80	.50	.35	.25	1.25	12	17
13	.48	.62			1.25	1.00	.35	.25	1.50	14	18
14	.52	.64			1.50	1.25	.35	.25	5c per	20	24
15	.54	.66			1.75	1.40	.35	.25	sq. foot	16	21
16	.56	.71	.97		2.10	1.55	.50	.35	surface	25	30
17		.76	1.04		2.40	1.70	.55	.40	6c per	33	38
18		.80	1.10		2.65	2.10	.65	.45	sq. foot	38	44
19		.85	1.16		2.90	2.25	.65	.45	surface	55	60
20		.88	1.23	1.44	3.10	2.50	.65	.45	7c per	60	65
22		.94	1.30	1.60	3.80	3.00	.85	.60	sq. foot	70	78
24		1.04	1.42	1.76	4.50	3.75	.90	.60	surface	80	98
26			1.49	1.84	5.60	4.50	1.00	.70	8c per sq.	120	132
28			1.63	2.00	7.50	5.00	1.10	.75	ft. surface	135	155
30			1.74	2.16	8.50	6.00	1.25	.85	10c per	155	180
32				2.32	9.50	7.00	1.35	.90	sq. foot	190	215
34				2.40	11.75	8.00	1.45	1.00	surface	235	265
36				2.56	14.55	9.10	1.50	1.00		270	324

Not over 14 ft. long 6/4 in. stock, 14 ft., 18 ft., 8/4 in. 18 ft. 28 ft. 10/4 in., 28 ft. 34 ft. 12/4 in.
Crating, 1½c per sq. ft. surface measure, minimum 12c per column.
Priming, 10c per sq. yd. surface.
Weight of shaft, number of sq. ft. by 1½ lbs. If fluted sq. ft. by 1-1/3 lbs.

From a great number of statistics submitted, the Millwork Cost Information Bureau has compiled the following figures as regards the manufacture of mouldings. Prices of material, labor, overhead, etc., to be figured as per f.o.b. the manufacturer's own plant. Figures based on 1914 costs.

In speaking of the advantages of the accurate knowledge of costs, one is often met with the argument that the selling price is, after all, based upon the market made by other sellers, and that no manufacturer can exercise any control over the price. This argument is, of course, ridiculous, for in the long run the cost of production, plus a profit, must be recovered in any industry, and the sooner the real cost is known, the sooner will prices find their true economic level. Moreover the man, who knows his costs first, will be the one to profit most by this knowledge.

The retail planing mill men of Toronto, working along similar lines, have compiled the following price lists, which are in such form as to allow rapid and accurate estimating, where mouldings of several different woods are used on the same bill of material.

Reference Schedule—Moulding Cost

Illustrating the method used in determining the costs.

	Basswood	Red Birch	Uns. Birch	Cypress	Fir	Red Gum	Sap Gum	Mahogany	Pl. Red Oak	Pl. W. Oak	¼ Cut P. Oak	¼ Cut W. Oak	White Pine	Yellow Pine	Poplar	Spruce	Sycamore	Walnut
Lumber 1in. thick																		
Waste	15%	25%	30%	15%	20%	20%	20%	20%	30%	40%	30%	35%	15%	10%	25%	20%	30%	35%
Hours Ripping & Cutting per M.	7.33	12.67	11.33	7.33	8.67	8.67	8.67	8.67	11.33	14.00	11.33	12.67	7.33	6.00	10.00	8.67	11.33	12.67
Delivered Purchase Price	75.00	90.00	80.00	70.00	70.00	105.00	60.00	300.00	115.00	120.00	170.00	210.00	74.50	75.00	100.00	70.00	75.00	180.00
Lumber Burden (overhead)	4.20	7.40	7.40	4.20	4.20	7.40	7.40	7.40	7.40	7.40	7.40	7.40	4.20	4.20	7.40	4.20	7.40	7.40
Ripping & Cutting .52 wages .48 burden																		
Basis Hours at 1.00	7.33	12.67	11.33	7.33	8.67	8.67	8.67	8.67	11.33	14.00	11.33	12.67	7.33	6.00	10.00	8.67	11.33	12.67
Without Waste	86.53	110.07	98.73	81.53	82.87	121.07	76.07	316.07	133.73	141.40	188.73	230.07	86.03	85.20	117.40	82.87	93.73	200.07
Waste	12.98	38.52	29.62	12.23	16.57	24.21	15.21	63.21	40.12	56.56	56.60	80.52	12.90	8.52	29.35	16.57	28.12	70.02
Sticking .52 wages .48 burden																		
11.67 hours at 1.00	11.67	11.67	11.67	11.67	11.67	11.67	11.67	11.67	11.67	11.67	11.67	11.67	11.67	11.67	11.67	11.67	11.67	11.67
Factory Cost	118.18	160.26	140.02	105.43	111.11	156.95	102.95	390.95	183.52	209.63	257.02	322.26	110.60	105.39	158.42	111.11	135.52	281.76
Commercial Burden	22.24	32.05	28.00	21.09	22.22	31.39	20.59	78.19	37.10	41.93	51.40	64.45	22.12	21.08	31.68	22.22	26.70	56.35
Total Cost	133.42	192.31	168.02	126.52	133.33	188.34	123.54	469.14	222.62	251.56	308.42	386.71	132.72	126.47	190.10	133.33	160.22	338.11

Standard Moulding Basis For Detail Mouldings

⅜ in.	Width	⅞ in.	1⅛ in.	1⅜ in.	1¾ in.	Width	2¼ in.	2¾ in.
$1.00	⅞ in.	$1.00	....	....	....	⅞ in.	....	....
1.00	1⅛ in.	1.25	$2.10	....	....	1⅛ in.	....	....
1.10	1¼ in.	1.50	2.50	....	....	1¼ in.	....	....
1.10	1⅜ in.	1.75	2.90	$3.50	....	1⅜ in.	....	....
1.40	1½ in.	1.75	2.90	3.50	....	1½ in.	....	....
1.40	1¾ in.	2.00	3.30	4.50	$5.50	1¾ in.	....	....
1.60	2 in.	2.25	3.75	4.50	6.20	2 in.	....	....
2.00	2¼ in.	2.50	4.15	5.00	6.90	2¼ in.	$13.75	....
2.30	2½ in.	2.75	4.55	5.50	7.60	2½ in.	15.15	....
2.30	2¾ in.	3.00	5.00	6.00	8.25	2¾ in.	16.50	$19.80
2.50	3 in.	3.25	5.40	6.50	8.95	3 in.	17.90	21.45
2.75	3¼ in.	3.50	5.80	7.00	9.65	3¼ in.	19.25	23.10
3.00	3½ in.	3.75	6.20	7.50	10.30	3½ in.	20.65	24.75
3.25	3¾ in.	4.25	6.60	8.00	11.00	3¾ in.	22.00	26.40
3.50	4 in.	4.50	7.45	9.00	12.40	4 in.	24.75	29.70
...	4¼ in.	4.75	7.85	9.50	13.05	4¼ in.	26.15	31.35
...	4½ in.	5.00	8.25	10.00	13.75	4½ in.	27.50	33.00
...	4¾ in.	5.50	9.10	11.00	15.15	4¾ in.	30.25	36.30
...	5 in.	5.50	9.10	11.00	15.15	5 in.	30.25	36.30
...	5¼ in.	6.00	9.90	12.00	16.50	5¼ in.	33.00	39.60
...	5½ in.	6.00	9.90	12.00	16.50	5½ in.	33.00	39.60
...	5¾ in.	6.50	10.75	13.00	17.90	5¾ in.	35.75	42.90
...	6 in.	6.50	10.75	13.00	17.90	6 in.	35.75	42.90
...	6¼ in.	7.00	11.55	14.00	19.25	6¼ in.	38.50	46.20
...	6½ in.	7.00	11.55	14.00	19.25	6½ in.	38.50	46.20
...	7 in.	8.00	13.20	16.00	22.00	7 in.	44.00	52.80
...	7¼ in.	8.00	13.20	16.00	22.00	7¼ in.	44.00	52.80
...	9¼ in.	10.00	16.50	20.00	27.50	9¼ in.	55.00	66.00

Percentage Schedule for Detail Mouldings Dated April 1, 1920.

Figure at Basis List and apply the percentage below:

Gum	375	% of Basis
Cypress	225	" "
Chestnut	325	" "
Birch	225	" "
Georgia Pine	225	" "
Black Ash	225	% of Basis
White Ash	375	" "
Whitewood	375	" "
Plain Red Oak	375	" "
Quartered White Oak	600	" "
Walnut	550	" "
Mahogany	600	" "

As quoted before "A modern shop must be more or less a schoolhouse, and in it the manager musts be one of the pupils," and so in regard to modern estimating. The Millwork Cost Information Bureau can certainly be of assistance to every odd work manufacturer, be he large or small. For the surest way to prevent any article being held for sale at an economically unsound price is to have reliable data regarding its cost most widely disseminated. This was the purpose for which the Millwork Cost Information Bureau was first created. In addition to actual expenditures, their system allows for interest on capital used at 6 per cent. If the turnover is three times per year, this only amounts to 2 per cent. of sales. It also allows for depreciation on buildings and equipment. If proper depreciation has been allowed prior to installing a cost system, or if buildings and equipment are new, they allow the following amounts per year: 3 per cent. on brick buildings,.5 per cent. on wood buildings, 10 per cent. on equipment.

Any method of distributing expenses to individual orders or operations that accounts for every item of expense incurred in the running of a business is worthy of much respect. On the other hand, no matter how fair the distribution may be to the various classes of product, a system that does not account for every dollar spent is very misleading and, therefore, a dangerous proposition.

The Scientific Kiln Drying of Lumber

Suitable Drying Conditions Worked Out in Advance - Successfully Reproducing and Controlling Drying Factors—Following Predetermined Drying Schedule—Intelligent Operation Essential

Written especially for the Canadian Woodworker

The best way of which I know to prejudice the average man in the lumber and woodworking trades against anything is to tell him that it is scientific. To him the word means impractical and therefore of no use in his business. Quite often he is more nearly correct than he knows, since much scientific work has no immediate application in industry. However, it must not be forgotten that all progress in industry is based upon science, which may be defined loosely as "classified knowledge" or "organized common sense."

Among the great industries which have benefited greatly from the application of scientific knowledge may be mentioned all the chemical industries, the portland cement industry, the steel industry and all industries dependent upon steel or alloys, and practically all industries having to do with the production of food of all kinds. These are only a few samples—there is hardly an industry today which does not owe much of its progress to science in one form or another.

Reproduction of Satisfactory Conditions

In many of its industrial applications, possibly in the majority of them, science presents itself in extremely simple form, and the application consists almost entirely in the reproduction, time and again, of various given conditions which science has determined to be suitable for the production of certain results.

The commercial application of scientific kiln drying is, to all intents and purposes, as simples as this; and its success depends largely upon the ability of the kiln and the operator to reproduce certain conditions which have been worked out for him beforehand and are known to produce the desired results. In addition, the operator must know how to make moisture determinations on wood samples, so that he may know what conditions to use and when the material is ready to come out of the kiln.

Scientific kiln-drying is just as simple as any other kind, and the underlying principles are exactly those involved in the air-drying of wood or, for that matter, in the drying of clothes and surely there is nothing in the latter which smacks of impractical scientific research or which daunts the good housewife to the extent of making her put the clothes away wet or "improperly seasoned," as the wood worker would say.

A moment's thought will make it clear that there are three atmospheric factors which influence the drying of clothes: the amount of sun, the dryness of the air, and the amount of wind. We all know that clothes dry fastest on a warm, dry, windy day. Likewise, lumber air-seasons fastest under similar conditions. Sometimes, however, it may be too hot, dry, and windy, with resulting injury to the lumber. The science of kiln-drying consists principally in maintaining in the kiln those conditions of heat, dryness and wind which produce the intended. In speaking of these three variables we usually call the degree of heat "temperature," speak of the degree of dryness of the air as "humidity" (the greater the humidity, the damper the air) and the amount of wind we think of in terms of "circulation," usually expressed in feet per minute, instead of in miles per hour as is customary in weather reports. Our three factors are then, in kiln-drying terms, "temperature," "humidity" and "circulation"; they are still, of course, our same old friends which determine whether or not our clothes are going to be dry before evening.

Now that we understand what it really is that determine the rate of drying, it remains to find out how much of each is needed for best results. Here is where the industrial research of the Forest Products Laboratory, at Madison, Wis., shows us the way. The laboratory has been working upon these problems for many years and has made a great many experimental kiln runs upon various kinds of wood, intended for all different uses.s These experimental kiln runs have been checked time and again in actual practice and the drying schedules proven satisfactory.

Using Predetermined Drying Schedule

A drying schedule is a chart or table which tells what temperature and what humidity to use under certain conditions of drying, and how to change the temperature and humidity as the drying proceeds. A number of these schedules have been published from time to time and others are constantly being added to the list. Copies of those available can be secured free of charge by writing to the laboratory.

In order to produce successful drying it is essential that the dry kilns be suited to the work which they are

to do. This means that they must be able to produce the conditions of temperature and humidity specified on the drying schedule and maintain them within the limits of accuracy demanded. To maintain these conditions properly it is essential that there be ample air circulation throughout all portions of the kiln. For certain classes of kiln-drying, such as the drying of heavy vehicle stock green from the saw, the drying schedule is such that the humidity in particular must be accurately controlled, and it is necessary to have a very accurate means of control and a very high rate of air circulation. On the other hand, in the drying of inch lumber of many coniferous species, such as the pines and spruces, the degree of regulation need not be nearly so great, and the high temperatures which are used make it comparatively easy to secure a fairly good circulation of air. To put the matter in another way, the kilns for the vehicle stock must be of higher grade, from the standpoint of control, than those for the 1-inch pine or spruce boards.

Type of Kiln Factor

There is another consideration which has a profound influence upon the drying schedule and type of kiln to be used, and that is the use to which the material is to be put. This phase of the subject received very little attention until it became necessary to kiln-dry wood intended for aircraft construction. It is essential for this use, that every bit of strength available be retained, and it is not possible to dry the stock as rapidly as would be the case if it were to be used for ordinary purposes, such as furniture manufacture or building construction, where a small loss in strength is of no moment.

The Forest Products Laboratory has made many thousand tests upon various species of wood to determine the effect of kiln-drying upon the strength and has developed drying schedules by which these species can be dried without injury. It is interesting to note that too rapid drying, either in the open air or in the kiln, may have caused considerable injury, even though there be no visible defects, such as checks, warping or cupping.

In order to carry on "scientific kiln-drying" it is necessary, then, to have suitable kilns, proper drying schedules, and an operator skillful enough to keep the kilns in running order and to make the drying follow the predetermined schedule.

Band Resaw Effects Large Saving

Operator Finds This Machine Very Advantageous—Handles Wide Range of Work—Lumber Saving Amounts to Ten Per Cent.—Tends to Increase Production

By Mark Foster

A furniture concern manufacturing a complete line of popular priced furniture and cutting several million feet of lumber yearly recently decided to replace the circular resawing outfit they were using with a modern band resaw. They figured that the saving in time and waste that the band machine would effect would more than pay for the new installation.

Two men operate the band resaw, the same as with the circular saw, so the labor expense of operating the new machine is no greater. In fact, it is really less, for the band machine handles all the resawing for the day in six or seven hours and the remainder of the time it is kept busy on work that really comes under the head of ripping. An instance of this: planks are ripped 4 inches wide on a rip saw and then cut into 2 inch square strips for chair leg stock by running through the resaw once. The resaw does the work as accurately, and even more quickly, than the rip saw, so in extending its operations in this way, it works out very advantageously.

Ten Per Cent. Lumber Saving

The band resaw carries 19 and 20 gauge saws, and the saving in kerf alone over the old circular machine exceeds 10 per cent. In other words, 10 per cent. more lumber is being saved. The saving in dollars and cents effected thereby may be easily figured. In view of these figures, which show how advantageously the band resaw may be used in the factory, the thought naturally dominates: "Why are not more furniture manufacturers using band resaws?"

The reason is probably because the average furniture manufacturer feels that he wouldn't have sufficient work to keep a band resaw busy all the time, and therefore the machine would not prove a profitable investment. How wrong this view is, is shown in the above instance, which is exceptional only in the sense that as yet only the more progressive concerns are using band resaws on their work.

In the past few years lumber has steadily increased in price because of its growing scarcity and necessity of conducting logging operations under most inconvenient conditions to obtain the better grades necessary in furniture work, which naturally adds to the expense of such operations. All branches of woodworking have felt the effects of advanced lumber prices, but no branch of the industry has felt it so keenly as the furniture makers.

Employ Most Efficient Machines

This condition has made it necessary for furniture manufacturers to employ the most efficient manufacturing methods. The only source open to them to offset the high price of their material and the comparatively low price their commodity commands is to control their manufacturing costs to the greatest extent possible.

It is vitally necessary for furniture manufacturers to eliminate every condition in their plants that makes for waste or needless expense. Therefore, every furniture manufacturing concern that has resawing to do, if only a few thousand feet daily, should handle the work on a band machine. The band resaw holds out an opportunity to cut down expense and waste. All woodworkers should be alive to every such opportunity that presents itself, and should thoroughly investigate its economic possibilities.

If furniture concerns in general are willing to profit by the economical and waste-saving methods worked out by the more progressive men engaged in the industry, it is a conservative prediction that within a year or so the band resaw will be considered as much a furniture factory tool as the sander or surfacer.

Box Manufacturers Gather in Chicago

Situation in Industry Reviewed—Figures on Lumber Market—Trade Promotion and Publicity Campaigns Decided on

The National Association of Box Manufacturers recently held their 21st annual convention in Chicago. This was a most successful affair, not only in view of the number in attendance but considering the broad attitude and co-operative spirit displayed by the gathering as a whole.

In the opening address Chairman B. F. Masters gave an interesting review of the box industry, touching on many points of vital importance. A few extracts from this address follow: "There never has been a time in the history of the world when future events could be forecast with so much uncertainty and so little exactness as today, because we have been passing through conditions that the world never knew before.

Production is Our Great Need

"I dare say if I were to ask you gentlemen the greatests problem that rests upon your minds today it would be unanimous that it is the question of production. Nobody has any difficulty in selling their product today; if we have it's their own fault. And anybody who sells his product to-day at a sacrifice does it because he does not know the possibilities of the industry in which he is engaged. I say that without any equivocation or modification. There never has been a time when our product and the manufactured products of the United States could be sold and can be sold with so little difficulty and with so little fear of competition and with so little regard for the adjustment of your prices to meet competition as today. The great problem is to produce the products yourselves.

Service Keynote of Industry

"Then, too, our industry is peculiar. We cannot base our operations upon the same plan that the manufacturer of 90 per cent. of the commodities of the country does. We can't manufacture our products and put it in stock and hold it until the time is ripe for marketing to the best advantage. In that respect we are different from practically all the manufacturing interests of the country and yet our work is as broad in its scope as all of these interests combined because we serve them all.

"But with all this service we can only manufacture our product after it is ordered. We make our goods to order. We must have the orders first. Therefore, we have deeper and graver problems to meet than the manufacturers of standard and staple lines, who manufacture their product and place it on their shelves or in their warehouses, awaiting the best market conditions before they sell it. We must always maintain a capacity to serve our trade and serve it quickly.

Securing Full Replacement Value

"I am of the firm conviction that anybody is quite justified in basing their selling price on the reproductive value of the lumber, and the strongest reason for that is that when we reach the peak and when the pendulum begins to swing the other way you are going to have a great deal of lumber on your hands that cost you a great deal more money than you can get out of it in the shape of boxes, and you will have to absorb some of the profit that you have made in the meantime (if you have been fortunate enough to make any). The other side of the proposition is as inevitable as the fact that we recognize there must be a period of reconstruction when values go the other way. I am not prepared to say when that will be, but I quite share the opinion that people express freely that some day we will see a basis of values lower on all staple commodities than we see today.

"I see no indication at present to effect a hasty approach of that condition, but when it comes you will sell your product not upon the basis of what it cost you but upon the basis of reproductive value. You will be forced to do it when it goes the other way. Why not equalize the thing by adopting the same rule and same plan in connection with the selling of your product today?"

Mr. Martin then paid tribute to the achievements of W. D. Burr, as secretary and suggested that all members give him their fullest support and heartiest co-operation. He concluded by saying: "I bespeak for this association that the next twenty years will lead us out into greater and broader visions of unity and will cement us more closely together and work more to the interests of our industry than even the past twenty years have done. That is my wish to you."

The Address of the Secretary

The secretary, W. D. Burr, in his report touched on the activities of the association and its branches. In outlining the lumber market he said.

"I want to direct your attention to a few figures. Figures are sometimes interesting, even in a burlesque show. The lumber production rose from 18 billion feet in 1879, to 23 billion feet in 1889, to 35 billion feet in 1899 and to 43 billion feet in 1904. In 1912, 45 billion feet were produced. Government figures for that year indicate that between four and one-half and five billion feet of lumber were consumed in the manufacture of boxes, or about 11 per cent. of the total production. I believe the Government estimate is somewhat less than the actual. Since 1912 the annual production of lumber has decreased. The total production in 1918 was 32 billion feet, in 1919 about 28 billion feet. If the lumber consumed by the wooden box industry has not decreased since 1912, it represented last year about 17 per cent. of the total lumber consumed. What of the future? Can the consumption of lumber by the wooden box industry increase in proportion to the normal increase in demand for containers? A decreased production of lumber means a decrease in the lower grades. It means higher prices for all grades. Higher prices in turn will bring about a demand for some of the lower grades for purposes other than the manufacture of boxes. If there is to be a shortage of box lumber, either the number of wooden boxes used must be decreased or boxes must be made of less material.

Demand for Fibre Containers

"Now let us consider the paper box situation. The corrugated and fibre box industry has shown a remarkable growth, as the following will indicate. In 1914 there were 84 corrugated box plants and 35 solid

fibre plants in operation. Today there are 122 corrugated box plants and 66 solid fibre plants. Of those existing in 1914 but one has been dismantled. These figures alone do not indicate the increased production, for many of the older plants have been expanded and more modern machinery has been installed. The average speed of corrugators and pasters has been perhaps doubled in the last six years. It is estimated that production has increased about 150 per cent.

"The paper box makers are extensively advertising the saving in transportation costs of their product as compared with containers—which condition will be further emphasized by an increase in freight rates. Laboratory tests indicate that the predominating cause of failures of wooden boxes is not the use of material of insufficient thickness, but faulty design, careless construction and too few nails.

"We must urge the use of better containers; we must educate the public to realize the best is the cheapest in the long run. We must make investigation in an effort to develop boxes which without sacrificing strength or serviceability, may be constructed from less lumber. I am convinced that in a great many cases, by improved design, increased nailing and the use of reinforcements in the form of cleats and metal straps, many boxes may be made with a substantial saving of wood and consequently of cost."

Mr. Burr also touched on standardization, cost accounting and distribution.

Many other interesting addresses were presented including a report on "Standardization" by D. L. Irwin (Chicago Mill & Lumber Co.) of the standardization committee; report on testing shoe boxes by J. A. Newlin, Forests Products Laboratory, Madison, Wis.; "Trade Promotion" by Murray Springer and the reports of the secretaries of the different branches.

Increasing Life of Sand Belts

The woodworking industry is getting some new light on sanding panels and other woodwork to get a smooth finish. The new light consists in the fact that lighter pressure and higher speed bring better results.

Whether sand drums or sand belts are used, much pressure results in battering the wood. This is especially noticeable when the sandpaper becomes slick or dull, which may result either from filling with dust or from the sharp corners of the sand wearing off against the wood. To insure cutting that is free and sharp and a good finished surface all sandpaper used must be sharp and clean. With lighter presure the sand will run longer before becoming dull, and if slick it will cut more freely even when it is dull, so the tendency is strongly towards high speed and light pressure on all sanding devices. Speeds may vary from 1,000 feet of travel a minute up to 3,000 or 4,000 on sanding belts, while on drum sanders and disc sanders almost any speed imaginable can be encountered.

So far as the cutting qualities of the sand is concerned, no speed limit has yet been attained. Sand belts and sand drums may be driven to whatever speed they will stand without damage or distortion; it is these mechanical things which really limit the speed in sanding. Efforts are largely centered on developing sanders and sand belts well balanced, with higher speed, to the end that there may be cleaner cutting with lighter pressure. This is a point to be kept in mind in selecting new equipment for sanding.

Fuel Value of Different Woods

Two pounds of dry wood of any non-resinous species have about as much heating value as a pound of good coal. Speaking in tons and cords, a ton of coal may be taken as the equivalent in heating value of 1 cord of heavy wood, 1½ cords of medium-weight wood, or 2 cords of light wood.

The following table is an approximation of the number of cords of seasoned wood of various kinds needed to give the same amount of heat as a ton of coal, on the basis of 80 cubic feet of wood, with a moisture content of 15-20 per cent. to the cord:

1	cord	Hickory, Oak, Beech, Birch, Hard Maple, Ash, Locust, Longleaf Pine, Cherry	=1 ton coal
1½	cords	Shortleaf Pine, Western Hemlock, Red Gum, Douglas Fir, Sycamore, Soft Maple	=1 ton coal
2	cords	Cedar, Redwood, Poplar, Catalpa, Cypress, Basswood, Spruce, White Pine	=1 ton coal

Resin gives twice as much heat as wood, weight for weight. Hence such woods as the pines and firs have more heating power per ton than non-resinous woods. The resinous woods in the table are considered as having an average amount of resin (15 per cent.).

The fuel value of wood depends in many cases not alone upon its heating power, but also upon such qualities as easy ignition, rapid burning, freedom from smoke, and uniform heat. As a rule soft woods burn more readily than hard woods, and light woods more readily than heavy woods. The pines give a quicker, hotter fire and are consumed in a shorter time than birch; where as birch gives a more intense flame than oak. On the other hand, oak gives a very steady heat.

Government Regulation of Fruit Box Sizes

It is probable that legislation will be enacted by this session of the Dominion Parliament which will amend the Inspection and Sale Act. The proposal is to amend this act so as to prescribe the quality, form, dimensions and capacity of all containers in which fruit shall be packed and the materials of which such containers shall be made; to prescribe the kinds of fruit subject to the regulations and to prescribe penalties for violations of such regulations.

Wages in Belgian Industry

In the plate glass industry of Belgium wages average about 125 per cent. greater than those prevailing prior to the war. The output is limited and is being sold at very high prices. The United States is expected to be again a desirable outlet for this product as soon as larger supplies of raw materials enable production to be increased.

New Parry Sound Company

The Parry Sound Forest Products, Limited, Parry Sound, Ont., who were recently incorporated, have purchased suitable premises from the Parry Sound Lumber Co. and propose manufacturing a line of sash, kitchen tables, clothes reels and other similar lines. They expect eventually to manufacture a complete line of furniture and will train help toward that end.

Robert Lyons, Parry Sound, Ont.

A resaw and other equipment is being installed to handle milling in transit. In addition to the lines mentioned the company have several patent toys, of their own design, that they will work on and are prepared to tackle anything that offers scope for development.

Robert Lyons, the managing director has had a wide woodworking experience and an extended insight into factory methods and systems. Born in Ayrshire, Scotland, in 1884, he started to serve an apprenticeship at the age of 16, after which he spent three years in office work. In 1906 he came to Canada and was for five years with Shearer, Brown & Wills and Henry Morgan Co., Montreal, in sash, doors, interior fittings and cabinet work. Later he occupied the position of foreman for leading firms in Montreal and Toronto and was for a long period general foreman for the C. X. L.—British Cordite and U. S. A.—T. N. T. plant at Nobel. Mr. Lyons bought the Parry Sound Turning factory in 1918.

Training Course at Forest Products Laboratory

Nearly two dozen representatives of prominent furniture concerns attended the training courses in kiln drying and in the handling of glues and plywood which were given April 12 to 23 at the Forest Products Laboratory, Madison, Wis. In keeping with the purpose of the laboratory to make these courses practical in every respect, the work required was all of a nature to familiarize the students with the structure and characteristics of furniture woods. Problems which are causing trouble in many furniture factories were presented, and solved as far as possible by the application of facts discovered in the industrial research work of the laboratory.

Under the supervision of laboratory specialists, the group of men in the kiln drying course undertook an experimental kiln run on 4/4 green plain sawed oak. This work brought up for discussion innumerable fine points of kiln operation, such as the use of apparatus for regulating temperature, humidity and circulation in the kiln, and methods for preventing checking, case-hardening, and warping. An inspection trip to a neighboring city afforded the class an opportunity to see two large installations of kilns drying heavy vehicle stock on a commercial scale.

In the glue and plywood course the best ways of mixing and applying casein, vegetable, and animal glues were demonstrated. Plywood panels were constructed by the class and subjected to various tests to determine the effect of different manufacturing conditions.

The latter part of each course was given over to special conferences on individual problems which the men had brought to the laboratory for discussion.

In view of the surplus number of applications for enrollment in the kiln-drying course, the laboratory is arranging to give it monthly, beginning in July. Other courses suited to the needs of various industries are also planned.

Furniture Men Enjoy Balmy South

The accompanying picture shows a number of well known furniture manufacturers who, with a party of ten others, are touring the Southern States. The snap was taken while on a trip to the Imperial Valley of

Having a gay time in sunny south

Southern California. The wording of the hotel would seem to indicate that they had wandered across the Mexican border. Such a sturdy "bunch" would not fear the Mexican revolutionists. From the right they are: D. M. Wright, Stratford; S. M. Smyth, Stratford; G. H. Aletter, Montreal; A. O. Smyth, Strathroy, and C. E. and J. E. Jacques, Kitchener.

A gallon of expensive oil poured into the stopped-up hole of a bearing does not have so much effect as a drop of cheap oil in a bearing with its hole free from obstructions.

New B.C. Lumber Commissioner

Lieut. Loren L. Brown, M. C., superintendent of the Dominion Forests Products Laboratory, attached to the University of British Columbia, has been appointed British Columbia Lumber Commissioner for Eastern Canada, with headquarters at Toronto, in succession to Major Brechin, who recently resigned the position.

Mr. Brown will carry on the work which has been for some years past conducted by the Forest Branch of the Provincial Department of Lands in lumber trade extensions in Eastern Canada, a work which has been productive of excellent results in popularizing British Columbia lumber in that large market.

During the war the Toronto office was kept in operation through conditions mitigated somewhat against the development of trade in that section of the Dominion, but now that the war is over, the work will be prosecuted with greater vigor and the success attained in the past in bringing before the Eastern manufacturer and builder the merits of the various woods of this province will, undoubtedly, be further accentuated.

Mr. Brown has both a practical and technical knowledge of the lumber industry and building trades. He is a graduate civil engineer possessing the degree of B. Sc., and an associate member of the Engineering Institute of Canada. In addition to having made a special study of British Columbia woods, he has had practical experience in the lumber mills, and for some time under the former Government was superintendent of important building construction in the province.

Mr. Brown was attending McGill University, Montreal, when the war broke out, and enlisted as a private at Montreal on May 29th, 1915, arriving in France in September of that year. There he transferred to the Canadian Engineers, and for his excellent work he was given a commission in May, 1916. In June of the following year he was awarded the Military Cross for his work with the First Canadian Engineers.

Acquires New Refractory Plant

The Carborundum Company, of Niagara Falls, N. Y., recently acquired from the Alien Property Custodian the plant formerly owned and operated by the Didier-March Company, at Perth Amboy, New Jersey. The plant will be converted to the manufacture of a complete line of carborundum refractories which are now giving such exceptional service in a wide range of high temperature furnace work.

The principal uses for carborundum refractories as developed up to date have been in the construction of boiler furnaces, water gas generators, carbonizing retorts, heat treating and forging furnaces, all types of oil burning furnaces, pottery kilns, tunnel kilns, rotary kilns, electric furnace construction, muffle furnaces, saggers, etc. In addition to the regular line of made-up refractories, the new plant at Perth Amboy will produce a complete line of high grade refractory cements.

Refractories made in any of the three carbofrax grades are composed of over 90 per cent. of this pure carborundum, to which small percentages of exceedingly high refractory materials are added to facilitate binding. The high refractibility of carborundum is, therefore, maintained in these refractories, and as carborundum cannot be melted, and is destroyed only by decomposition at temperatures over 4000 degs. F., it is also impossible to actually melt Carbofrax brick or special shapes. Their exceedingly low co-efficient of expansion and high thermal conductivity reduces the spalling of these refractories to a minimum, and rapid change of temperature has little effect upon them. Their resistance to abrasion is also exceedingly great, as they are composed of a substance which is one of the hardest materials known. The Refrax brick has the same general characteristics as the Carbofrax, but in the production of this brick absolutely no binding material is used. Refrax brick therefore contains 100 per cent. carborundum.

The plant is located on a site of twenty-four acres fronting on the Raritan River. It consists of a modern clay working and refractory plant with a capacity of over one hundred tons per day and covers a floor space of about three hundred thousand square feet. The buildings are of substantial brick, steel and concrete construction, and there is also included office buildings, laboratories and ample housing facilities for employees. In addition about sixty acres of high grade fire clay lands at Bonhampton have been secured.

Carborundum refractories are made in four regular grades, in addition to which special mixes are utilized in the production of carborundum saggers, known as Carbofrax "A," "B" and "C," and Refrax. All of the standard shapes in which fire clay or silica brick are made can be produced in any of the grades, in addition to which practically any special shape, including tile, muffles and waggers, can be made in any of the three Carbofrax grades only.

Complete information regarding all carborundum refractories and helpful data on their proper uses will be gladly given by the Carborundum Refractory Service Department, the Carborundum Company, Niagara Falls, N.Y.

Belgian Plate Glass Situation

In pre-war days the Belgian glass ovens supplied the greater part of the high grade plate used in the manufacture of mirrors. Naturally when this source of supply was cut off a shortage of glass resulted but it was anticipated that when these ovens resumed production that the situation would show a marked improvement. This improvement has not materialized. In addition to being faced with an unprecedented world wide demand, it was found that it would take a long time and a heavy expenditure to bring the production up to even the pre-war normal.

Commissioner Herring, the American trade commissioner at Brussels, Belgium, recently sent out the following report regarding the shortage of Belgian plate glass: "Advise prospective customers of Belgian plate glass that it is practically useless to attempt to obtain supplies now. Efforts are made to supply pre-war customers, but no surplus is available for new clients. It is impossible to accept orders for future delivery. Labor shortage and lack of coal and raw materials still delay production, now about 60 per cent. normal. No prospects for immediate increase."

The ideal belt is one which never slips, never breaks, and which can be taken up or off in a very few moments.

Outlook for Furniture Sales

M. Wulpi, commissioner of the central bureau of furniture and casket manufacturers, Chicago, issued a bulletin late in March, analyzing the outlook for sales. He believes that the crest of present business in these lines has been reached and he suggests that manufacturers strengthen their sales organizations, watch credits, and guard against overbuying. He looks for a substantial volume of business during 1920, and cautions against the danger of pessimism that might lead to neglect of business opportunities. He adds: "Fundamental factors show that the transition from a seller's to a buyer's market is under way, but there is nothing to indicate that the decline will be precipitous."

In most sections of the country, general sales for the year should remain at fairly high levels for the first six months. The majority of clients may look for liberal orders during the spring and early summer. Deliveries are still behind demand in many lines, a situation stimulating to localities where these industries are a factor. Now that the railroads are back in the hands of their owners, large quantities of equipment and supplies will be required, to the benefit of the equipment centres. Housing facilities are not yet adequate. These and other factors, taken in connection with the usual spring rise, will cushion the inevitable decline. Commitments beyond the summer months should be made with the greatest care, as it is probable that a decline will be more in evidence during the third quarter than it is now.

Money will doubtless be tighter at that time, and the expansion of any but the most essential industries will likely be frowned upon.

Twelve Business Maxims

These twelve maxims have been used and tested by a successful manufacturer and given as tending to insure success.

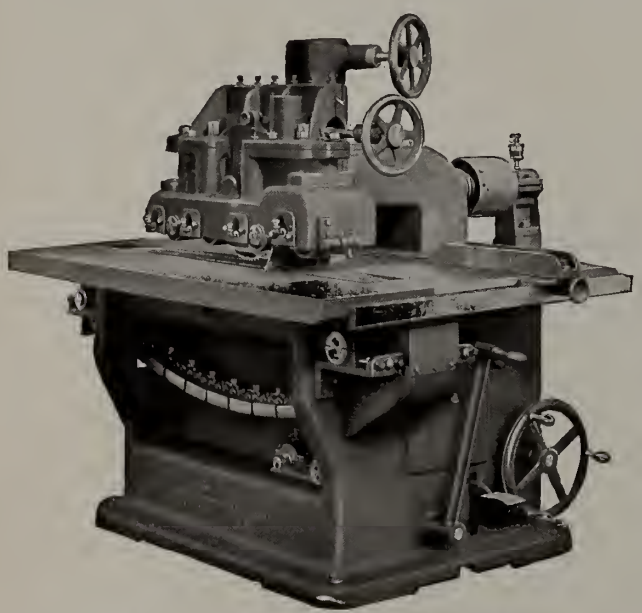
1. Have a definite aim.
2. Go straight for it.
3. Master all details.
4. Always know more than you are expected to know.
5. Remember that difficulties are only made to be overcome.
6. Treat failures as stepping-stones to further effort.
7. Never put your hand out further than you can draw it back.
8. At times be bold; always, be prudent.
9. The minority often beats the majority in the end.
10. Make good use of other men's brains.
11. Listen well; answer cautiously; decide promtly.
12. Preserve, by all means in your power, "a sound mind in a sound body."

An attractive adaptation of William and Mary design, from the Columbia line of Grafonolas

Machinery & Equipment

Straight-edging and Jointing Saw

A machine that is finding favor among the users of straight-edging and jointing saws is the Mattison "Ripper." This is a heavy rigidly constructed machine, the base being cast in one piece. The overhead saw and feed works are entirely encased and an efficient type of kick-back protects the operator from flying chips and edgings. The chain bed is independent of the main table and has vertical and lateral adjustments. The upper feed rolls can be moved apart to permit of easy access to saw and the carrying of large saws. Will handle stock as short as 9½ in. and as thick as 4 in. Carries saws from 9 in. to 14 in. Three rates of feed are provided, 40, 80 and 120 feet a minute. Made in two sizes, one having a capacity of 18 in. inside the saw and the other 32 in. All adjustments are easily made from the front of the machine. The overhead saw mounting is adjustable in all directions ensuring perfect alignment with the chain. The work done is so straight and accurate that for core stock, kitchen table tops and work of a similar



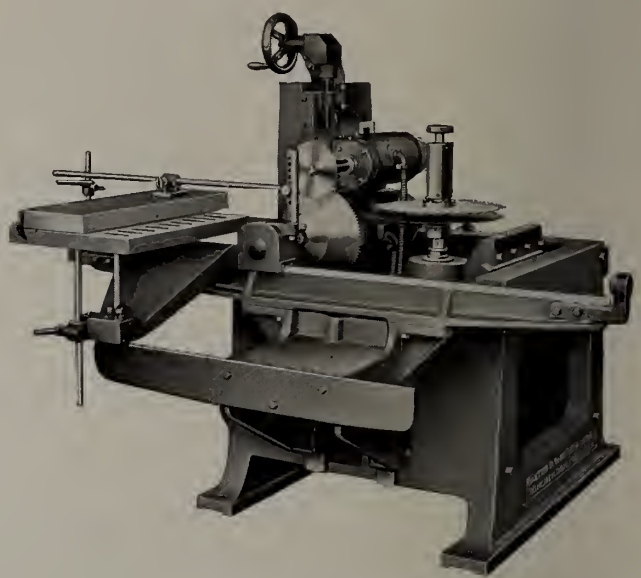
The Mattison, an accurate ripping and jointing saw

nature the material may be glued up from the saw. The Mattison Machine Works, Rockford, Ill., will gladly furnish full information. Chicago office, Republic Bldg., State and Adams Sts., Chicago.

Direct Motor Driven Saw Tenoner

Another application of direct motor drive in the construction of a new woodworking machine is shown below. It is a Direct Motor Driven Saw Tenoner made by Baxter D. Whitney & Son, Inc., Winchendon, Mass. This Tenoner was designed and built to satisfy the demand for a tenoner that could be operated without a countershaft or belts, thus allowing the machine to be set in any position desired and erected without regard to shafting.

An alternating current motor having a speed of 3540 r.p.m. is mounted directly on each saw arbor in place of the pulleys. The housing of each motor is made a part of the yoke that carries the saw arbor and bearings all of which is adjusted as a single unit to secure the desired shape and size of tenon wanted. This application of motors on the saw arbors elimin-



Whitney motor driven saw tenoner

ates all extra bearings as the same bearings serve for both the saw arbor and the motor.

The table can be tilted above or below the center and locked at any angle up to 22 degrees. The top and bottom saw arbors with their bearings and motors are mounted in yokes raised and lowered by elevating screws operated by handwheels. The yoke carrying the top saw arbor has also a horizontal adjustment to line up the top saw with the bottom saw or to cut an offset tenon if desired. Each saw arbor runs in Whitney type self-oiling ball bearings designed especially for high speed. The ends of the saw arbors are detachable and are so made that when screwed down in position against the shoulders of the arbors the ends center themselves and come in alignment with the saw arbors. The bottom saw arbor also carries the 12 in. cut off saw.

The vertical arbor carrying the splitting saws is also mounted in a yoke having a horizontal adjustment to move the saws to and from the work. The entire top of the upright arbor can be removed with the saws. The knee and the yokes carrying the saw arbors are adjusted by the movement of handwheels placed within easy reach at the operator's end of the machine. Any size tenon from 3/16 in. to 3 in. thick and up to 6½ in. long can be cut at one operation. Tenons that are saw cut have a surface that holds the glue better and makes a tighter joint.

The manufacturers, Baxter D. Whitney & Son, Inc., will be pleased to send anyone interested descriptive circular of this machine.

Ball Bearing Trim Saw

A distinct innovation in woodworking machinery in the shape of a high-speed ball bearing trim saw has been placed on the market by the Dominion Machinery Co., of Toronto, Ont. This machine is shown in the accompanying illustration. In addition to the ball bearing feature, the table will tilt to an angle of forty-five degrees and the saw is raised or lowered on an inclined plane. Another new feature is the drive. Instead of the ordinary belt, the drive from countershaft to saw arbor is a V-shaped link belt. This belt, on account of being endless, runs perfectly smooth, and owing to its shape, may be run very slack without slipping.

Dominion variety saw with V link belt

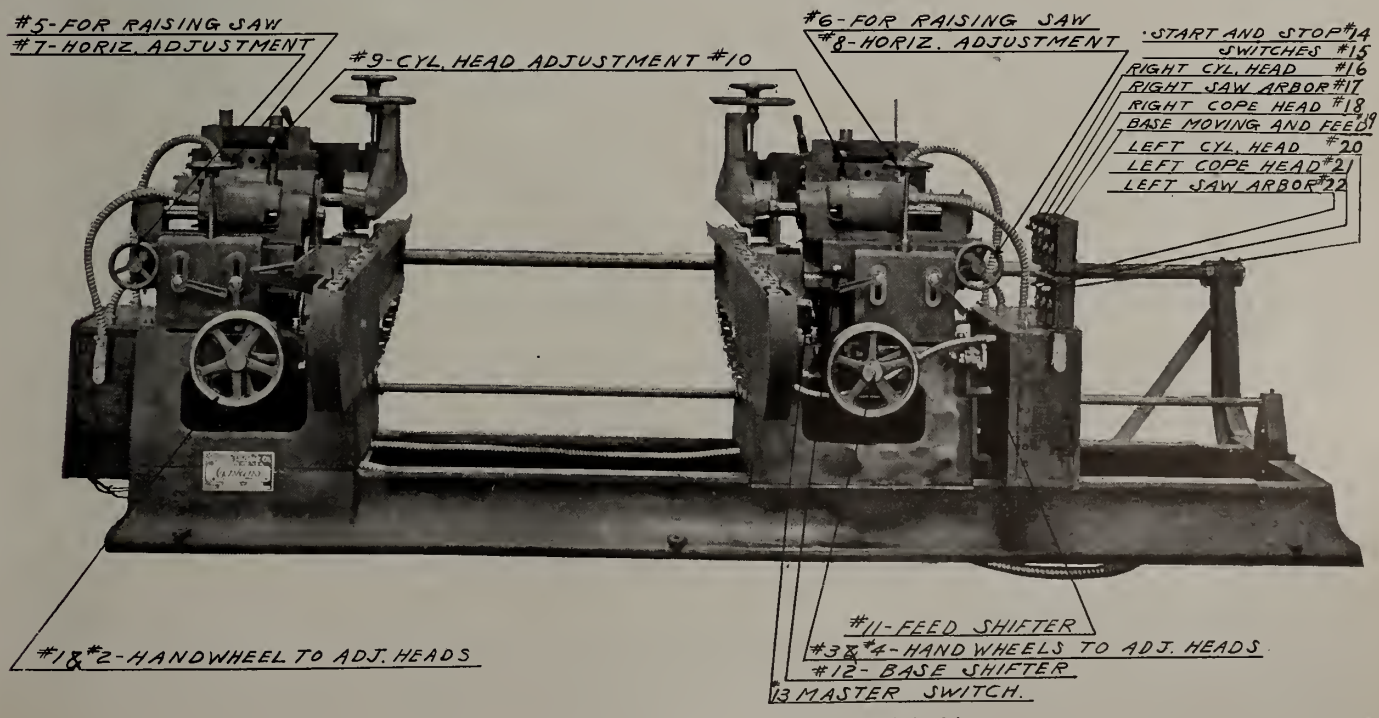
This machine is well guarded, all belts being fully covered by metal guards, and in addition the exposed part of the saw beneath the table is protected. The guards beneath the table are hinged and may be opened easily to give quick access to the saw.

The machine is well finished, and in addition to finding favor in the Canadian market, quite a number have been sold to British woodworkers.

Jenkins Double End Tenoning Machine

This machine is a re-designed model of Hayes standard double end tenoner. Many improvements suggested by users and other improvements worked out by the designers have been embodied in the new machine. It will cut tenons on all lengths of stock between 5 to 9 inches and from 1 to 60 inches wide. The range of tenon sizes is ¼ to 7 inches long and ⅛ to 4 inches thick. The machine is motor driven, having nine motors directly mounted on arbors. These are controlled by push buttons switches conveniently located at the right hand end of the machine. A master switch is provided to stop all motors. It is also made for belt drive. The arbor bearings are all S. K. F. ball bearing type except the feed shaft bearings. The upper and lower cylinders run in ball bearings which are seated in the motor housings. The motor housings are gibbed to yokes and yokes gibbed to the frames, thus providing for adjustments. The maximum between heads is six inches and minimum ⅛. The pressure bar is adjusted by means of a hand wheel and hand wheel lock operated on a ball thrust bearing, 4 inch vertical movements is provided for. Hand lever lock and release permits horizontal movements of pressure bar for instant removal of upper head. Each bar is equipped with 39 pressure blocks, each with it's own individual spring to take up any variation in thickness of stock going through. A 2 h.p. motor drives the feed and the employment of a transmission gives two rates of feed, viz., 12 to 18 ft. per minute. Hand lever feed control is provided on both front and rear. The motors for the cylinder heads saw and cope spindles are mounted directly on each spindle in the place of the ordinary belt pulley. The stator is fitted in a housing that is part of the yoke carrying spindle bearings. This application eliminates all extra bearings as the same bearings serve both spindle and motor.

Full particulars may be secured by writing the Jenkins Machine Co., Sheboygan, Wis., or their representative, the Garlock Walker Machinery Co., Toronto, Ont.



Jenkins double end tenoning machine. Electric or belt drive

Upholstering and Trimming

"For Men Are Square"

By D. D. Fennell*

(Continued from April "Canadian Woodworker")

Aristocracy and Democracy reached into this industrial problem today almost imperceptibly. Some men when they meet a man like to know what church he belongs to and will say that they do not wish to associate with him unless he shares their religious views. They are narrow and bigoted in these matters. Another man values nothing but money and says, "How much money is he worth? I will associate with him if he is a man with plenty of money." Another man will say, "How does he stand socially?" and so on, but long ago I learned that there is only one way to judge a man and this is so comprehensive. "Is he aristocratic or democratic?" If he is aristocratic I do not care to have anything to do with him. We had an idea that aristocracy was something we inherited; something that came from certain habits and customs and training. Aristocracy is a condition of mind. There are more aristocrats among the laboring men than among the employers. The worker earning $25 may be a typical aristocrat. The aristocrat is a man who is servile to his supervisors, but is absolute in his relation to his fellows. The sort of man that is insolent and unsympathetic and to those over whom he has supervision he is always brutal. The German in his old organization the paternalistic government of Germany—was peculiarly the aristocrat. There is no place in the length and breadth of this American country for the aristocrat. All men are free and equal within certain limits.

There has come into America and there has come into the warp of American society the knowledge that a man must be a man in his own rights, based on those elements that make a democracy, and the fellow that passes a townsman on the street owing to different social strata is a fellow that is going to lose out sooner or later.

There is no place for the "cootie" in America. I was starting out one night to make a speech; my wife asked me what I was going to say. I never prepare anything—I never have time—so I said, "I am not going to say very much; I am going to tell them there is no place in America for a 'cootie.' " She said "That does not sound very nice. Don't tell them that." there is no place in America for a "cootie." Your aristocrat is a parasite. He wishes to give nothing and to receive much; it may be awkward for the fellow born in luxury with nothing to do, but they are parasites, unless they put their time and service into production, for this is a work-day country and this is a work-day time and there is no place for any in this country but democrats.

You must appeal to your workmen today in the most dignified possible manner. You must recognize them as distinct entities in American society. You must look upon them as worthy of the most careful thought by you and the most sympathetic attention from you. In other words, they are just as good as you are. The man today who does not feel for his industrial family a veritable affection wants to get out of industry as soon as God will let him.

*Address before Upholstered Furniture Manufacturers' Association.

Justice

In the city of Buffalo, during the war, we had a demand made by the machinists in 20 different plants at the same time. We picked out five and with the five we organized a "shop committee." The committee was elected by secret ballot and represented the men who had made the demands. The Secretary of War permitted us to appoint one man in industry to represent the employers. It was agreed by the employers of the men that whatever conditions were laid down by the committee they would be the obligations for acceptance on the part of the parties concerned The committee decided upon but one thing, and that thing was justice.

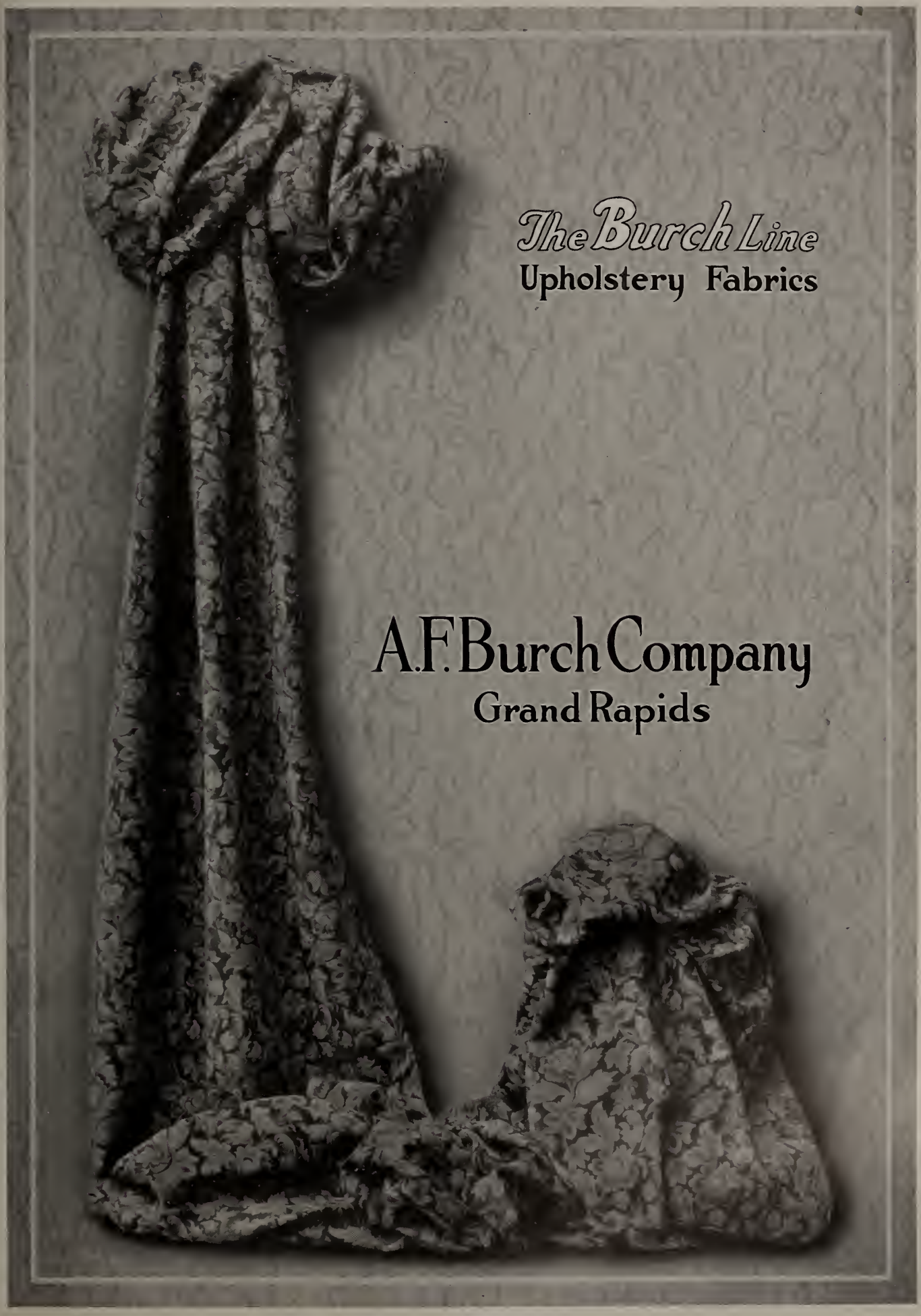
The agreement was made one year ago last July. From that time until the end of the war, there was never an employer or a machinist who broke one jot or title of that agreement. We did not have one strike on the Niagara frontier during the period of the war although there were 6,000 throughout the country—simple justice.

You are having trouble. I hope you win out absolutely, providing you are absolutely fair in this thing. Do not put yourself in jeapordy by doing one single thing that is not right. Prepudice and feeling are so apt to get the best of us that we sometimes do one little thing that is morally wrong, and if we do it our opponents make a balloon out of it.

One of the greatest assets in all the world is common courtesy. I have learned as far back as 15 or 16 years ago every one of my men in my plant (when I had 1,200 to 1,500 of them) was a fellow who was helping me to do a great big job and I could not keep a smile off my face when I met one of them. They used to refer to me as a certain person.

I wanted to do it. It was not a matter of policy. Here was a bunch of fellows who belonged to "my family," and we were all trying to do one great thing. This is not a matter of swap and trade any more. We have to come right out squarely and put all our cards on the table. You can't get more out of anything than you put into it, and a little friendly feeling displayed toward the men will bring back dividends.

Out of justice there always issues brotherhood, and always will. It is right. This great nation of ours was built upon the basis of brotherhood. My friend Jim Foster, of Cleveland, with the Hydraulic Pressed Steel Company, taught his organization one thing—that Foster is first, last and all the time, a square man, and he dares any man to say, "He said one thing and did another." It took days, weeks, months and years to bring his men to understand that there must be no film of distrust between them. Foster's plant is "more than a place to work." Thirty per cent of his men are union; 100 per cent voted against striking when the steel strike was called last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Grand Rapids

fall. This is the biggest compliment ever paid any man in American industry.

I could name 75 plants where there is no place for unionism at all. They have given their men something so much better, so much bigger, so comprehensive, that the thing is insipid and impossible, and not at all to be feared.

Profit sharing and bonuses are all incidental. I do not care about them one way or another. All the American working man wants is justice and the square deal, and if you are giving it to him in your plant, he will reciprocate, for men are square.

Upholsterers' Association in Annual Meet

The twenty-first general meeting of the National Association of Upholstered Furniture Manufacturers, marks the beginning of the 10th year of its history. This large assembly gathered at West Baden Springs, Indiana, on April 21st and 22nd. There were a large number of delegates present from every section of the country east of the Missouri River. The programme carried out was of the most interesting character and was lead by specialists in the various fields of which the association is now active.

The secretary and official cost accountant, J. L. Maltby, made a resume of the growth of the association during the past year, in which himself and assistant have been engaged exclusively in the interests of the Upholsterers' Organization, throughout the above mentioned territory.

D. D. Fennell, new director of Industrial Relations, gave an address, which was most enthusiastically received on the subject "Handling the Labor Situation," which is becoming active at many points, in the field of the association, while G. D. Pettibone sketched the work being undertaken by the association in production engineering and exhibited some new charts just made from work carried out in connection with the strike situation for the National Association of Upholstered Furniture Manufacturers.

Traffic was presented by Mr. J. D. Pierce, promotion manager of the National Furniture Traffic Association. The new plan on which Mr. Baker, the traffic counsel, is to work was presented. A very large percentage of the delegates present, enrolled for the support of this most important work. Very large savings have occurred to the members during the past year and the difficult situation which may follow will now be covered by Mr. Baker's service.

Mr. C. A. O'Connor made his report on the defense fund of the association, which showed that the industry throughout the country had lent its very valuable support to the handling of the labor situation, particularly in the matter of the Chicago strike. The results are well-known through the literature which has gone to all parts of the country.

A large expansion of the membership was also made at this time. The association finds itself in the soundest position in its history. Action was taken for the furtherance of the work for the ensuing year in the shape of financial support exceeding three times that of any previous year.

A very interesting feature was the attendance of the wives of a large number of the delegates. West Baden Springs is a very delightful place for recreation and was enjoyed to the limit by all those present, some indulging in golf, others in horseback riding and similar outdoor sports, and some "indoor sports," as well as making use of the mineral springs.

Maintaining Maximum Production

A recent issue of the American Manufacturer contained the following interesting statements:

Today capital cost more than 7 per cent. instead of 6 per cent. or less.

Wages are 85 per cent. over five years ago, and heavy in demand and supply scarce.

1911 to 1914 the net immigration was 2,892,000.

1915 to 1918 the net immigration was 437,000.

Up to 1914 only 12 per cent. of all manufacturing wage earners enjoyed a 48-hour or less. Now 48 hours' work for labor is customary.

Labor scarcity and shorter hours have come to stay: 200 men at 54 hours per week produce 10,800 man-hours.

Two hundred and twenty-five men on 48-hour week produce same man-hours.

Manufacturers must secure 12½ per cent. increase production to pay the cost of 48-hour week.

But two aids possible. One, a Wisconsin, illustrated:

Invested $40,000 in new machinery brought $280,000 yearly saving of labor cost.

Another in Cleveland held cost increase down to 7 per cent. despite wage increase of 110 per cent. and material of 50 per cent., through better management and brain production.

Itemizing Fixed Expenses

"There are 18 fixed expenses in business," recently said an expert associated with the Retail Public Ledger, "each one of which has a definite bearing on everybody's business. There are no such things today as 'miscellaneous expenses'—they disappeared with the sock in which the cross-roads dealer used to keep his cash. The 18 standard items of expense follow.

1. Taxes.
2. Insurance.
3. Fuel.
4. Rent.
5. Your own salary.
6. Your clerk hire.
7. Your advertising.
8. Telephone.
9. Office expenses.
10. Office machinery.
11. Equipment.
12. Repairs to equipment and store.
13. Depreciation.
14. Shrinkage.
15. Donations.
16. Bad debts.
17. Interest on investment.
18. Personal insurance.

"Just check these off and see if they don't apply to your own line of business."

Eaton Toy Plant Taken Over

The Eastern Handle and Dowel Co., Ltd., recently took over the plant at Farm Point, P. Q., formerly operated by the Eaton Toy Co. The equipment includes two Hawker automatic dowel machines, two bolters, one 24 inch planer, one C.M.C. sticker, five turning lathes, two Cowan band saws and other small machines. The plant is turning out handles and dowels at the rate of from 15 to 20 thousand a day. It is the intention of the company to install the equipment necessary to increase the output to 50 thousand pieces. While toys are being made the output will be confined to handles and dowels as much as possible.

If your foreman is hasty with you, do not forget he has more to worry him.

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Fumed Stains and Toners
Golden Oak Stains and Fillers

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Standard Paint & Varnish Co., Limited

Windsor, Ontario

THE FINISHING ROOM

Reducing Tendency to Shrink and Swell

High Moisture Resistant Varnish on Well-Seasoned Wood Tends for Greater Dependability in Finished Product

By Dixy Wells

All practical men and even many consumers know the tragedy of using moist wood for the manufacture of furniture. Like many affairs of life, an ounce of prevention is worth a pound of cure.

Experience has taught that less moisture is taken on as wood ages, and each time it is moistened and allowed to dry out there is a diminishing of the tendency to shrink or swell until eventually as years have passed, the wood is very little affected by any of the usual atmospheric changes.

One often hears the statement that certain wood is "hard as bone." This usually means that it has seen years of service, and is thoroughly dried up. As a rule all wood should be thoroughly dry before it is put into cabinet work, and after this detail has received attention a finish should be used that will further help to keep the wood dry.

Suitable Varnishes On Market

There are on the market today standard varnishes, that are water-proof, that even hot water or strong liquids will not injure. Their use tends to prevent the surface absorbing moisture or losing it. There is, of course, a sort of aluminum leaf finish which has been used successfully on the propellers of aeroplanes, but which we believe is impractical for furniture.

The old cabinet makers in Europe had a hard and fast rule that no cabinet lumber should be used that was not thoroughly seasoned by contact with the air, through a period of several years, and in the course of this process most of the tendency to shrink or swell was gradually eliminated. It has been proven that no matter how dry it may be, when subjected to resoaking it is weaker than it was originally.

Experiments indicate that some specimens show a loss in strength of nearly 20 per cent. It has also been found that the loss of strength upon wetting is very great when wood has been dried by steam pressure. In cases of this kind the loss in strength runs away up to over 50 per cent., so you will see that drying processes seem to remove a certain substance in the wood bringing about a chemical change, and it is this change which is supposed to lessen the tendency to swell and shrink from moistening and drying again and again.

Retaining Strength in Stock

Drying always renders it more or less brittle, depending largely upon the degree to which the drying has been carried, and although one will find that the strength of wood increases with its degree of dryness, wood which has been dried and then resoaked is less resilient than when fresh or green, therefore, when the first consideration is strength it is very important that one does not dry the wood beyond the degree to which it is to be used.

A change does take place in the wood as a result of drying, and these changes should be considered when determining the use for which the article is to be put. This change is more or less chemical, but it is probably due to the fact that the moisture in the wood escapes during the process of drying, carrying with it, of course, certain sap substances. This is easily detected from the odor of drying wood, and especially when it is steamed. You can even get some of this in a yard where lumber is being air dried, especially when it is fresh pine, and the evaporation of moisture is rapid.

Each Soaking Effects Change

The more you repeat the wetting and drying process the more substance value is removed from the wood, until in the end there is very little response on its part to changes in atmospheric conditions. More or less of the life of the wood is killed, but still sufficient properties remain to make the wood of great value for special purposes.

There is, we understand, a process in Denmark, prevalent among certain manufacturers whereby a chemical process is employed to produce within a day or two the same changes in wood that under ordinary circumstances would occupy many years.

Time certainly changes the character of all wood either hard or soft, and in the veneer business especially there are many drying and redrying processes to put the wood in proper shape for the furniture manufacturer, reducing in all cases the tendency to shrink or swell in ordinary changes of temperature and moisture.

One big point is to get wood that is thoroughly dry and then put on a finish that will keep it dry. That produces the best furniture, the furniture that will give the best satisfaction to the consumer, who after all is the final answer in sales success. He must be kept enthused; he must find that in return for the price asked he has received a service extending over a period of years that will bring him back to the retailer asking for a certain brand of furniture which you have manufactured.

Cover All Surfaces

There are, of course, a number of good finishing varnishes which will serve all the requirements of protection from moisture, the main point being to get people to use them and to coat all the surface of the wood and not merely the outside face surface.

Take the under surface of chairs, tables, cabinets, etc., moisture is very apt to reach these portions as well as that which is clearly visible, and if furniture is to be kept from swelling or contracting, thus making gaps which destroy the looks and weaken its strength, these portions must be covered.

The cost of wood, especially the better grades, is going higher and higher each day. It is even the

policy of some big mahogany concerns to send men who they expect to mature into positions of responsibility out to the source of supply for some months or even years in order that they may know the mahogany game from start to finish. They know what precious woods cost; they know the trials and tribulations of the business; they know that woods must be conserved. It is so with many other kinds of wood. There are experts who know them from stump to the finished furniture. They know their failings and shortcomings, they know their life and history, and, therefore, are qualified to determine what will best preserve them when made over into the merchandisable product.

After seeing that your lumber is real dry look over carefully the list of available finishing materials to see that only those are used which will give not only longer service in the home, but give the finishing touch of perfection to what you have produced. It is not always necessary to use the same finishes, of course, for the outside surface as for the portions which do not ordinarily show, but in all cases the entire surface should be covered.

Remember that great slogan "Save the Surface and You Save All," and whatever finishes you use be sure they have moisture resisting qualities. You will then obtain a certain amount of protection against swelling and shrinking, which after all is one of the most important items in successful finishing and merchandising.

Securing Good Results with Varnish

Keep Finishing Room Air Fresh and Pure—Plenty of Daylight Assists Drying and Gloss—Proper Temperature Important

When varnish is sealed in cans it remains fluid perfectly. When left to stand in a cup for a few days, the top will be covered with a tough, elastic skin When you coat an object with varnish it will dry apparently to the surface of the object coated. This illustrates that the air dries the varnish not only by evaporation, but also by oxidation.

The air of your finishing room should be kept fresh and pure. Indoor air is not pure; all outdoor air is not necessarily pure, although fresh. Sometimes indoor air is better than outside air—sometimes worse. Varnish will not dry properly if the air is impure. In addition, the gloss is apt to be effected unfavorably. Sulphurous and carbonic acid gases are present in some degree in all city air, and almost always in factory air. These gases have a very bad influence upon the varnish.

Good Ventilation Needed

The finishing room should be shut up while the varnish is being applied to keep out dust and drafts, but as soon as the varnishing is done, it should be ventilated by throwing open the windows, according to weather, to let in the fresh air. The modern factory does not rely entirely on this method, but is equipped with a good ventilating system. Ventilation does not mean drafts. Avoid direct drafts of air upon the work. Fresh air will cause the varnish to dry in the proper time and help give it a gloss, when not rubbed.

Varnish dries better in daylight than at night in darkness. Work done early in the morning will have the rest of the day to dry it in, and will dry much better than work done in the latter part of the day. This shows the importance of having the finishing room well lighted. A dark, poorly-lighted finishing room is not the place in which to work varnish.

A Maximum of Daylight

Daylight and plenty of it. That not only tends to make the finish dry better, but the workman can see better how to do his work properly. Without it the work will likely be disfigured by misses and imperfections. Poor eyesight is also conducive to poor work. For dark days artificial light is an excellent substitute for daylight. Be sure to get the best artificial light. The electric company can advise you. The most expert varnisher will fail to do good work without light. Give your finishers plenty of it.

The air of the finishing room in both winter and summer should be dry and have a temperature of not less than 70 degrees, Fahrenheit. An atmosphere that is too warm will retard the drying of the varnish because heat of a sufficient degree will keep varnish fluid. While heat is employed in varnish drying systems, it is not still heat, but the results are obtained by the introduction of oxygen and circulation of the heated air. If the air is too cool the varnish will fail to work properly under the brush, resulting in many varnish evils. The work upon completion should be stored in a room at least 70 degrees Fahrenheit for a day or two at least.

Warm Humid Air Best

Heat does not necessarily remove the moisture from air. Air may be warm yet humid. Artificial heat will dry out the moisture but as this is not easily obtainable nor desirable in summer when days may be the most humid, prevention is better than any cure. The manufacturer is obliged to take a chance unless it is possible to avoid varnishing in such weather and utilize the workman on something else.—Jamestown Finishing Facts.

Cheaper Denatured Alcohol

A resolution of importance to manufacturing, farming, chemical and other industries of Canada is to come before the Federal House in the form of proposed amendments to the Inland Revenue Act respecting the distillation of denatured alcohol. One of the clauses of the resolution provides.

"That denatured alcohol and specially denatured alcohol which is intended for uses in the arts and industries, or for fuel, light or power, for any mechanical purpose may be manufactured in Canada free from excise duty."

This is the legislation which was urged by the Advisory Council on Scientific Research as a means of bringing "industrial alcohol" within the reach of all users, in the hope that it would prove a cheap and suitable substitute for gasoline, which is becoming scarcer and dearer each season.

Life is a casket not precious in itself, but valuable in proportion to what fortune, industry or virtue has placed within it.

Removing Stains and Blotches in Wood

Simple Treatment to Remove Weather, Water, Alkali, Rust and Other Stains from Different Varieties of Wood—Method of Finishing After Removal of Stain

By H. A. C.

TO bleach stains out of wood a number of points must be observed to make a successful job and to prevent the after effects from the bleaching materials and chemicals. Soft wood or close-grained woods, such as pine, etc., require bleaching at times as well as hard woods, and the treatment of either of those woods is almost similar. The stains usually required to be bleached out of wood are as follows: Weather or water stains, alkali stains, color stains, particularly aniline stains, dog and cat urine stains, iron rust stains, etc. The bleaching out of rust stains and dogs' urine has been the source of a special difficulty and has so far withstood all usually employed methods, but, nevertheless, it is an easy matter.

The hard woods which are easily affected by the weather by alkalies, etc., and which are difficult to bleach, include all woods containing tannic acid in a larger or lesser degree, and include oak, mahogany, cypress, birch, cherry, chestnut, walnut, ash, etc. All sappy or white woods are more easily bleached, such as pine, spruce, hemlock, whitewood, poplar, maple, bass, gum and similar woods.

Finish Must be Removed

As mostly all the wood to be bleached has some kind of a finish, it is of importance to have the finish thoroughly removed before starting the bleaching process. In the case of using a remover containing oil or wax, a final cleaning must be done with soda water or alcohol, to remove all traces of the wax and to allow the bleaching material to affect the wood and to penetrate. As all methods for bleaching wood are based on water soluble chemicals, it is impossible to avoid the sponging up of the wood or the raising of the fibre of the wood.

To bleach small articles, it is advisable to have a wooden tank made of sufficient size to immerse the articles to be bleached, which also would make a more perfect job and save a good deal of the bleaching material, although this is very low priced. The tank for this purpose must be properly joined. No nails or other iron parts should be used on it, and the joints should be bound with white-lead putty or casein. A porcelain-lined metal tank would also answer the purpose, or a rubber-coated tank would be advisable.

Oxalic Acid for Light Stains

For ordinary bleaching of surface weather stains the following solution is sufficient: One pound oxalic acid dissolved in one to one and one-half gallon of hot water. For a more deep-rooted stain an addition of strong white vinegar, or still better, acetic acid, is required, and the bleaching liquid should be applied as hot as possible, repeating the application of same until sure that the bleach has gone as deep into the wood as the stain itself. After bleaching, it is required to thoroughly wash the surface, and an extra sponging off with vinegar is essential.

To bleach aniline stains apply a strong solution of chloride of lime and after a while wash off with clean water, after which apply the oxalic acid method as above given. If the stains do not yield to this treatment, apply a solution of tartaric acid, and treat afterwards as above.

For rust stains the same method is to be used, but in bad cases, instead of using tartaric acid, diluted hydrochloric acid, or a solution of citric acid will do the trick. The chloride of lime method is to be used for dog or cat urine stains. In all cases the oxalic treatment afterwards is required.

Hints For Refinishing

In refinishing the wood, the following is to be strictly observed to make a perfect job, and particularly if the wood has to be filled or stained to avoid a spotted or clouded appearance of the finish. After thoroughly cleaning and drying of the bleached surface, do not sandpaper, but apply a thin coat of shellac which must be pure, greatly reduced with alcohol, about one-half the strength of the regular article used for finishing. Allow twenty-four hours, or as long as possible, for the shellac to dry; after which sandpaper, and only then start the staining, filling, or whatever finish is required. The shellac, be it ever so much reduced, will harden the raised fibres of the wood, and by sand-papering (or using steel wool) they will cut the fibres off short, making a perfectly smooth surface; furthermore, the softer parts of the wood will absorb the shellac to some extent, preventing the stain or colored filler to accumulate in those parts more than on other sections of the surface, and will give a more uniform finish. This is particularly important and apparent where cross-cuts of the wood are intended to show a uniform finish or color with the balance of the job. This treatment with shellac is intended for exterior as well as interior work, and is in no way detrimental for the best exterior work, providing the guaranteed pure shellac is used.

If aniline stains are not intended to be removed, but it is wished to prevent them from striking through subsequent coating, particularly enamel or paint, etc., the following is recommended to set or make such stains permanent. Take one pound of green copperas (ferro-sulphide) and dissolve in one to two gallons of hot water. Add to it one-half the quantity of alum and apply one to two coats of this over the surface.

Refinishing a Filled Surface

Often a person is called upon to remove the filler from the pores of a piece of wood and finish it another color. A good varnish remover will take off all the varnish and if a good stiff brush is used immediately after the filler will usually come out. If the pores are not entirely free from filler give another coat of remover and use the brush again. This treatment, while emptying the pores, will not remove the coloring from the wood. If a lighter finish is desired this color will have to be eliminated with a clear caustic bleach. A number of applications may be necessary. The bleach must be entirely removed with clear warm water, then the surface is ready for refinishing.

Build Good Permanent Foundation

Filling and Staining Important Operations—Material Not Usually to Blame When Trouble Occurs—How One Manufacturer Discovered Faulty Work

By E. D. P.

Laying the firm foundation needed for a perfect finish is one of the main essentials in successful finishing, consequently no operations require more care and watchfulness, on the part of the foreman finisher, than the filling and staining. It is in the filling department that the finish is made and in many instances it is in this department that the finish is marred.

Sometimes troubles unaccountably crop up which are most difficult to solve. The blame for these occurrences is commonly laid at the door of the material being used whereas the real fault lies, in many instances, in the method of its application.

An instance of this kind occurred a short time ago. The writer was recently called in, by the manager of a large factory, to see if he could assist in finding the reason why the filler was not filling the grain of the wood. The same grade and make of filler had been used in this place for a number of years and had always given good satisfaction. It was a filler manufactured by a reputable firm who specialize in stains and fillers.

The trouble seemed to begin all at once. A peculiar feature was, while some of the cases were coming through perfectly filled others did not seem to have any filler in the pores. The foreman was a good conscientious man who knew his work thoroughly and had been giving entire satisfaction.

When the writer called he proceeded directly to the filling department, going alone to see how the work was carried out when the foreman was engaged elsewhere. It did not take long to find the root of the trouble.

During the temporary absence of the foreman the men or boys were wiping the filler off before it had dried flat. As a result the filler was being pulled out of the pores of the wood about as fast as it was being applied. When the foreman was on the floor the work was carried out as it should have been. This accounted for some cases being filled perfectly while others were passed on in poor shape.

It turned out that the men and boys in that department had been shortly before placed on piece work and the trouble dated from that change. Needless to say there was no more trouble from that source as a proper remedy was immediately applied.

There are many reasons why a filler does not work satisfactorily and the above is only one. In nearly every case where trouble is uncountered it does not lie with the filler but is due to some purely local condition or to the method employed in preparing the work and handling the filler.

The fillers that are being distributed today by reliable firms, concerns who specialize in finishing materials, do fill the wood and give satisfaction if handled properly. If you are experiencing trouble with any wood finishing material do not jump to the conclusion that the fault is with the materials used. Make sure that the grade used is suitable for the work on hand and that it is being applied properly. If a solution cannot be readily found call in the service man of the manufacturer of the material. He will gladly help you out. Most manufacturers of finishing material retain service men, who are experts in their line. They are at your service and will help you out with your troubles and assist you in keeping your finishing department at its highest state of efficiency.

Washing Chamois Skins

The chamois is found in practically every finishing department and perhaps a few words on keeping it clean and in good condition would not be amiss. If not kept properly it will loose its softness and pliability.

One of the most satisfactory cleaning solutions is a weak solution of salsoda. Allow the chamois skin to soak in this for an hour or more then remove it and place it in a soapy solution, allowing it to remain immersed for about two hours. It is then rinsed out in clear water, then washed out in water containing salsoda and soap. The water is now squeezed out carefully by pressing with the hands and being in a warm place to dry. Hot water should not be used as it tends to make the skin hard and stiff.

Our Slogan and Pass Word "More Production"

By Will Haas

The high cost of living is the loudest cry today, but if we would all change the cry to the tune of more Production and dance with its melody, we would make old H. C. L. quiver and disappear so rapidly that it would all have seemed to be a dream.

More Production is most important—our Government is asking all businesses to speed up Production, for Production will lead us out of the period of reconstruction in a sane and safe manner and is the only thing that will stabilize prices. Therefore, let American worker take Uncle Sam's advice (ask Dad, he knows) and do his part towards speeding up Production by delivering a square day's work every day, for a square day's pay.

Remember, just as much as you put into your work each day just so much will you get out of it. Every hour's time you lose means just so much less happiness to you and yours, as well as less Production. I have heard someone say: "The best time to loaf is when you are dead."

Let us use our Karpen education and show the lead as usual. Every worker that speeds up production does his part to cut the cost of living. We are in a better position to do so today than ever before; the enlargement of our plant makes this possible.

By merely thinking, hoping, talking and trusting that somehow, somewhere, sometime, things will come out right, while we do nothing to make them come out right is sunstruck folly.

Let's get busy and let's make More Production our slogan and password.—"Karpen Komment."

BIG 4

Write for sample panel showing four great Marietta Specialties, as follows:

MACO

The new principle non-fading Mahogany stain.

Has the non-fading quality of a water stain.

The non-grain-raising quality of an oil stain.

Can be filled directly over the stain like a spirit stain.

KOPALAC

"The last word in spirit Varnishes."

Has heavier gum body than shellac and holds up varnish coatings better. Can be either brushed or sprayed. Will not turn white nor fog when sprayed.

Guaranteed to contain no rosin.

SPARTAN CRACK FILLER

A non-shrinking cement for filling cracks, holes, wind checks and other defects in wood. Saves good lumber that might otherwise be wasted. Made in shades to match the stain. Dries in half an hour.

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To cap the climax, the panel we send you will be finished with Marietta Varnish. A high grade article strictly up to the Marietta standard of working and wearing qualities.

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Marietta, Ohio

Southern Factory: High Point, N. C.

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Address.....

Person.....

"Good workmen know the difference"

Look for this trade mark on the back of every belt, sheet or disc.

An airplane propeller mystery—solved!

AN airplane propeller was being tested for balance at the Hardman, Peck factory in New York. The testing room was closed against air currents that might stir the delicately pivoted blades.

One end of the propeller was heavy. It slowly dropped, one ineh, two, three, four inehes. The workman removed it to his beneh and lightly sandpapered one blade. He eould feel the eutting of the grit through the pliable paper. He quit when he figured he had overcome the slight drop.

But on the testing pivot it again stirred and after a few moments fell an ineh or so. The foreman ehaneed by and said, "You missed it a trifle that time, Tom."

"No, **it ought to stay level,**" said the workman, daring to set his skill against the government testing machine. Just then the propeller returned to dead level. Mystified, they left it and when they came back it behaved the same way. This happened three times.

"I'll bet it's that fly. There he's lit on the blade; see it drop" said Tom. The mere weight of a fly did it."

Doesn't it awaken your highest respect to know the workman ean judge "to the weight of a fly" when smoothing wood, metal or leather? He gets to know abrasives the same as a barber knows razor blades.

Manning Speed-grits are winning simply beeause "Good Workmen Know the Differenee"

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comes in the following varieties:

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HANDY ROLLS
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DURUNDUM PAPER
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Manning
Speed-grits
Reg.U.S.Pat.Off.

Don't say Sandpaper —say Speed-grits

The above photograph shows the Nichols Equipment installed in the works of the Votey Organ Company, Garwood, N.J. These dryers may be used to turn out automobile bodies, furniture, pianos, talking machines, etc., in as many days as it formerly took weeks, and the finish is better, for it is dried scientifically, from the inside out.

If not already Nichols equipped, you owe it to yourself at least to investigate, because:—

1—It will easily triple the output of your finishing rooms.

2—It will decrease congestion in your factory.

3—It will decrease the investment in goods necessarily in process.

4—It will enable you to make more prompt deliveries.

We will analyze your particular conditions and then make you a proposition on an equipment that we know, from our extended experience, will save you time and money, as well as improve your product.

We guarantee fully the efficiency of the equipment as well as its mechanical construction. Every installation has been successful. There are hundreds of concerns to whom we can refer you.

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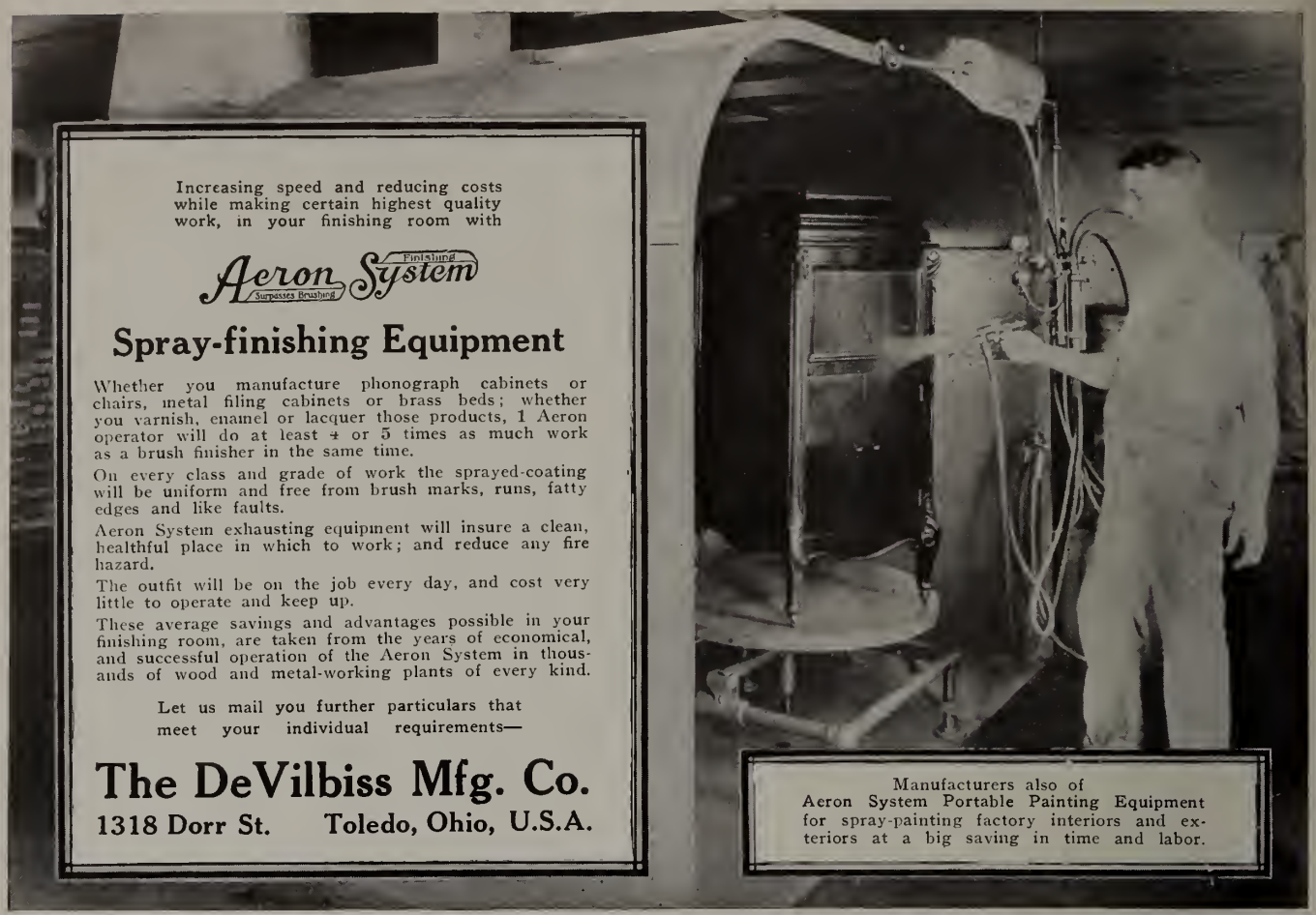
Manufacturers of Dryers for Lumber, Veneers, Glued Stock, Varnish, Paint and Enamels, for both high and low temperature work. Also sole agents for "Zenitherm" insulating material for the making of rooms for both high and low temperature drying.



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Aeron System (Finishing — Surpasses Brushing)

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On every class and grade of work the sprayed-coating will be uniform and free from brush marks, runs, fatty edges and like faults.

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for spray-painting factory interiors and exteriors at a big saving in time and labor.

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Wood Fillers also that have been tested under the most difficult of varying circumstances and found satisfactory.

Eliminate trouble in your finishing department by using these tested materials.

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The Edward J. Shannon Company

CINCINNATI, OHIO

Veneers and Panels

Can Core Stock Be Too Dry?

Core Foundation of Work—What Might Result From Material That is Too Dry—Selecting and Jointing Stock

By S. H. Johnstone

No doubt many reams have been written on the selecting and preparation of core stock for panels and veneered products, yet faulty work is being continually put on the market. One sees evidences of this in practically every furniture store. While strolling through a showroom recently, the writer noticed a handsome period buffet in beautiful burl walnut. A closer examination of this piece showed that the top was slightly marred by a depression running its full length.

The core is the foundation of all veneered work, and as such should be as near perfect as it is possible to make it. In this particular instance the fault may have been due to carelessness on the part of the veneer men or may have occurred because too much care had been exercised. In any event, it should not have been found if the operators had had a real working knowledge of what constitutes a good core and of the action of different woods when exposed to moisture.

Practical Knowledge Needed

It may seem strange to some to say that the above fault may have occurred because too much care had been taken. Thoroughness, coupled with knowledge, tends for a perfect product, but if knowledge is lacking, extra thoroughness or carefulness may cause considerable trouble. Do not take this as a suggestion that one should not be careful and thorough in all operations, but rather that one cannot acquire too much knowledge, and that knowledge is essential to good work.

Take the case in question. The depression might have been caused by a green or wet piece of stock being glued up in the core body—carelessness. Again, it might have been caused by making the core of different kinds of wood and in an effort to eliminate possible trouble from damp stock drying the core to too low a moisture content—lack of knowledge. As some woods swell more than others when taking on moisture, it is possible that as the core gradually reached a normal moisture content, in equilibrium with the surrounding atmosphere, certain pieces expanded more than others, forming alternate thick and thin pieces, causing the depression mentioned.

Selecting and Sorting Stock

This brings up the selection of stock for cores. It should be a hard and fast rule that only one kind of wood be used in a core, and, better still, that all the stock going into any one core be as nearly the same texture as possible. A soft piece of pine will shrink or swell more readily than a harder piece, and if the two textures were used together, they might produce irregularities on the finished surface.

Chestnut and poplar seem to be favored as the most suitable material for core stock. The high prices being asked for these woods have caused many manufacturers to turn their attention to other sources of supply. One large piano maker has been experimenting with cores made from California red wood. This wood possesses many of the qualities required for this work. When thoroughly dry, it does not warp readily. It is light, takes a fine, smooth finish and may be obtained in large sizes. To date it has worked out very satisfactorily. Another wood that should find favor as a core wood is B. C. or sitka spruce. This lumber was brought into prominence as an aeroplane wood during the war, and since then many uses have been found for it. It is plentiful, light, does not tend to warp and buckle, dries readily and is easily machined. There are many other woods that may be used successfully for solid cores.

Gluing Directly from Saw

The straight edging and jointing type of saw seems to be coming into general use for preparing core material. This machine takes the place of a number of ordinary rip saws and perhaps a jointer or two and effects a saving in time, power, labor and material. With a properly-fitted saw, lumber can be glued up as it leaves the machine without any further correction. When jointing is necessary, the ordinary square joint is about as satisfactory as any. The Linderman takes a certain amount of material without increasing the strength of the joint to any appreciable extent, and, in addition, is an expensive machine to install and operate. The tongued and grooved joint, made on the ordinary automatic type of jointer, is very satisfactory, especially if a V joint is made, for it helps keep the face even when cramping up. It means an extra operation and consumes a certain amount of stock, so that if a straight edging saw is available it is the part of wisdom to use it and glue up from the saw.

Give Plenty of Drying Time

After glueing, the material should stand so as to equalize the moisture of the glue joint and should be at a normal or average moisture content when used. In many cases rough, planer work, if passed, will show up through the face veneers. The planer must be kept in first-class condition and if through poor stock or a poor machine good work is not possible, the cores should be sanded or scraped. This latter specially holds true if cheap lumber is being worked up as a rough spot on the core, such as a knot or cross-grained section, may show through as a depression or may cause a loose spot or blister. This occurs even when crossbanding is applied under the face material.

There is not any excuse for poor results, as attention to detail and a familiarity with veneering requirements will enable any shop to do good work.

View of plant of Birds Eye Veneer Company, Escanaba, Mich.

Veneers From Northern Hardwoods

Plant Situated in Heart of Virgin Hardwood Sections—Every Effort Made For Economical Production—Plant and Grounds Made Beautiful and Attractive

Many of the large veneer manufacturers specialize in veneers in oak, walnut, mahogany or other of the so-called fancy cabinet woods. The Bird's Eye Veneer Co., Escanaba, Mich., devote their attention to the production of a high-grade line of rotary cut veneers in bird's eye maple, plain maple and birch. Other local woods are worked up but the efforts of the company are centred on the manufacture of the lines mentioned.

This concern was organized in 1912 and set about the erection of a modern, well-equipped veneer manufacturing plant. On planning the new building architectural beauty as well as utility was considered and the result was a substantial brick factory constructed along attractive lines and laid off so that the fullest advantage might be taken of modern manufacturing methods and efficient labor-saving equipment.

Surroundings Made Attractive

The spacious grounds which surround the plant and which provide for log storage and the future

Heavy lathe for rotary cut veneers, Birds Eye Veneer Co.'s plant

growth of the business have been made attractive through the inaugunation of a park system and the planting of trees, shrubs and flowers. This work was done under the supervision of landscape artists and the result is a factory setting that attracts the attention and merits the admiration of all who enjoy the beautiful.

In order to obtain a sufficient supply of choice logs—from 2,000,000 to 2,500,000 feet are required annually—the company has contracted with the lumber-

Bright, clean warehouse; note well crated veneers ready for shipment

men in Wisconsin and northern Michigan for any choice trees that may be found in their virgin holdings. In addition experienced woodsmen scour the forests in search of logs that will uphold the reputation and quality of all "Bird's eye" products. The texture and beauty of the veneers cut from these carefully selected logs is such that the demand from the United States, Canada, Great Britain and France taxes the capacity of the plant to the utmost.

Large Floor Space Provided

The main building is 100 x 368 ft., half of which is two stories. Part of this upper floor is used for the emergency drying of veneers while the remainder supplements the warehouse and shipping departments. The main floor embraces the cutting department, dry kilns, crating and shipment departments and the

(Continued on page 88)

OAK MAHOGANY CIRCASSIAN MAPLE

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two years. Fifty-two years' close study of the hardwood resources of the northern region has kept us always in touch with an ample supply of as fine quality white oak, walnut, ash and other logs as could be found here fifty-two years ago. A half century study of manufacturing has kept us always ahead of the procession in equipment and methods. The aim has been always to get the maximum of quality out of an exceptionally high quality raw material. This business having always been in the one family, it has been traditional that each generation should add something to the quality of the hardwood lumber and veneers produced. Today we offer you the highest possible type of product; a service based on fifty-two years of holding customers through proper handling of orders and a constant effort to still further improve both wherever possible.

HOFFMAN BROS COMPANY

FORT WAYNE INDIANA

Northern Grown Oak American Beauty Walnut

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OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

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No one is ever disappointed when they have placed their orders with us. It is part of our business policy to ensure our customers getting the maximum in quality, service, and satisfaction. Your requirements for Rotary Veneers, Poplar Crossbanding and Sheet Stock, Walnut Butts and Longwood Quartered Oak, etc., can be quickly filled from our large stocks. Why not get in touch with us now?

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View of Chicago Warehouse

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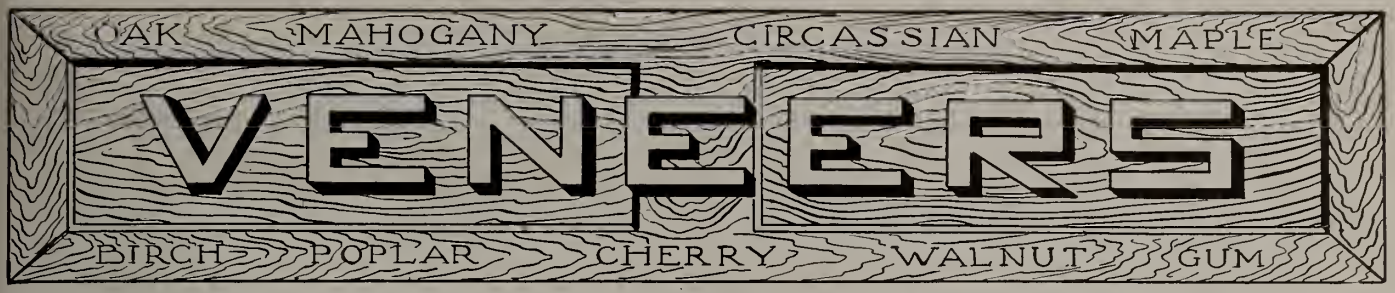
(When writing mention Canadian Woodworker)



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Our walnut veneer cannot be beat, both in plain and figured wood.

Write us for prices.

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Southern Veneer Manufacturing Co., Inc.
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Importers and Manufacturers of all kinds of Sawed, Sliced and Rotary-cut

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a large stock of selected Mahogany, Figured and Plain Walnut, Walnut Butts, Sawed and Sliced Quartered Oak and Sycamore and all other native woods.

1,000,000 Feet
QUARTERED RED GUM
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Quartered White Oak
Sawed Veneer
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OAK MAHOGANY CIRCASSIAN MAPLE

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All our veneers are from prime *veneer logs*, not *woods run* logs, grown in northern Michigan. When you place your order with us you are absolutely certain of getting veneer made from the cream of the best logs known to the veneer business, a certain guarantee of beauty, permanence and uniform refinement in appearance.

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ESCANABA, MICHIGAN

BeVeCo VENEERS

Veneers from Northern Hardwoods

(Continued from page 80)

main office. Two additions provide for the six concrete boiling vats and the power plant. A 400 h.p. Corliss engine provides abundant power for the plant and drives the dynamo which generates the current for lighting and the operation of numerous individual electric drives on such machines as clippers, broom handles, lathes, saws, etc.

In the log storage yard, which is at the rear of the plant, the logs are unloaded by means of a powerful portable derrick. When required they are carried from the storage yard, by a rail or derrick, to an inclined skidway which carries them to a specially-constructed conveyor. This conveyor travels past the cut-off saws and in front of the steaming vats then on out through the side of the building. The logs are unloaded from the conveyor in front of the different vats as they travel past, while the short blocks are carried through to the dump at the far side of the building.

Logs Handled Economically

From the steaming vats the logs are picked up by an overhead crane or carrier and carried to the log deck. Here they are barked and made ready for the lathes. The cutting-room is equipped with two Capitol veneer lathes, clippers, trimmers, etc., a small circular mill for working up the cores, broom handle machines—the cores are sawn into crating and broom handle blanks—and other machines. Suitable conveyors are arranged to remove the refuse and clippings as they are made.

The drying is done in 20 compartment kilns 20 x 20, arranged in two rows. The circulation is upward and the stock piled on edge between stickers. In the supplementary drying room on the second floor the veneers are suspended on wires for drying.

After being dried thoroughly the veneers are tagged and stored in orderly piles in the warehouse. When required the stock is taken to the shipping floor where it is trimmed to the sizes ordered, crated and shipped out. The bird's eye veneers are cut one thickness only, viz., 1/28 in. thick, while the plain maple and birch range from 1/8 in to 1/28 in.

Interior Painted White

The interior of the plant is bright and cheerful, being painted white and supplied with an abundance of light, and an effort is made to keep the premises spick and span. All refuse and litter which gathers in addition to that carried off by the conveyors, is removed at regular periods and the stock and other material kept in neat, orderly piles. This tends for greater efficiency and higher production as well as making the men more contented, for it creates a pleasant place to work in.

The personnel of the company is J. C. Kirkpatrick, president; G. W. Earle, vice president; W. P. Schuldes, secretary treasurer and C. J. Bryns, general manager.

Veneers Damaged in Succeeding Operations

Glue Room and Conditon of Stock Not to Blame for All Veneer Troubles—Interesting Facts to be Gained by Following Work to Finish

By J. C. Taylor

We have had lots to say about things that have happened which ought not to happen in the glue room, things that ought to be done that are not done, and there is still room for a lot more good effective talk about the doings in the glue room itself, and the handling of stock before it goes into the glue room. But there is also something worth while to be said about things that happen beyond the glue room, to stock after it has passed through. There is really a two-fold reason for this: There are things done in the glue room the effects of which may show up afterward; then there are things which happen beyond the glue room which may affect the well-being of stock from the glue room in a manner that might be mistaken for things happening in the glue room or before the glue room.

The glue-room man who faithfully follows up stock after it passes beyond may get some pointers for guidance in his own work that will make for improvement. This of itself is worth while, but it is not the most important thing. What is in mind are the things which happen to stock beyond the glue room and the effect they may have on it. These are things worth noting, especially by the management, to the end that remedies may be applied where they are needed.

Drying First Operation

Generally, when stock comes from the glue room its first stopping place thereafter is in piles in the warehouse or drying room, so that the moisture incident to gluing may be dried out before it goes to the finishing room, the assembling room or for wherever it is destined.

Sometimes no attention is given to forcing the drying, and the stock is merely sheltered to dry out naturally in the open air. This is slower, but sometimes it proves more satisfactory in the end than if artificial drying is resorted to, unless the artificial drying is scientifically done and there is included in it a regulation of the moisture content.

One of the things we have been learning recently is that if a panel or similar work is overdried there is set up a condition which makes for warping and checking, and this should be guarded against. The one safeguard against it is to maintain a uniform condition of humidity in the air. Also, that condition of humidity should be, as nearly as practical, the same as the finished work will be subjected to in daily use. Moreover, this applies not merely to the drying out of built-up work immediately after it comes from the glue room, but it applies with equal force to the drying out of the same stock in and beyond the finishing room, and finally it applies to the finished stock while it is stored in a warehouse for shipment.

Excessive Drying Causes Trouble

The old practice of playing safe has been that of getting rid of the moisture, or as much of it as practical, on the theory that there is no danger of getting either a panel or warehouse too dry. The result is that often warping and checking has been developed by the handling of stock beyond the glue room, and we know now this can be prevented by maintaining what we may term a normal humidity condition for finished stock. Fortunately, too, there are made available ways for doing this practically automatically, just as there are means for maintaining a somewhat uniform temperature condition. It is worthy of note in

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this respect that uniformity in humidity is a more important matter than uniformity in temperature.

Experiments by the Forest Products Laboratory indicate that panels from the glue room may be dried in a temperature of 120 degs. F., if with this temperature the humidity is maintained at 46 per cent. Under these conditions the panels will come uniformly to a final moisture content of about 8 per cent. within a reasonable drying period. If at the same temperature the humidity is maintained at 57 per cent., the moisture in the panels will not be reduced much below 10 per cent.

The better plan to follow with panels in drying out, after they have passed the glue room, seems to be that of maintaining what is termed a maximum dry humidity condition for the dried stock—that is, not permitting the moisture content to get below that which is normally encountered by the finished product in daily use. The common fault in this connection has been that of overdrying, accompanied at times by too rapid drying immediately after stock comes from the glue room. Then it is trimmed to size and probably taken to the finishing room, where the moisture incident to the application of finishes on overdry wood sets up strains and causes trouble, some of which might be prevented by leaving a little more moisture in the wood when it is taken to the finishing room. Then, in drying the finishes and the finished panels, there may develop some of the same trouble of too rapid drying and too much drying—that is, reducing the moisture content to an abnormally low point—which, it has been proven, causes trouble both with the woodwork and with the finishes.

Normal Moisture Content Desirable

In case panels are made up at a panel plant and must be shipped to a furniture factory or other user, if the panels are abnormally dry as they come from the panelman's warehouse, they are liable to do some warping in transit. Therefore, they should have the normal moisture content when loaded out for shipment, then the user should store them where this normal moisture content will be preserved.

If the panels are dry and he had a dry storage warehouse, close piling of the flat panels will help preserve the natural moisture content. The ideal plan, however, whether the stock is close-piled or is piled with cross-strips, is to maintain in the stock room itself what might be termed a normal condition of humidity. This, we are now realizing, is of more importance than uniform temperature. There is, however, a relation between humidity and temperature which should be studied so that a rational balance may be maintained.

When it comes to finishing-room work, we have there a matter that has always been a bone of contention between the glue-room force and the finishers. Each is inclined to blame the other when things go wrong, while the fact of the matter is that troubles may show up there which are due to faulty glue-room work, but more often the trouble is lack of understanding and following proper methods in the finishing room.

Glue Not Best Size

One of the things that time and experiments have taught us is that glue size as a filler or wood surfacer is poor practice. People have used a thin glue size in various ways, some purely as a filler, others have used it as a means to cleaning fuzz from mahogany faces, and so on. The best authorities now have not only discontinued its use, but they object to glue appearing in any form in the face wood. The argument against it is that it does not properly seal up the pores of the wood when used as a filler, that it is more given to expansion and contraction with changing moisture conditions incident to finishing-room work, and that it makes trouble with some of the finishes, especially those of the varnish class, though not so much when shellac and wax are used. To sum it all up, the place for the glue is inside, not on the outside surfaces.

The matter of stains and fillers in their application to panel faces and the drying out is something that needs more scientific research, to the end that we may have satisfactory stains and fillers without doing violence to either the wood or to the finishing course which comes after. One trouble which seems to arise here is that stains which serve to color the wood best give trouble of one kind and another now and then, while to correct this trouble with stain mixtures of a different class interferes with their penetration and coloring qualities, so there seems to be quite a lot yet to learn.

Through individual effort, and through information furnished by experiments conducted by the Forest Products Laboratory at Madison, we are learning something about finishes and moisture absorption through them that ought to help some.

Have Both Sides Protected

One of the things coming out of this is that uneven coating on wood causes warping. Plainly, therefore, if we have a panel that is varnish-finished on one side and nothing done to the other side, that panel is likely to warp. This is argument in favor of coating panels and woodwork inside as well as outside, and it is argument that should be heeded. Moreover, the inside and the outside coatings should balance up so far as moisture-resisting qualities are concerned, though they need not be the same material. It should be practical to use some cheaper finishing mixture on the inside, as not so much attention is required to the color shading, but it should have body and moisture-resisting qualities that will balance fairly with those of the finish used on the face. Make the face finish whatever is desired and let this be the key to the inner coatings.

This is not so much a matter of quality or bulk or frequent coatings as it is a matter of getting the right chemical composition in a finishing material to balance it up in moisture-resisting qualities.

Among the things the Forest Products Laboratory has discovered about finishes on wood in their relation to moisture is that while thickness of body—that is, repeated coatings—are factors, a more important factor is found in the constituents of the body. In other words, two coats of some varnishes will show moisture-resisting qualities equal to ten or twelve coats of another kind of varnish. Also, after building up what might be termed a reasonable thickness of varnish body, by repeated coats, not much is gained by additional coats.

The moisture-resisting qualities in connection with finish practically all hinge upon the finishing materials rather than upon the kind of wood used. The kind of wood used seems to have practically nothing to do with moisture penetration in cases where varnish coatings are used.

Atmospheric Moisture Penetrating

Another thing that has been found is that the real penetrating moisture is moisture held suspended in

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Our factory contains every mechanical device needed in the production of Select Veneer. Electrically driven saws, set in concrete bases, and filed by expert men, mean quality and quantity production. We thus give you minimum cost and maximum quality.

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the air. To state it another way, while the average man would assume that immersing a piece of finished woodwork in water would be a much more severe test than exposing it in moisture-saturated air, such is not the case; in fact, woodwork will take up moisture from the air when the air is saturated with moisture just about as readily as it will take up moisture if immersed.

In the matter of repeated coatings, experiments were conducted with spar varnish, some of the wood being finished with two coats, some four and some more, the results showing some improvements in moisture-resisting qualities up to six coatings, after which there was no improvement. Moreover, the improvement as between two coatings and six was hardly enough to justify its use. This plainly indicates that it is quality, not the quantity of finishing material that determines its moisture-resisting qualities as a surface coating for wood.

The purpose of setting forth things here is to point the fact that there are many things which can happen to a piece of veneered woodwork beyond the glue room, which affect its welfare, and for this reason there is need for attention, for experiments and for the development of proper ways to treat wood beyond the glue room, and even to the warehouse of the finished product, if we would insure quality and reduce the number of complaints.—"Veneers," Indianapolis.

Shortage of Veneer Material in South

Industry Faced with Low Production and Strong Demand—Battery Manufacturers Require Large Amount—Situation will Improve as Logging is Resumed

By Harold E. Everley*

Veneer and plywood, like lumber, are products of the log and any disturbance which reduces the cut and supply of logs will necessarily affect the output of these materials. With the production of logs and flitches for veneer and plywood manufacturing at but approximately 25 per cent. of what it should be in normal times and with the production of veneers and plywood now not more than 40 to 45 per cent. of the normal cut, it is only natural that users of these products find them difficult to obtain.

Because of the present logging conditions throughout the larger portions of the southern territory, which has been described elsewhere, in this issue veneer and plywood production for 1919 and the beginning of 1920 has declined considerably. It may be considered that during September, 1918, the production of veneers and plywoods was more or less normal. During January, February and March, 1919, production of these materials had fallen to 80 per cent. of that in September, 1918. By November, 1919, production was but 60 per cent. of the September, 1918, cut and by December, 1919, it had fallen to 50 per cent. of what it should have been. This rapid decline in the production was due, in the main, to the shortage and increasing difficulty of obtaining of veneer logs and flitches. During the period between January and March, 1920, has been seen a further decrease in the production of veneers and plywood which has declined to 40 or 45 per cent. of the cut during September, 1918.

With the present decreased production has come an increased demand. For five years building operations have been restricted and there has been comparatively little call for veneers for interior finish. With the increase of building there is a growing need for veneer. Another demand for veneer is coming from the battery manufacturers who are increasing the production of their line rapidly. The need for thin stock on the part of the battery manufacturers is beginning to effect the supply of veneers for other purposes. One mill reports that it is expecting to give one-third of its production to the battery people, one-third to the need of the building operations, and the remainder to the furniture industry.

Some idea of the present shortage of veneer and plywood stocks may be had when it can be stated that at present the orders for sawn oak veneers are 100 per cent. more than the stock on hand, and this condition has been true since January, 1920. On February 1, 1920, there were orders for 17,000,000 ft. of sawn oak veneers with but 8,400,000 ft. on hand. These figures represent the production and stock of about 90 per cent. of the total number of firms manufacturing veneer and plywood stock.

The conditions as to the production and stock of sliced veneers is about the same as for sawn material. On February 1, 1920, there were on the book orders for 1,925,000 feet with but 800,000 feet in stock, as compared with 1,800,000 feet of orders and 728,000 feet of stock on hand January 1, 1920. It has been stated that Slicer machinery manufacturers are now twelve months behind in filling their orders for equipment to make Sliced veneers. When this equipment can be manufactured and placed to work it will tend to increase the production of this particular product.

The Rotary veneer mills report being three months behind in filling the orders for Rotary cut veneer.

The present situation in reference to the production and stocks of veneers and plywood naturally has resulted in a greatly disturbed market for these products. Like the lumber buyers veneer and plywood manufacturers have been bidding strongly for logs and flitches to keep their mills in operation and it is not uncommon for an operator to pay $70 to $90 per M. feet for gum veneer logs, and $175 to $250 for flitches, which are now selling for 250 to 300 per cent. more than they did in September, 1918.

The shortage of stocks and difficulty of manufacturing veneers and plywoods, insofar as the producers of the south are concerned, is due, in the main to the scarcity and high price of suitable veneer logs and flitches. The present condition of the veneer and plywood market will gradually improve as soon as the logs and flitches can again be had by the manufacturers in large and increasing quantities which will permit them to gradually build up their stocks of the finished product.

*Report to National Council of Furniture Associations.

In all your dealings, remember that today is your opportunity, tomorrow some other fellow's.

Information and Inquiries

You are cordially invited to make use of this department

Inquiry For Transfers

Goderich, May 3, 1920

Editor "Canadian Woodworker:"

Will you kindly inform us where we can secure transfers suitable for sleighs and similar articles.

Yours truly,

Goderich Mercantile Co.

The Decalcomania Co., of Canada, Limited, 364 Richmond St. W., Toronto, manufacture and stock a very complete line of transfers including stock designs in animals and patriotic designs that should be suitable for your requirements. Neat name plates, in transfers, can be made up to your order. If you require a large number, sufficient to warrant the expense of making stones, etc., you could have transfers made to your own design.

Information on Vegetable Stains

Owen Sound, Ont., April 24, 1920

Editor "Canadian Woodworker:"

Would you kindly give me formulas and instructions for making stains from vegetable bases. Also tell me where the different compounds may be purchased.

Yours truly,

John Burman.

We do not know of any wood stains that are being made from vegetable sources. Experiments along this line were carried on during the war when dyes were exceedingly scarce, which showed that stains could be made from dyes made from certain trees and shrubs. Methods for producing these on a commercial basis were sought. After the cessation of hostilities when dyes became more plentiful, the matter was dropped. Owing to the uniformly satisfactory results obtained with the use of analine dyes, the investigation has not been resumed.

Market for Spool Wood Wanted

Englishtown, N. S., May 6, 1920

Editor "Canadian Woodworker:"

I have unsuccessfully tried to secure information on spool wood from several lumbermen and was wondering if you would kindly assist me. I would like to know the names of firms in Canada, United States and Great Britain who purchase spool wood and the different lengths and sizes required.

Sincerely yours,

W. H. Sellars.

As far as we know there is not any particular sizes or lengths that might be classed as standard. Each manufacturer requires the blanks to be cut to suit his own particular needs. You might write the following spool manufacturers and if they are not in the market for blanks, they might direct you to other firms who are: Canada Spool & Bobbin Co., Limited, Walkerton, Ont; Laurie Spool Co., Limited, Montreal, Que.; C. G. Thompson & Co., Sherbrooke, Que.; Lachute Shuttle Co., Lachute Mills, Que.; Schutz Bros., Incorporated, 152 Chambers St., New York, N. Y.; Leif Sundt & Co., 62 New Broad St., London, Eng.; C. R. Clark, Newcastle, N. B., manufactures a line of spool blanks and might help you in securing a market for your product.

Which Grade of Oak?

A furniture manufacturer has written in asking if F.A.S. plain red oak has a finer grain than No. 1 common. He states that he is using No. 1 common but finds that for such surfaces as table or dresser tops it shows a very coarse grain. He wants to know if using a better grade would overcome this or, if not, would using plain white oak give him a better appearing top. Will any of the readers of the "Canadian Woodworker," who have worked both red and white oak, in the different grades, answer this query? Your co-operation will be appreciated.

In the Market for Broom Handles

A Scotland house would like to get in touch with Canadian manufacturers of broom handles who can fill orders for 1⅛ inch handles 32 to 74 inch long. The name of the inquirer may be had by writing the publishers of the Canadian Woodworker.

Wooden Handles Wanted

A large firm in Holland who make a specialty of importing tools and hardware would like to get in touch with some Canadian manufacturers of wooden handles who are in a position to fill export orders. Any one interested can secure the name of this firm from the publishers of this journal.

Three Ply Boxes Wanted

An inquiry has been received from a concern requiring 10,000 three ply veneer tea or rubber chests 19 by 19 by 24. These are to be shipped K.D., complete with end batons, straps and binding. Any one desirous of going after this business can secure the name of the firm from the publishers of this journal.

A New Resource Map of Canada

A "Map of the Dominion of Canada indicating Natural Resources, Transportation and Trade Routes," scale 100 miles to the inch, has just been published by the Department of the Interior.

On this map varieties of mineral, agricultural and fishery resources, and the timber and fur in general are printed in red lettering in their proper locations. The sites of important water powers, developed and undeveloped are indicated, and the lines of all railroads completed up to date are clearly defined.

The thorough reliability of this map is shown by the caution which ignores probabilities however promising. The trader, investor, manufacturer and economic student will read the map as an open book; its appearance is timely when demand is abnormal and enlarged production a necessity.

The map can be obtained free of cost on application to the Superintendent, Natural Resources Intelligence Branch, Department of the Interior, Ottawa.

An arrangement for tallying the number of feet that has gone through the planer is a necessity in a busy mill.

A chain mortice machine does good work when the chain is kept properly sharpened.

SERVICE

means giving the very best that is in you. No word has been over-played in modern advertising copy more than the word "service." In practical use the word "service" has a relative significance. The advertiser who honestly desires to live up to his advertised service, naturally has as his goal 100% satisfaction in all particulars of his dealings with his customers.

In reality, though, that man who advertises service and then gives the very best in him in his struggle to make it 100%, is giving service in the true sense even though he fall down 33% from his expectations.

Frankly, that is exactly our position to-day. Faced with a tremendous demand for our products and a woefully short supply, on top of which were heaped unheard of weather and labor difficulties, we have not hesitated to invest thousands and thousands of dollars in new mills and new logging equipment, and have spared no effort to get loaded cars out. However, the best we could do was not adequate under the conditions. We are still behind although hopeful of again getting our heads above the mud and mire that all winter has deluged southern timberlands.

At least we can say we have given the best in us and will continue to do so until our service does finally go back to approximately 100% level.

ATC

— Manufacturers —

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Hardwood Lumber
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Anderson-Tully Co.

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Furniture Men to Exhibit

A number of Canadian manufacturers will exhibit at the Canadian Industries Exhibition which is to be held in the Agricultural Hall, London, Eng., from June 3rd to 17th. This exhibition, the object of which is to stimulate interest in the export trade and to show European buyers that the Canadian manufacturers can supply a large percentage of their requirements, will be the first of its kind ever held outside the Dominion that was not under government auspices. Among the furniture firms which will be represented are: McLagan Furniture Co., Limited, Stratford, Ont.; the Kindel Bed Co., Limited, Stratford, Ont.; Stratford Mfg. Co., Limited, Stratford, Ont.; Simmons Limited, Montreal, Que.; and the Windsor Phonograph & Record Co., Limited, Windsor, N. S.

Amendments to Compensation Act

The amendments to the Workmen's Compensation Act which are before this session of the House, will probably, if enacted, increase the rates by about 25 per cent. The changes include that the the rate paid to injured workmen be increased to 75 per cent. of the average wage, with a minimum of $12.50 a week. Pensions for widows increased to $40 a month and an additional $10 for each child. This clause to be made retroactive to include all widows receiving pensions under the act. Funeral expense allowance increased from $75 to $125. The widow to receive a lump sum of $100 at the time of her husband's death. Injured workmen to receive artificial limbs or eyes free of charge.

It will be seen that these will mean a heavy increase in the amounts to be paid and must be met by increased assessments.

Installs New Broom Handle Equipment

Mr. C. W. Smith, of Grand Rapids, Michigan, U. S.A., has installed two complete sets of machinery for the Canada Broom Company, Montreal. One set of machinery is for finishing, polishing, and colouring broom handles, and the other for threading handles and tapping brush blocks and mop handles. The finishing outfit has a capacity of from 5,000-10,000 broom handles per day. This work was carried out under the personal supervision of Mr. Smith who, in addition to installing the machinery instructed the operators as to the best methods of handling the machinery.

Safety First Rules

Detroit manufacturers conducted a safety first campaign, using the following rules, which were applied to machinists and to men working about the belting and shafting of stationary machinery:

1. Never attempt to stop a machine by grabbing the belt.
2. When replacing a belt stop machinery or reduce speed one-half.
3. If an overhead belt is caught and begins to wind around shaft get away and shut off power.
4. In replacing belts, place them on the driven pulley first.
5. When handling a belt between two overhead pulleys, never place the ladder between the shafts, nor rest it against a revolving shaft.
6. Do not be ashamed to shift belts with a stick instead of the hand, and for overhead work always use a stick reaching nearly to the floor.
7. In shifting belts always use the palm with the thumb and fingers extended and look out for metal lacings.
8. Keep hands off any running belt with metal lacings.
9. Keep hands off any running belts with a loose end of leather lacing.

A Drying Schedule for Air Seasoned Oak

The following skeleton drying schedule is recommended for the kiln drying of air-seasoned oak. It must be remembered, however, that no mere formula in itself will insure the perfect drying of wood. The kiln operator must be trained to watch the condition of the lumber and to apply the proper remedies if things start to go wrong.

The schedule was prepared by the U. S. Forest Products Laboratory for 4/4 plain-sawed oak (highland variety) with a moisture content of 15 per cent. This moisture condition would ordinarily be reached in from 9 to 12 months of air seasoning.

Density of Specimen	Average moisture content in percentage of weight oven dry		
	Relative humidity at 80° F.		
Low	38%	61%	88%
.519	7.6	11.2	19.4
.527	6.0	10.2	17.4
.536	6.5	11.0	18.2
Medium			
.630	7.7	11.3	18.9
.639	5.8	10.7	18.3
.643	6.8	11.3	19.5
High			
.720	6.4	11.2	19.3
.724	7.4	11.4	19.6
.753	6.1	10.8	18.8
Total Ave.	6.7	11.0	18.8

After the stock is dry, the temperature should be held at 145 degrees and the humidity raised to 80 per cent. This condition should be maintained for 10 hours in order to balance the moisture content, thus reducing the tendency of the lumber to warp after machining.

Has Canadian Representative

Mr. Matthew Brown, who for nearly four years past has been Ontario representative of the Gall Lumber Co., Toronto, has been appointed Canadian salesman for the Thomas Hall Lumber Company of Charleston, W. Va. This firm manufactures yellow poplar, oak, maple, chestnut, basswood and other hardwoods, and have for some time been doing business in the Dominion. In assuming his new duties, Mr. Brown carries with him the best wishes of his late employers and the many friends he has made in the trade. He has had a wide experience in the lumber business, first in Hull, Yorkshire, England, where he served five years' apprenticeship with a leading firm, and later in Petrograd and London. Coming to Canada in 1912, Mr. Brown was associated for a couple of years with the R. Laidlaw Lumber Co., Toronto, in the office and on the road. He is conversant with the hardwood trade and is looking forward to developing a large business in the Dominion for his firm.

Hardwoods

My organization has behind it the experience of thirty-seven years in the manufacturing and distribution of Hardwood Products.

When you purchase from me you buy guaranteed quality and satisfaction. And the prices are no higher than you would expect to pay anywhere for the same quality of stock and service rendered.

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1 car 4/4 No. 1 Com. and Btr. Unselected Birch
1 car 8/4 Log Run Hard Maple
1 car 10/4 Log Run Hard Maple
1 car 10/4 Log Run Soft Maple
2 cars 4/4 Fas Plain White Oak
4 cars 4/4 Fas Plain Red Oak
1 car 5/4 Fas Plain White Oak
1 car 5/4 Fas Plain Red Oak
1 car 5/4 No. 1 Com. Plain White Oak
1 car 5/4 No. 1 Com. Plain Red Oak
2 cars 6/4 Fas Plain Red Oak
4 cars 6/4 No. 1 Com. Plain Red Oak

Eastern Representative - -
A. E. Klippert
11 Laxton Ave. Toronto, Ont.

BOOKS FOR SALE

The following books are offered at special prices subject to previous sale:

Saw Fitting Manual, a treatise on the care of saws and knives. Deals with everything in the saw and knife alphabet, from adjustments to widths. Price $4.25.

Common-Sense Handrailing, by Fred T. Hodgson. Published by Frederick J. Drake & Company, Chicago. 114 pages, illustrated. Price 50c.

"Boy Activity Projects," by Samuel A. Blackburn, published by the Manual Arts Press, Peoria, Ill. 144 pages, including 64 illustration plates. Price $1.25.

Handrailing Simplified, by An Experienced Architect. Published by William T. Comstock, New York. 52 pages, illustrated. Price 50c.

"Woodwork Joints," by Evans Bros., London England; 214 pages, with 430 illustrations and a complete index of eleven hundred references. Price $1.50.

"Carpentry," by Ira S. Griffith. Published in 1916 by The Manual Arts Press. 188 pages, illustrated. Price $1.00.

"Details of Cabinet Construction," by Evans Bros., London, England; 203 pages, fully illustrated. Price $1.50.

"Machine Molder Practice," recently published by the Practical Books Co. 172 pages, 100 illustrations. Flexible leather binding. Price $3.00.

Utilization of Wood-Waste (Second Revised Edition), by Ernst Hubbard. Published in 1915 by Scott, Greenwood & Sons, 192 pages, illustrated. Price $2.00.

Seasoning of Wood; A Treatise of the Natural and Artificial Processes Employed in the Preparation of Lumber for Manufacture, with Detailed Explanations of its Uses, Characteristics and Properties, by Joseph Wagner. Published by D. Van Nostrand Co., in 1917. 274 pages, illustrated. Price $3 00.

"Staining and Polishing," including varnishing and other methods of finishing wood, with a complete index of 1500 references, published by Evans Bros., of London, England. 218 pages, price $1.50.

"The Kiln Drying of Lumber," a Practical and Theoretical Treatise, by Harry Donald Tiemann, M.E., M.F. Just published, by J. B. Lippincott Co. 316 pages, illustrated. Price $4.50.

The Woodworker Publishing Co., Limited

345 Adelaide Street West, Toronto, Ont.

News of the Trade

The McCoy-Ingalls Phonograph Co. was recently registered at Danville, P. Q.

The Canadian Handle Co., Strathroy, Ont., contemplate installing the electric drive.

The Independent Coal Co., Ottawa, Ont., are erecting a planing mill at their plant on Richmond Road.

I. G. Pickering Co., Dundas St., Toronto, cabinet makers, are planning an addition to their plant.

H. Graham & Son, Midland, Ont., manufacturers of handles, contemplate installing a variety band saw.

The Metropolitan Phonograph Co., Montreal, P. Q., was recently registered with H. S. Paradis as proprietor.

The upholstering business which has been conducted by C. H. Peppler at Kitchener, has been discontinued.

The plant of Merritt & Co., Chatham, Ont., manufacturers of bent goods, was recently damaged by fire.

The H. E. Furniture Co., Limited, Milverton, Ont., contemplate a three-storey brick addition, 58 ft. x 70 ft.

The Chestnut Canoe Co., Fredericton, N. B., are having plans prepared for a four-storey factory 100 ft. x 43 ft.

Simmons Limited, Montreal, P. Q., are erecting a mattress and bedding factory at Halifax, N. S., cost $12,000.

O. Robidoux, L'Annonciation, Que., is planning on erecting a small sash and door factory at a cost $5,000.

The Canada Last Co., Limited, Preston, Ont., are changing their dry kiln to a high humidity, forced draught system.

The Shierholtz Furniture Co., Limited, New Hamburg, Ont., have commenced the construction of a three-storey, 40 ft. x 50 ft., addition to their plant.

There has been a change in the partnership known as the Continental Upholstering Co., Montreal, P. Q., and G. & A. Vineburg are the present proprietors.

The Economical Upholstering Repair Co., and the Havana Upholstering Co., are the names of two upholstering firms who recently opened up in Kitchener.

The Office Specialty Manufacturing Co., Ltd., Newmarket, Ont., have been authorized by supplementary letters patent to increase their capital from $750,000 to $1,500,000.

The Life Long Furniture Co., Ingersoll, Ont., manufacturers of upholstered furniture, are reported to be discontinuing business. J. P. Albrough is the proprietor.

The woodworking plant at Lunenburg, N. S., formerly conducted by Albert Smith, has been purchased by N. Myra, E. Myra and Richard Corken, who will continue to operate it.

The sash and door factory operated by Zenus Clark, Durham, Ont., will probably be taken over by the Clark Metals Limited of Toronto, who contemplate moving to Durham.

The Upholsterers' Union of Winnipeg, have negotiated a new schedule which calls for 95 cents an hour and a 44 hour week, retroactive to April 1. This is an increase of 11½ cents per hour.

A phonograph has been invented by a British engineer which may be heard for two miles. A patent sound box and the employment of compressed air are responsible for this feat.

The plant of the Cranbrook Sash & Door Co., Limited, at Kitchener, B. C., was recently destroyed by fire. A large planer, which had just been installed, had only been in operation one day.

The carriage factory of A. B. Greer & Sons, London, Ont., was recently damaged by fire. The loss will run into many thousands of dollars. It is believed that the fire was started by lightning.

C. B. Williams Co., Toronto, Ont., have had plans prepared for a planing mill to replace the one which was recently destroyed by fire. The new building will be two storeys and of brick construction.

A short strike occurred at the Munro-McIntosh carriage plant at Alexandria, Ont. The men returned when Hugh Munro, vice-president of the Canada Carriages, Limited, promised them an increase of 15 per cent. with a further increase of 10 per cent. on August 1st. He intimated that if present conditions continued it would be necessary to increase the number of hands.

The lath mill recently equipped by Rhodes & Mavor at Thessalon, Ont., has been put in operation. The firm installed new machinery in the woollen mill building to manufacture lath and other wood products.

The Eastern Handle and Dowel Co. Ltd., Farm Point, P. Q., are increasing the capacity of their plant and contemplate installing a Hawker adjustable head dowel machine, a larger sander, blower and a rumbler.

Morin & Freres, Limited, Cap de la Madeleine, P. Q., contemplate erecting a planing mill. The new building will be 60 x 42, two storeys, of corrugated iron construction. They are in the market for the necessary equipment.

The Potvin Box Factory, Blind River, Ont., have closed down for a few days to make alterations to the plant. They are preparing to handle the timber direct from the river to the mill and are building carriers for that purpose.

Simmons, Limited, Montreal, P. Q., are having plans prepared for a large factory to be erected in London, Ont. It is anticipated that a warehouse and showrooms will be build this summer and the factory erected at a later date.

Lounsbury-of-Campbellton, Limited, Campbellton, N. B., have been incorporated to carry on a business as general woodworkers. Capital $90,000. Two of the incorporators are M. E. Betts and E. A. LeGallais, both of Campbellton, N. B.

In all probability the C. Beck Mfg. Co., Limited, Penetang, Ont., will discontinue the manufacture of pails and buckets. Their stave factory was badly gutted by fire a short while ago and it is unlikely that this plant will be built.

George Coultis & Son, Thedford, Ont., are rebuilding their heading mill and will instal, in addition to the old equipment, a few new machines. The building will be 80 x 80 of cement block construction. About twenty men will be employed.

The Harris Wood Products Co., Limited, Toronto, have moved their offices from Bay St. to 109 Church St. They are exhibiting at the new offices a small building built according to the specifications of the Harris system of sectional construction.

Frederick Wragge of Preston, Ont., recently purchased the furniture manufacturing business of W. E. Hill, Galt, Ont. Mr. Wragge has had a wide experience in the making of furniture and contemplates increasing the output of the new plant.

Logans, Limited, Montreal, P. Q., have been granted a provincial charter to manufacture and deal in furniture, fixtures and other wood products. Capital $40,000. J. Kerry and A. S. Bruneau, both of Montreal, are two of the incorporators.

The Otto Higel Co., Limited, Toronto, recently purchased some property adjoining their present factory site. While no changes are contemplated at present, this property will be used eventually to take care of the growth of their business.

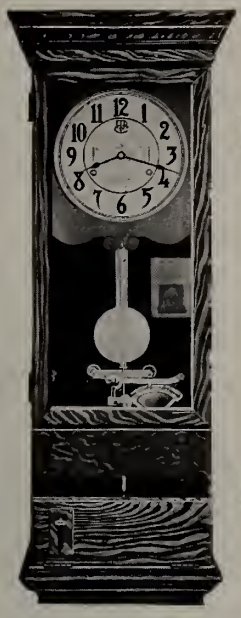
Hart & McDonagh, wholesale lumber dealers, Toronto, have removed their offices from the Temple Building to the Robinette Chambers. The new address is Hart & McDonagh, Robinette Chambers, corner Bay and Temperance Sts., Toronto.

W. McPhillips, Limited, London, Ont., have been incorporated to manufacture and deal in musical instruments, cabinets and other articles of wood. Capital $150,000. Among the incorporators are W. McPhillips and W. H. McPhillips, both of London. .

The employees of Burroughes & Watts, Toronto, billiard table manufacturers, were recently entertained at a banquet. Mr. C. Acland presided. A most enjoyable time was spent, a number of entertainers contributing to the evening's pleasure.

The Wood Pipe Co., Limited, Montreal, P. Q., were recently incorporated to manufacture and deal in wood pipes and other wood products. Capital $50,000. J. W. Carson, financier, and M. L. Hersey, both of Montreal, P. Q., are among the incorporators.

McCabe Bros., Tottenham, Ont., suffered a serious loss when their large planing mill was destroyed by fire. The dry kiln, with its stock of lumber, was also burned. The strenuous work on the part of the fire brigade and citizens of the town, saved the sawmill and lumber yard. About



In these times of high labor costs the plant manager, who doesn't employ the most accurate methods of time-keeping, is courting disaster.

If you think you don't need an INTERNATIONAL JOB TIME RECORDER you can have only two reasons

Either your plant is already fully equipped with them or we have not yet had an opportunity to explain and demonstrate their benefits, or you have **not been in touch with any of our users.** In the first case we have only to wait until your factory has expanded, when we know from your past experiences that you will order additional International Recorders to take care of your increased labor. In the latter case we know that sooner or later you will instal them. How soon ?

These are facts that cannot be disputed—

—a printed, unchangeable time record on every job;

—an accurate, indisputable record that the workman prints himself;
the exact time the job was started and also when it was finished;

—a reliable record that is necessary in establishing the exact labor-costs of any job;

—an investment that will pay for itself over and over again and still keep on working for you.

—it further allows you the opportunity of a trial balance of your productive labor against your total purchased labor—it's the "between" where the leak is.

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Write, wire or phone for full information

International Business Machines Co. Limited

WINNIPEG
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(TIME RECORDER DIVISION)
Royce and Campbell Avenues, TORONTO
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Holland Bk.

(Also Makers of Dayton Scales and Hollerith Electric Tabulators)

thirty-two machines were destroyed, the damage amounting to between $30,000 and $35,000. No insurance was carried.

The Falls Combination Desk Co., Limited, London, Ont., have been incorporated to manufacture and deal in desks, office equipment and fixtures. Capital $40,000. Two of the incorporators are A. F. Falls of Chatham, Ont., and F. W. Farncomb of London, Ont.

J. H. Blackie and F. Crowbie, both of Chicago, recently acquired a site in Woodstock, Ont., and will construct a cement building in which to manufacture excelsior. The cost will be in the neighborhood of $4,000. Construction will be commenced in the near future.

The Starr Company of Canada, Limited, London, Ont., was recently incorporated to manufacture and deal in phonographs, pianos, organs and other musical instruments. Capital, $530,000. M. McNaughton and N. S. Brown, of London, Ont., are two of the incorporators.

The Winnipeg Showcase & Fixture Co., Limited, Winnipeg, Man., were recently incorporated to manufacture and deal in store fixtures, furniture and all kinds of wooden articles. Capital $100,000. C. J. McLeod and H. Ormand, both of Winnipeg, are two of the incorporators.

The tax-payers of Aurora, Ont., voted, by a substantial majority, to grant exemption from general taxation for a fixed period to the Anchor Construction Co. This firm intends erecting a plant to manufacture safety matches on the site formerly occupied by the Office Bureau Co.

Good Homes, Limited, Montreal, P. Q., have been incorporated to carry on business as builders and contractors and to manufacture and deal in building material of all kinds. Capital $49,000. C. M. Cotton and F. T. Enright, both of Westmount, P. Q., are among the incorporators.

A. L. Gareau, Incorporee, Quebec, P. Q., have been incorporated to manufacture and deal in vehicles of all kinds, agricultural implements and furniture and to take over as a going concern the business now being carried on under the name of A. L. Gareau, Enrg. Capital $20,000.

The Little Giant Manufacturing Co., Limited, North Bay, Ont., have been granted a provincial charter authorizing them to deal in and manufacture furniture, toys and all kinds of woodenware. Capital $25,000. Among the incorporators are C. J. Collier and G. L. Bull, barristers, of North Bay, Ont.

The Safe Cabinet Co., of Canada, Limited, Toronto, Ont., were recently granted a provincial charter to manufacture and deal in cabinets, wardrobes and all kinds of office furniture. Capital $100,000. Two of the incorporators are J. Stewart, accountant, and H. J. Stuart, barrister-at-law, both of Toronto.

The basket factory which J. E. Assam equipped in Thessalon, Ont., was recently put in operation and is now running full blast. The orders on hand will keep the plant going for many months. Mr. Assam would consider doubling the capacity were it not for the difficulty experienced in securing skilled labor.

Shipbuilding is still active in Nova Scotia, the following keels being load recently:—B. M. Melanson, Weymouth, N. S., for a steamer, E. R. Gaudet, Weymouth, N. S., three-masted 200-ton schooner; the Comeau Shipping Co., Comeauville, N. S., a 200-ton schooner, and Octave D'Eau, West Pubnice, N. S., a fishing vessel.

The Anthes-Baetz Furniture Co., Limited, Kitchener, Ont., were recently incorporated to manufacture and deal in furniture, boxes and other wood products, and to take over as a going concern the business known as the Anthes Furniture Co., Limited, capital $500,000. J. C. Breithaupt and J. H. Baetz, Kitchener, are among the incorporators.

The Eastern Handle & Dowel Co., Limited, Farm Point, P. Q., have been incorporated to manufacture and deal in broom handles, dowels and wood turnings of all kinds. Capital $20,000. This concern recently took over the plant of the Eaton Toy Co. at Farm Point, and are adding some equipment and reorganizing the factory to suit their needs.

The Parry Sound Wood Turners, Limited, Parry Sound, Ont., were recently granted a provincial charter to conduct a general woodworking establishment as wood turners, manufacturers and dealers in lumber, timber and pulp wood. Capital $40,000. Among the incorporators are H. J. Black and C. C. Johnson, manufacturers, both of Parry Sound, Ont.

The Miller & Gordon Manufacturing Co., of Yarmouth, N. S., are erecting a new factory at Carleton, N. S. This building will be 50 by 120, part two storeys high and the remainder three. Many different hardwood products will be manufactured including clothes pins and dowels. A band mill to saw out the timber will be included in the equipment.

National Showcase Co., Limited, Toronto, Ont., have been incorporated to manufacture and deal in all classes of interior and exterior fittings, showcases and other articles of a similar nature, and to take over as a going concern the business known as the Toronto Wood Specialty Works. Capital $40,000. H. Chinn, J. Chinn and Leo Wakeley, are among the provisional directors.

It is of interest to note that at a recent meeting of the Dominion Board of the Retail Merchants Association of Canada, held in Ottawa, a resolution was adopted unanimously opposing the move for a statutory eight-hour day and maintaining that the present system, under which we are operating, is a perfectly fair and sound one and in keeping with good democratic government.

The American Broom Works, St. Basile, P. Q., have installed a number of Kline automatic laths and Nash sanders. The lines manufactured include spools, short handles, wood casters, paper roll blocks and other small pieces of a similar nature. The plant is electrically equipped, the power used being generated at the Shawinigan falls. The daily capacity of the plant is 50,000 pieces of turned work.

The Restmore Mfg. Co., Limited, Vancouver, B. C., manufacturers of furniture, iron beds and bedding, etc., are opening a branch warehouse at Calgary, Alta., to facilitate the distribution of their line in the prairie provinces. Robert Hunter, secretary of the company, is looking after the preliminary work, and R. J. Hurst, formerly manager of the furniture department of Weiler Bros., Victoria, B. C., will have full charge.

Orville Wersching was killed and Clem Frank badly injured in an accident at the plant of the Crown Furniture Co., Limited, Preston, Ont. It appears that these two men were assisting in making some repairs to the roof and in hoisting a bucket of cement, the derrick in some unaccountable manner became loose and toppled over, carrying the two men with it. Mr. Frank had been in the employ of the company for only three weeks.

The new addition, which is being erected by the Kindel Bed Co., Limited, Stratford, Ont., is about complete. The building is 175 x 80 ft. three storeys high. The first floor will be used as a woodworking machine shop but the equipment has not yet been installed. The second floor will be devoted to upholstering while the third storey will be used as a finishing room. Other changes contemplated include three lumber storage tracks and changes and additions to the dry kilnes.

The extensive additions to the Angus, Montreal, shops of the C. P. R. involve considerable alterations and extensions to the woodworking departments. The addition to the passenger car shops total 71,000 square feet; a shelter 126 feet wide by 144 feet long will be built on the west end of the present planing mill for the purpose of keeping material under cover as a weather protection and will give an area of 18,000 square feet for this purpose. Four new stalls will be added to the present dry kiln, increasing the area by 7,400 square feet. The total cost is a million dollars.

The Parry Sound Forest Products Ltd., Parry Sound, Ont., were recently granted a charter with a capital of $100,000. The members of the company are James Ludgate and Robert Lyons. They have purchased a large building from the Parry Sound Lumber Co. which is right in the heart of the town and adioins the switch connecting the C. P. R. to the C. N. R. They purpose manufacturing window sash, kitchen tables, clothes reels and other allied lines and will also carry building materials. Robert Lyons, who is an experienced factory man, will be the manager of the company.

The Snyder Furniture Co., Limited, Elmira, Ont., was recently incorporated to manufacture and deal in furniture and other wood products and to take over as a going concern the furniture manufacturing business formerly carried on in Elmira, by Heimbecker & Jung. Capital $100,000. The officers are H. M. Snyder, Waterloo, Ont., president; A. H. Snyder, of Waterloo, vice-president; and C. H. Snyder, of Waterloo, secretary-treasurer; and Henry Heimbecker, manager. The output of the factory, which consists of frames for upholstered furniture will, for the time being, be taken by the Snyder Bros. Upholstering Co., Limited, Waterloo, Ont.

HARDWOOD LUMBER

General Offices
GREENWOOD, MISSISSIPPI,
U.S.A.

This brand is your GUARANTEE and our mutual PROTECTION.

If you are not satisfied, we want to know the reason why.
Our lumber must buy your GOOD WILL.

Manufacturers Exclusively

BAND MILLS:

GREENWOOD, MISS. MOORHEAD, MISS.

Our Kraetzer-Cured Gum is guaranteed to be practically ***flat, straight*** and ***bright.***

Personal

F. Whittemore, manager of the Dominion Match Co., Deseronto, Ont., was in Fort William recently on a business trip.

C. O. Maus of the Hyde Lumber Co., South Bend, Ind., spent a few days in Toronto recently calling on the trade.

J. G. Hay of the North American Bent Chair Co. and Mrs. Hay are spending a very enjoyable holiday in the Southern States.

J. R. Shaw, Woodstock, Ont., managing-director of the Canada Furniture Manufacturers, Limited, was elected chairman of the Ontario division of the C.M.A.

Jacob Turrel has resigned his position as superintendent of the Crown Furniture Co., Limited, Preston, Ont., to take a similar position with another firm. He will be succeeded by Frank Sider, of Guelph, Ont. Mr. Sider comes very highly recommended.

W. H. Farnham, superintendent of the Canadian Woodworking Company's plant, Yarmouth, N. S., has resigned to take a position with the Telfer Woodworking Co., Bridgewater, N. S. Mr. Farnham recently acquired an interest in the latter concern.

Wm. Stirrett of Port Arthur, Ont., left recently for Chicago, to consult with his associates regarding the construction of a woodworking plant in connection with the Port Arthur Wagon Works. This factory was recently acquired by Mr. Stirrett and others for approximately $300,000.

S. J. Cook, sales manager of the McLagan Furniture Co., Limited, Stratford, Ont., left recently on a business trip to Great Britain and France. While there he will represent the McLagan Furniture Co. and the Kindel Bed Co., of Stratford at some of the industrial exhibitions that at present are being held in England and France.

W. H. McIntyre, Ottawa, Ont., has resigned his position as assistant general superintendent of the Ottawa Electric Railway Co., and Ottawa Gas Co., and has taken the position of general manager of the Ottawa Car Mfg. Co., Limited. This concern manufacture street cars, heavy gun carriages, ammunition wagons and articles of a similar nature.

Jack Chown, who represents the McLagan Furniture Co., Stratford, Ont., had a narrow escape recently in a fire which occurred in a hotel at Windsor, Ont. He escaped by sliding down a fire ladder in his night shirt leaving behind his clothes and samples. He was enabled to return to Stratford through the kindness of a railroad conductor loaning him a long coat.

D. Hibner of Kitchener, Ont., who recently disposed of his furniture factory to Malcolm & Hill, Ltd., contemplates taking up his residence in Calgary, Alta. Western buyers and other western business men have urged Mr. Hibner to organize a company to manufacture furniture in Calgary. It is understood that the request is being favorably considered and there is a possibility of Mr. Hibner establishing such a plant in Calgary.

Aaron Witmer, manager of the Kitchener and Waterloo branches of the Canada Furniture Manufacturers, Limited, is resigning his position and has purchased a farm at Grimsby, Ont., where he intends devoting his attention to the growing of fruit. Mr. Witmer has been connected with the furniture industry for over twenty-eight years, most of that time in the same factory. He has been with the Canada Furniture Manufacturers since 1907.

Obituary

Angus Campbell, superintendent of the Woodstock branch of the Canada Furniture Manufacturers, Limited, expired recently at the plant one morning.

A. J. Lockhart of Bowmanville, Ont., recently passed away in Vancouver, B. C. Mr. Lockhart was a member of the firm of A. Lockhart & Sons. The interests of this firm include a barrel factory and heading mill at Orono, Ont.

Chas. Fetter of Hepworth, Ont., was killed recently in the plant of the Hepworth Furniture Co., Limited. He had gone under an elevator to make a few adjustments and for some unexplainable reason the elevator dropped a distance of five feet, and striking him on the head, killed him instantly.

T. H. Semmens recently passed away in Hamilton, Ont., at the age of 78 years. Mr. Semmens was a well known casket manufacturer having been connected with the Semmens & Evel Casket Co., Limited, Hamilton, Ont., for many years. He retired a few years ago from active participation in the affairs of the company.

Jacob Kaufman, a well-known Kitchener manufacturer, recently died in that city. Mr. Kaufman operated a large planing mill and in addition was interested in the Kaufman Rubber Co., The Forwell Foundry Co., both of Kitchener, and a large sawmill at Rosseau Falls, and a chemical plant at Trout Creek. He served as trustee of Zion Church for 35 years. He is survived by his wife, two sons and two daughters.

Archie M'Auslan recently passed away in Galt, Ont. Mr. M'Auslan was born in Paisley, Scotland, 78 years ago and came to this country with his parents at an early age. He entered the employ of Jas. Robertson, Galt, and upon Mr. Robertson's death took over his planing mill and has conducted it ever since. Mr. M'Auslan always took an active interest in the affairs of the community and is mourned by a wide circle of friends.

A. W. Benjamin of Yarker, Ont., recently died in Hamilton. Mr. Benjamin was a well known manufacturer having conducted a wheel and axle plant at Yarker, where he manufactured wheels for the McLaughlin Carriage Co. When that company engaged in the manufacturing of automobiles he put in equipment to manufacture spokes and auto wheels. Later he built and equipped a basked factory. He is survived by his wife, three daughters and one son.

The Late W. T. Castle, of Montreal

It is with much regret that we have to record the death of our good friend, Mr. Wm. T. Castle, of the firm of Messrs. Castle & Son, furniture manufacturers and dealers, Montreal.

The late Mr. Castle was in his sixty-third year, and was a native of Montreal. He began his business career with his father, the late Mr. Thomas Castle, who came to Canada from England and established the firm's present business in Canada's commercial metropolis more than forty years ago.

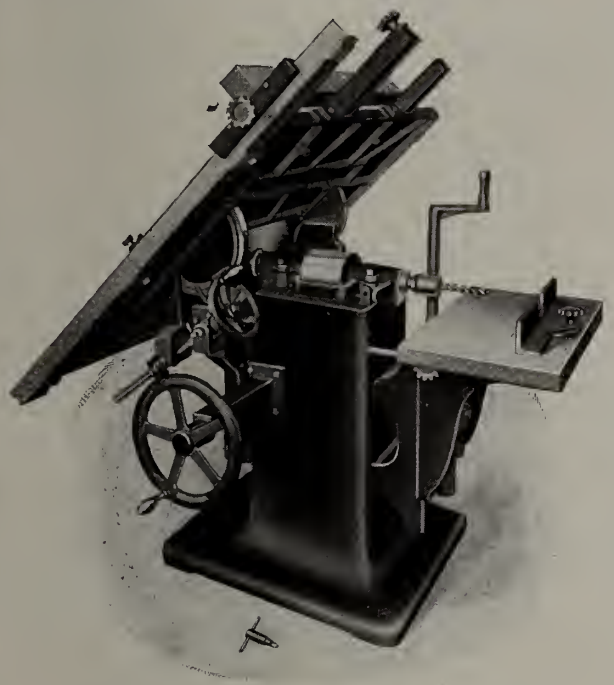
An interesting reminiscence of Mr. Castle may be found in the Annual Furniture Number of this journal, published in November last. To this issue Mr. Castle contributed a particularly interesting and able discussion of "The Manifold Uses and Abuses of Wood." This was the first and last literary effort of the kind ever made by Mr. Castle—and like, the rest of his works, it was good. In his article Mr. Castle advanced a strong plea for the development of a sound national taste in the employment of our native woods. His observations were characteristic of the man—idealistic, diversified, dignified, possessing the strength of true simplicity.

We may be pardoned perhaps for quoting the concluding lines of an editorial criticism of Mr. Castle's article which appeared in the same Number in which his contribution was published: "Those who point us occasionally to the goal of higher attainment are of that exclusive company whose name and fame belong to the Honor Roll of industrial progress."

Toronto Firm Adds Dry Kilns

Robert Bury & Co., Limited, Toronto, have purchased the dry kilns adjoining their lumber yards and veneer warehouse, at the foot of Spadina Ave., from the Toronto Kiln Co. This firm specializes in Canadian and American hardwoods and veneers, including walnut, mahogany and quartered oak. The capacity of the new kilns is 200,000 and their acquisition enables the Robert Bury Co. to carry a large stock of kiln dried woods.

An Excellent Machine for Furniture and Cabinet Work



The "Famous" No. 16 Variety Saw Bench with boring and mortising attachment will do much to increase your output in your furniture and cabinet shops. Accuracy is a main factor in its operation, while the roughest class of work is handled with the same degree of efficiency.

Write us for further information regarding the "Famous" No. 16 Variety Saw Bench and many other machines that you may need and are included in our complete line of woodworking machinery.

The Sidney Machine Tool Company

SIDNEY, OHIO U. S. A.

Ontario Agent--H. W. Petrie, Ltd., Toronto

A Choice Collection For Your Selection

3 Cars 4/4"No. 3 Com. & Btr. Winter cut Basswood.

1 Car 5/4" No. 2 Com. & Btr. Winter cut Basswood.

4 Cars 4/4" No. 3 Com. & Btr. Soft Elm.

6½M' 4/4" No. 3 Com. & Btr. Chestnut.

2½M' 6/4" No. 2 Com. & Btr. Chestnut.

30M' 8/4" No. 3 C. & B. White & Red Oak.

15M' 4/4" No. 3 Com. & Btr. Birch.

25M' 6/4" No. 2 Com. & Btr. Birch.

12M' 8/4" No. 2 Com. & Btr. Birch.

12M' 12/4" No. 1 Com. & Btr. Birch.

May we serve you?

Canadian General Lumber Company, Limited

712 Bank of Hamilton Bldg.
TORONTO

MONTREAL OFFICE: 203 McGill Bldg.

Selling

Graves, Bigwood & Co.'s
Lumber, Lath and Box Shooks

WANTED

Veneer Man, capable of taking charge of veneer room in a factory manufacturing phonograph cabinets. One who guarantees to turn out the highest grade work. Apply, stating experience and wages required, to

Gold Medal Furniture Co.,
3-5 Uxbridge, Ont.

FOR SALE

We offer the following used machines in good order:

Moulder, McGregor-Gourlay, P.U., 4 side, 12", two sets matching and V joint heads, extra cutters, 200 moulding knives.

Moulder, McKechnie-Bertram, 3 side, 12", fully equipped.

Matcher, McKechnie-Bertram, 3 side, 24", 6" drop, brass heads.

Shaper, Major Harper, 2 spindle, wood table.

Cut-off Saw, sliding table, wood frame, with 10" saw.

Tenoner, wood frame, for sash and doors.

Heater, with condenser, Sturtevant No. 5819, 36 x 72 x 60.

Jig Saw, iron frame.

Subject to prior sale.

Write for prices.

Harris Wood Products Co., Limited,
109 Church St.,
Toronto, Ont.
Phone Ad. 1568. 5

FOR SALE

We are offering for sale the following woodworking machines in very good condition, most of them practically new:

P. B. Yates No. 108 Moulder, 10", latest model, with Shimer heads.
Cowan Band Resaw, No. 171, with 3 Saws and Swage.
"Tannewitz" Dowel Machine ¼ to 1-in.
"Bertrand" 18-in. Jointer. Buzz.
No. 4 "Waymouth" Lathe.
No. 213 "Yates" Glue Jointer with Extra Heads.
"Preston" Double Head Shaper.
"American" Jig Saw.
"Bertrand" 24-in. Planer.
"Cowan" Blind Mortiser and Borer, M. 191.
"Cowan" Lock Corner Machine, M. 61.
"Cowan" 42-in. 3-drum Sander, M. 73.
"Cowan" Triple Drum and Disc Sander, No. 6165.
Preston Wood Turning Machine on Stand.
Band Saw Sharpener and Setter.
"Garnder" Chair Drill.
Chucking Machine.
3 K.W. 115 Volt Generator with Rheostat.
6 x 6 "Leonard" Horizontal Engine.
6 x 8 Upright Engine.
12 x 30 Goldie & McCulloch Wheelock Engine, No. 1233.

Canadian Veneering Co., Inc.,
5 Acton-Vale, Que.

Upholsterers Wanted

Steady job and highest wages. Apply Queen Furniture Co., 53 Vine Avenue, Toronto, Ont. 5

For Sale—Cottonwood

1 car —1 "—No. 1 Common.
1 " —1¼"— "
2 " —1 "—No. 2 Common.
1 " —1¼"— "

Extra good thickness, widths and lengths. One year dry. Can ship immediately from Buffalo, N.Y. Will quote very attractive prices. Address Box 79, Canadian Woodworker, Toronto. 4-5

Sprinkler Tank For Sale

12' 0" high.
16' 0" diameter at bottom.
15' 0" diameter at top with eleven ¾" hoops.
Capacity 15,500 gallons.
Apply to

GEO. PATTINSON & CO.,
5 Preston, Ont.

FOR SALE

One Goldie & McCulloch Wheelock Engine, 11 x 28; at 125 pounds boiler pressure and 95 R.P.M. The engine is rated at 75 horse power and is capable of carrying, for a short period, a 20 per cent. overload.

One Generator, 110 Volts, D.C., and a small steam engine with which same can be run. This generator would be an excellent plant for charging storage batteries.

These are located at 72 Albert Street, Ottawa, and are for sale at a price so low that it will pay anyone who is in the market for either one of these machines to investigate. Any enquiries will be answered promptly.

HUGH CARSON CO., LIMITED,
5 Ottawa, Ont.

G. M. C. List

Linderman 6' Glue Jointer.
S. A. Woods No. 29 Matcher, 15 by 6.
S. A. Woods Matcher, 14 by 6.
S. A. Woods Moulder, 12 by 6.
C. M. C. Moulder, 10 by 10.
Cowan No. 220 Endless Bed Planer, 26 by 10.
Cowan 3 drum Sander, 48".
Columbia 3 drum Sander.
Horizontal Belt Sanders.
American Double Disc Sander, 36".
Cowan Sash & Door Relisher and Mortiser.
McGregor-Gourlay Band Saw, 34".
American and Whitney Scrapers and Knife Grinders.
General Electric, 35 K.W., 125 V., D.C. Dynamo, Switchboard and 5 H. P. Motor.
Dean Fire Pump, 500 gallon capacity.

GENERAL MACHINERY CO.,
67 Frederick Street,
Toronto, Ont.
Phone Main 2200. 5

Sticker Hand Wanted

Experienced Sticker Hand to take charge of two stickers. Highest wages and steady work. Apply Stratford Chair Co., Stratford, Ont. 5-6

WANTED

Correspondence with furniture manufacturers desiring practical designs and details of furniture in all the prevailing periods. Address C. Theodore Eichelsdoerfer, 56 West Mechanic St., Shelbyville, Ind. 3-6

For Sale

60" Berlin Invincible 3 drum Sander, in perfect condition. Have responsible machine man look this over for you. G. W. Murray Co., Ltd., Market St. East, Winnipeg, Man. 5

For Sale

Planing Mill, Shingle Mill, Chopping Mill, Sash and Door Factory combined. Owner has good business reasons for selling. Apply Box 84, Canadian Woodworker, Toronto, Ont. 5

For Sale

One Woods Iron Frame Rip Saw—power feed.
One Holmes 24" two saw Edger.
One Mitts & Merril Hog.

The C. Beck Mfg. Co., Ltd.,
5 Penetanguishene, Ont.

Factory For Sale

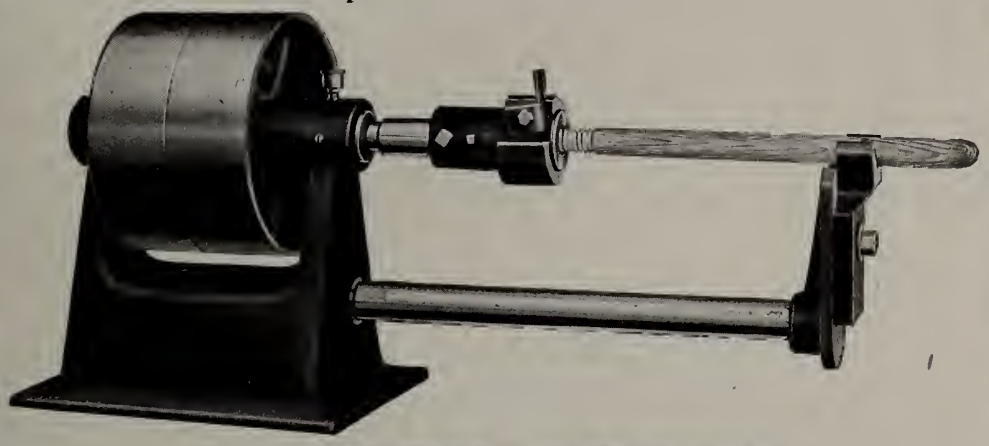
Solid brick, two storeys, 50 x 100, and site. Now operated as a planing mill, with a good side line; doing splendid business in a good live town, centrally located. Will sell as a going concern, or the building and site separate. Satisfactory reasons for disposal. Apply Box 83, Canadian Woodworker, Toronto. 5

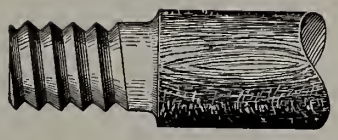
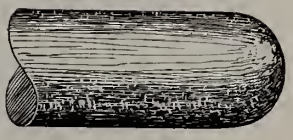
Drum Sanders For Sale

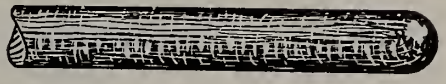
49" Berlin, Spiral, run one week.
48" Berlin, Straight, good as new.
43" Berlin, Spiral, excellent shape.
48" Fay & Egan, excellent shape.
Also
Mershon 44" Band Rip, excellent.
Berlin No. 108-15" Moulder, good as new.
Berlin No. 90 High Speed Matcher.
American No. 2 "BOSS" Timber Sizer.
70" Sheldon Fan.
All the above are very fine tools.
Write Box 82, Canadian Woodworker, Toronto. t.f.

The New Automatic Reversible Threading and Tapping Machine

For cutting all kinds of threads from ¼ inch diameter up to 2 inch diameter

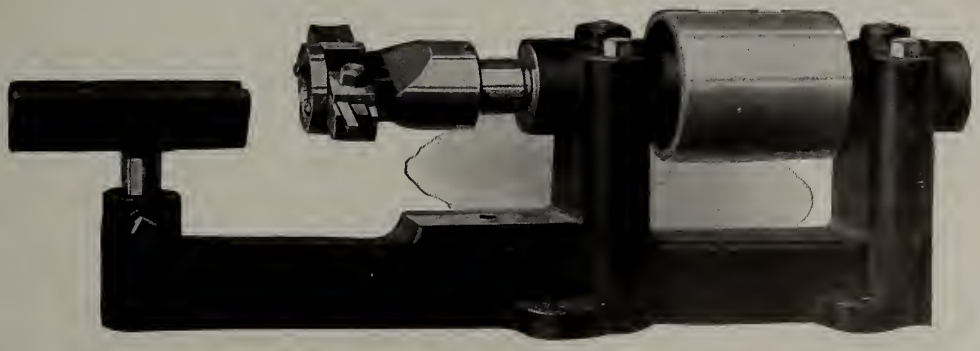


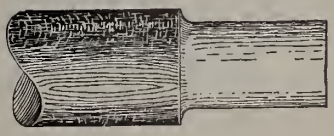





The New Chucking Machine No. 31

For sizing and topping Handles of all kinds, such as Broom, Hoe, Rake, Mop, Fork, Sweeper, Duster and similar handles, as well as Dowels for Chair and Furniture Manufacturers.





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503 Grandville Avenue - GRAND RAPIDS, MICH., U.S.A.

Factory Superintendent and Designer

in cabinet and furniture work desires change and will consider any fair offer. Ontario preferred. Can invest some capital if opportunity good. Box 86, Canadian Woodworker, Toronto. 5

FOR SALE

Single Surfacer, 28 inch, Whitney pattern, in good condition. Will sell cheap. Box 67, Canadian Woodworker. t.f.

FOR SALE

Spraying equipment, consisting of Paasche Air Compressor Unit, No. 32, complete. For full particulars apply

T. S. SIMMS & CO., LTD.,
3-5 Fairville, St. John, N.B.

Wanted to Purchase

Good used Drum Sander, 42" or 48". Specify make, length of time used and best price.

RYAN BROS.,
110 James Street,
4-5 **WINNIPEG, MAN.**

Walnut Burls from India

The recent arrival in England of a shipment of 244 walnut burls from India was the subject of considerable comment in the English lumber journals. They are said to be the first Indian walnut burls that have ever reached England. They came from a remote interior province, and the transportation problem was difficult. The valuable blocks of wood were carried twenty miles on the backs of natives, and then ninety miles farther on the backs of camels before rail and water communication with the outer world was reached.

The wood will be sliced in thin veneers in England and will be worked into furniture, interior house finish, and musical instruments. It is intimated that some of this fine wood may seek a market in the United States where highly figured veneers command the best prices.

The exact special if the walnut is not stated in the published accounts. Different kinds of trees pass in India by the name of walnut, some of which are more like locust than walnut; but true walnut grows in parts of northern India, and if it is not the genuine Circassion walnut, it bears close resemblance to it. Apparently this is the wood which has just reached England.

Prices at which these burls are held are not stated; but Circassian wood of a similar kind, when on the market a quarter of a century ago, in London and Paris, commanded a price of $300 a ton.

When a machine is unsteady in its work, jumps, jerks or vibrates, it is a sign of a poor foundation or a poor balance in the machine parts, or both. It goes without saying that every machine should have a firm foundation to rest upon. In most cases the trouble of this kind is not with the foundation so much as with the machine itself. Somewhere, and perhaps more than one or two places, there is lack of proper balance in the working parts. So if you have a machine that is unsteady or vibrates in its operation, have it thoroughly overhauled. When the right balance is obtained the machine will steady down in its work and give better service.

In Tennessee the pencil companies are said to be replacing old fences with new woven-wire fences in order to secure the cedar rails. According to report an investigation of woods not already used for pencils is being made by a lumber company in California, whose representatives have been in Washington and Oregon for the purpose. The juniper, the Alaska yellow cedar, Port Oxford cedar and Idaho cedar are being studied for both suitability and commercial supply.

Wanted to Purchase

A WOOD GRAINING MACHINE

Apply Box 85, Canadian Woodworker, Toronto

PETRIE'S LIST
of NEW and USED
WOOD TOOLS
FOR IMMEDIATE DELIVERY

Wood Lathes
No. 4 Waymouth, variety.

Wood Planers
26" Double surfacer, divided rolls.
24" Pony planer.
24" Crescent, single surfacer.
12" Petrie buzz planers, with safety heads (4).

Band Saws
30" Ideal, pedestal.
60" Fay & Egan, band re-saw.

Saw Tables
No. 5 Famous, combination (2).
No. 4 Famous, combination.
Ballantine, tilting table.
MacGregor Gourlay railway cut-off.
No. 1 Greenlee automatic cross-cut.
No. 642 C. M. C. cut-off.
Galt, iron frame, cut-off.
Goldie & McCullough, power feed rip.
Davis, power feed rip.
7" Wright's, swing saw.
Canadian, steel frame airmotor cut off.

Mortisers
Cowan, foot power.
No. 1 C. F. & F., foot power.
No. 2 C. F. & F., foot power.
No. 1 Defiance D handle mortiser.

Moulders
13" Clark-Demill four-side.
12" Woods four-side, inside.
10" Goldie & McCulloch, three side.
10" Houston, four-side.
8" Dundas four-side.
6" McGregor-Gourlay, three side.
6" Dundas sash sticker.

Boring Machines
Ballantine, vertical.
Gear driven, post borer.
Fay, single spindle, horizontal.

Sanders
48" Berlin, three drum.
No. 176 Cowan, adjustable.
Post radial, surface sander.

Sawmill Machinery
No. 1 Sawyer-Massey portable sawmill.
Boss, automatic, shingle machine.
Vaughan, gasoline driven, drag saw.
Champion, friction, drag saw.

Miscellaneous
Saw arbors, from 20"-30" saws.
20" American, wood scraper.
Bowmanville, double head tenoner.
Fay, iron frame, double head, tenon machine
No. 3 Defiance, rim & felloe rounder.
No. 1 Defiance, axle shaper.
No. 1 Defiance, spoke driver.
No. 21 Covel bandsaw filing clamp.
No. 104 Covel band saw roller.
M. 137 Cowan, sash clamp.
M. 21 Cowan, door clamp.
3" x 7" universal wood trimmer.
Cowan veneer press screw.
Humphrey clothespin lathes (5).
Humphrey clothespin slotters (2).

Ask to see our large stock of used supplies—belting, pulleys, machine shop equipment, mill supplies, pipe and fittings., etc. Most of this material is as good as new, and can be bought at greatly reduced prices.

H. W. PETRIE, LTD.
Front St. W., Toronto, Ont.

Here's a Real Test —

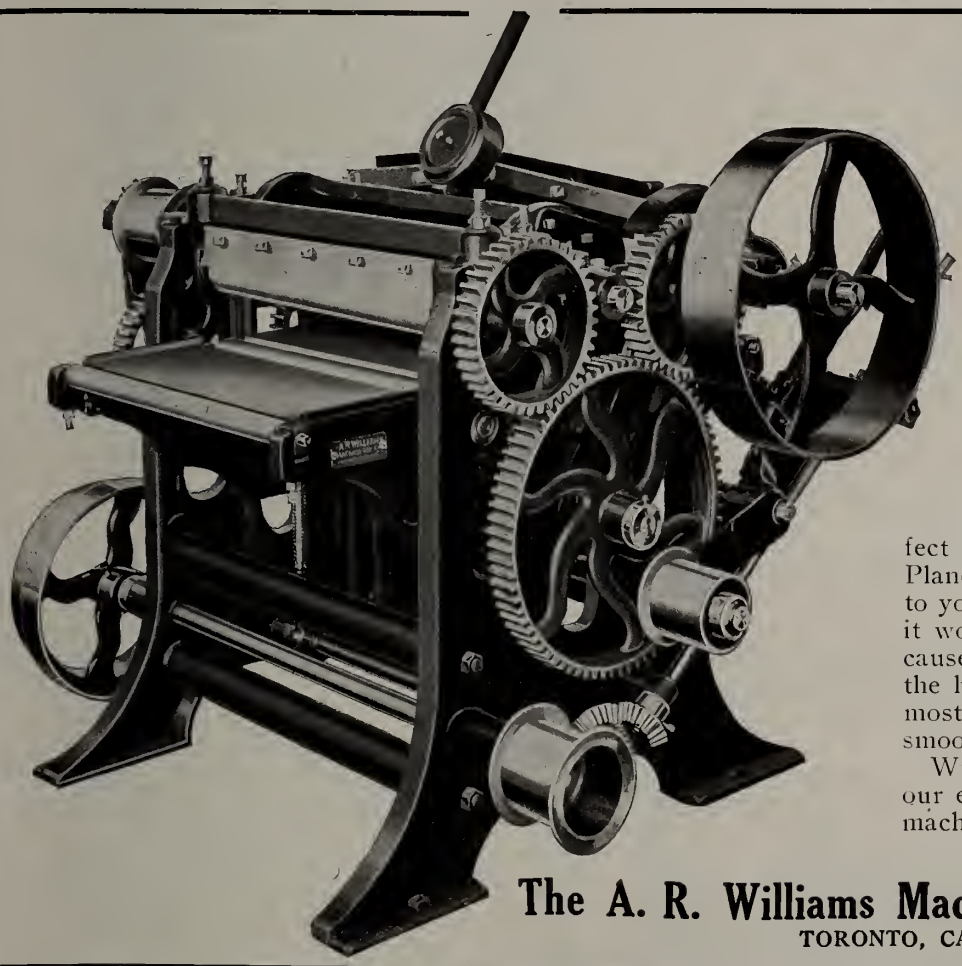
When buying a kiln, don't stop with the manufacturer's claims but ask the users direct. We are willing to have you try it on

THE STANDARD DRY KILN

Get our list of users and circular for your files.

Address:

The Standard Dry Kiln Co., 1542 McCarty St., Indianapolis.



A Record Service by The "Eclipse" SURFACE PLANER

With a record of over 2,000 in actual use and giving full satisfaction and perfect results the "Eclipse" Surface Planer is bound to be of interest to you. For the furniture factory it would be an ideal machine because of its ability to produce the highest grade of planing and most suitable where very thin, smooth work is required.

Write us for full particulars on our entire line of woodworking machinery of all descriptions.

The A. R. Williams Machinery Co., Limited
TORONTO, CANADA

Automatic Hole-Cutting Machines

The Wheel and Hole Cutting Machine has four automatic movements, all of which work in perfect unison, performing their functions in clock-like regularity.

The Hand-Hole Machine will cut hand holes in crate and box ends. It is worked by a carriage and levers, and will cut any size or length hole with either round or bevel edge in any kind of wood.

WRITE FOR NEW DESCRIPTIVE CATALOGUE.

The Virginia Wheel & Hole Sawing Machine Company

S. S. SEE, Manager

14 Third Street N.E. Roanoke, Va.

No. 3 Self Contained
Scroll Saw

Colladay Machine Works
Successors to
Jos. O. Colladay Co., Inc.
Manufacturers of a complete line of woodworking machinery
Since 1867 Philadelphia, Pa.

"DOMINION"
Ball Bearing Trim Saw

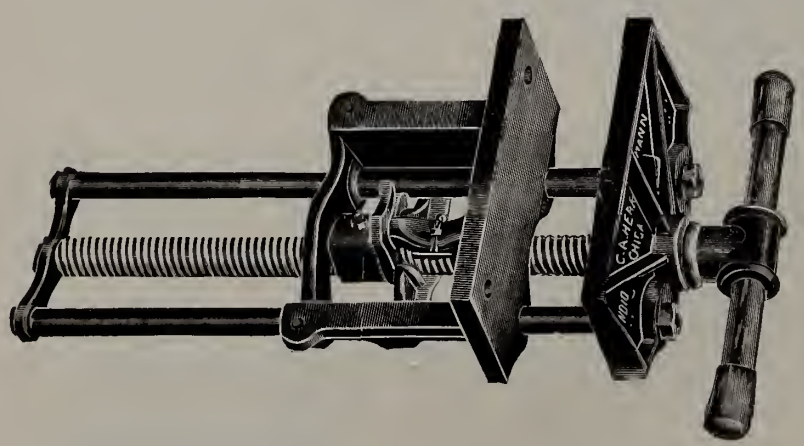
Other new features you cannot afford to overlook when buying.

Full particulars for the asking

Dominion Machinery Co.
Main 6519 110 Church Street, TORONTO

A simple twist of the wrist locks or unlocks this master vise

The Herriman Master Vise



Unparallelled in the rapid action and grip. Unmatchable in the performance of its work.

Time and Labor Cut ½ or Better.

SAVE YOURS

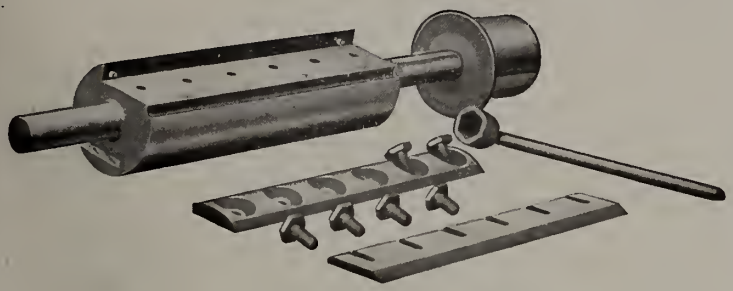
One feature alone is worth more to you than its entire cost in the saving in operating time over any other vise made.

The fact that this vice **need not** be "screw set" or "screw loosened" is the reason of its adoption in all efficiently operated plants.

Exclusive Distributors for the Herriman Master Vises

The O. E. JOHNSON COMPANY

1223 W. Washington Boulevard, - CHICAGO, Illinois.



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Safety First! How often have we heard or seen this phrase, yet daily, yes, and oftener, accidents are occurring. Silver's Round Safety Cylinder will protect the operators of any of our new jointers from needless injury. They are greatly appreciated by the operators of these machines and they help wonderfully to increase production. Write us for descriptive matter regarding our complete line of machinery that will interest you.

The Silver Mfg. Co. Box 370 **Salem, Ohio, U.S.A.**

Bad Order Claims Stopped and Building Problems Solved

Automatic Machines For

BUNDLING WITH WIRE

Box Shooks, Staves, Crating, Veneers, Flooring, Spool Bars, Drawer Bottoms, Etc.

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Machine Molder Practice

The new and only book in existence on molder work, operation and superintendence of the molder machine.

160 Pages, 100 Illustrations
Flexible Leather Binding
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Every Sheet is WARRANTED and STAMPED "OAKEY'S"

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This Superior CABINET GLASS PAPER is made especially for the use of Pianoforte and Cabinet Manufacturers. Carpenters, Carvers, etc., etc.

EXTRA STRONG FLINT, SAND & GARNET PAPERS

In rolls 50 yards long by 18, 20, 24, 30, 36, 40, 42 & 48 inches wide

Also in Sheets, Discs, Strips and Bands, of various sizes to suit requirements of Purchasers

Mfrs. of Emery, Black Lead, Glass, Emery, Flint & Garnet Papers & Cloths Emery Wheels, etc

WELLINGTON EMERY & BLACK LEAD MILLS, LONDON, S.E.1.

Canadian Agents:

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Improved Glue Heater

No heat controllers or other safety guards are necessary with this heater, **because it cannot injure glue.** It's simple, substantially made of copper and costs less than any other.

Let us tell you more about it.

We make any size desired.

Cincinnati Glue Heater Company
Cincinnati, Ohio

CASCO
Waterproof Glue

STRENGTH

Admittedly greater than the **best hide glues,** infinitely stronger than the vegetable glues.

COST

FOR JOINTING. Very much less than the hide glues.

FOR VENEERING. A little more per pound than vegetable glue, but little, if any, more per GLUE LINE FOOT.

PRODUCE THE BEST VENEERED PRODUCT. It costs no more in the beginning and very much less in the end. Hundreds of the larger manufacturers are using CASCO after exhaustive tests in comparison with other adhesives.

MANUFACTURED BY

The Casein Manufacturing Co.
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NOTE. Send for Casco Red Book. It contains much information on glue, veneer and panels.

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Carborundum Brand Garnet Paper and Cloth

The quality of all Carborundum Brand products is recognized by woodworkers to be the standard of durability. For clean, fast cutting, flexible, uniformity every roll, strip or sheet of Carborundum Brand Garnet Paper and Cloth is unsurpassable.

We can supply your wants direct from our large stock at our Toronto Warehouse.

Write for price list

Norman Macdonald
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Fifteen Legs More

On this job of spindle sanding mahogany table legs in the Elite Furniture Plant at Jamestown, N. Y., a sheet of 00 Garnet Paper, Carborundum Brand, finishes forty-five legs.

The best paper they had ever had before would finish but thirty legs and Oscar Englund, who runs the machine, says he has quit making further tests.

He seems quite satisfied that

CARBORUNDUM BRAND
GARNET PRODUCTS
MAKE GOOD SANDERS
BETTER SANDERS

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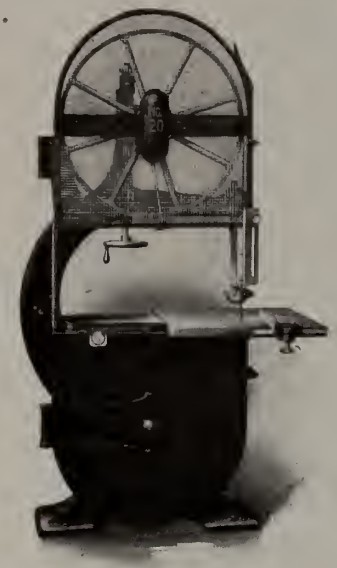
Carborundum Products are: Carborundum and Aloxite Grains and Powders, Grinding Wheels, Sharpening Stones, Paper and Cloth, Garnet Paper and Cloth and Carborundum Refractories



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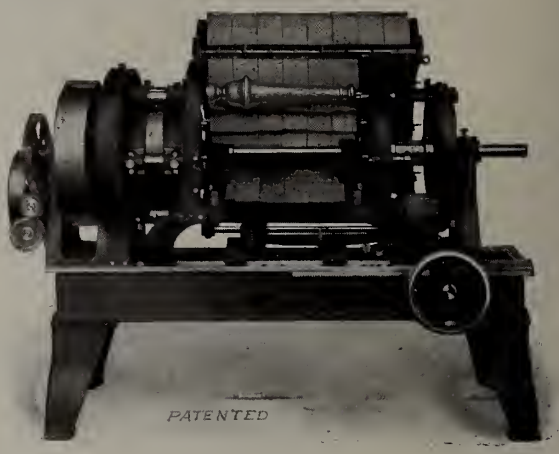
Represent the highest type of design and manufacture, built to produce a steady output with the lowest possible cost of maintenance and upkeep. Built in two sizes, 30 and 36-inch, and arranged for both belt or direct motor drive and with latest type of safety guards.

Write for Large Circular and Prices

Hall & Brown Wood Working Machine Co.
Home Office and Factory, 1913 to 1933 N. Broadway
SAINT LOUIS, U.S.A.

Beat the H. C. of M.



The No. 10 Nash Sander for furniture turning is a big help in reducing the high cost of manufacturing. It is saving upwards of $15.00 a day in many places.

Might do that for you if you would give it a chance.

J. M. NASH, Milwaukee, Wis.

Fibre

First Quality Material for Fibre and Upholstered Furniture Manufacturers

Good Furniture is Only Made From Good Materials, Well Selected Carefully Handled and Inspected

In selecting your Fibre Cord and stakes for Fibre Furniture you can secure no better material than that which we produce. Our Cord is carefully watched throughout the entire process of manufacture and kept uniform in strength. It is giving perfect satisfaction.

Our Uniflax Seaming Cord for Upholstered furniture is unexcelled. It serves the purpose perfectly and lasts indefinitely. Prices for these materials are commensurate with the quality and are withal very reasonable.

GRAND RAPIDS FIBRE CORD COMPANY

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IS AN INSTITUTION

It is based on a solid foundation. This has been proven in the history of our business. Starting only about fourteen years ago we had to educate the entire woodworking trade to the idea of Vegetable Glue.

Today our Sign

PERKINS

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TRADE MARK (Reg. U.S. Pat. Office).

Means to the Woodworking Trade

Reliability, Uniform Quality and Service

It is our constant study and labor to make the best so our customers may get the best.

ITS FIRST COST IS ITS LAST COST.

Process and Product Patents covering Perkins Glue were granted July 2nd and March 19th, 1912, and have been held valid and infringed by the United States Circuit Court of Appeals. Patents have also been granted in Canada, Great Britain, Germany, France, Belgium, Italy and other foreign countries.

Perkins Glue Company

Factory and General Offices:
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Sales Office:
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Vegetable Glue

We are manufacturers of **the best line of Vegetable Glues made,** suitable for all purposes from the finest to the roughest work, and solicit correspondence and enquiries from all woodworking industries requiring a powerful Glue for any purpose.

We manufacture a larger line of Vegetable Glue than any other concern in the business and can meet your requirements in every particular, at a minimum cost.

We also furnish upon an easy payment plan, **all the equipment required for the application of Vegetable Glues** and send experts thoroughly posted in this line of industry **to see that you get properly started in the work.**

Our line embraces specially quick drying **Vegetable Glue, Stainless Glue** and **Glue suitable for joint work** of all kinds.

We solicit enquiries from all users of Glue in woodworking, or those contemplating engaging in this line of industry, namely:

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2nd. Those producing high and medium grades of work and are interested in getting **the best product at the lowest cost.**

3rd. Producers of low grade or rough work who require **the cheapest product that will give satisfactory results.**

4th. Producers of low or high grade work who have had, or are having any trouble of any kind with Vegetable Glue through lack of proper adhesion or uniformity, or have any other **problems to solve.**

5th. Consumers of Vegetable Glue who are ready and willing to try out a new product with a view to securing better, as well as **more economical results.**

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Any or all of these six classes of consumers of Glue we believe we can serve to **great mutual advantage.** Give us a chance to prove our claims. Correspondence solicited.

Address—

Victor G. Bloede Co.

BALTIMORE, M.D., U.S.A.

NAPCO WATERPROOF GLUE

No wastage

Applied cold—and mixed cold

Profitable in its saving

Consistent in all grades of work

Odorless in the glue room

NAPCO is absolutely uniform. It eliminates waste, is easily applied, is impervious to water, and never lets go.

NAPCO joints are as strong as the wood.

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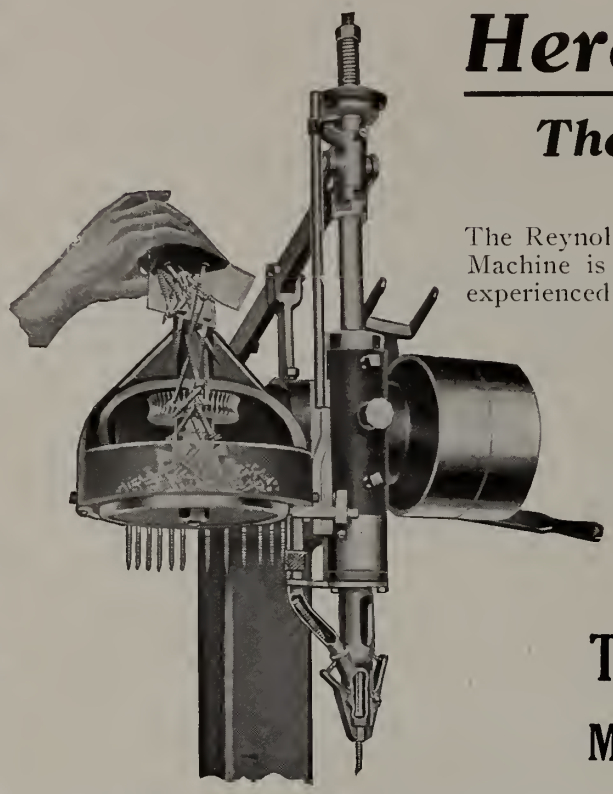
SOLE AGENT FOR CANADA

Deliveries made from either Montreal or Toronto Warehouses.



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The Magazine Feed is Automatic

The Reynolds' Automatic Magazine Fed Screw Driving Machine is automatically Perfect—even your most inexperienced man can use it with the greatest efficiency. And remember, this machine will drive from 1000 to 2000 ordinary screws per hour, enormously reducing your labor costs and increasing your production.

Its operation is simplicity itself. Just put a gross of screws (either wood or machine) into the hopper. The machine does the rest.

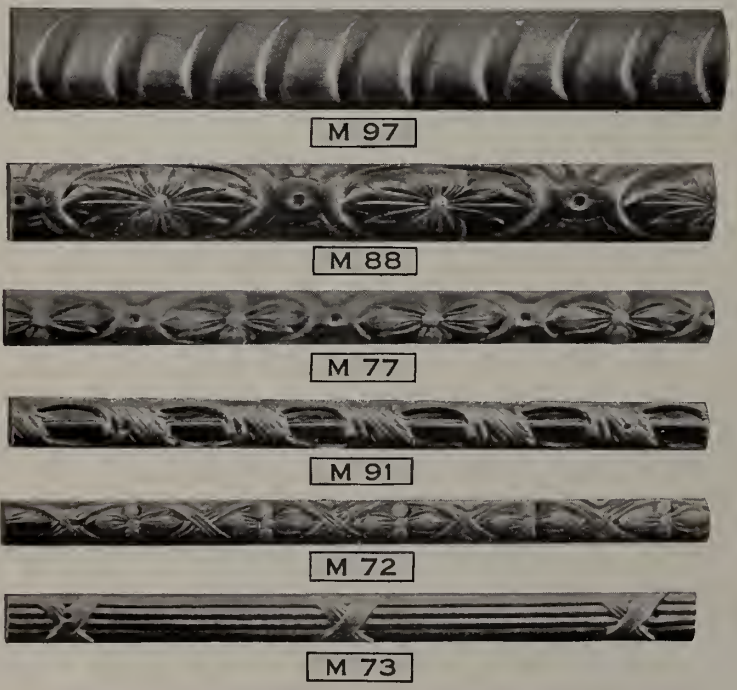
Can you afford to be without one?

Write us to-day

The Reynolds Machine Co.

Department C

Massillon, Ohio - - U.S.A.



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KNOBS The Period Knobs we placed on the market a few months ago are proving very popular. If you have not received samples ask for them now.

ROSETTES A new Period item to accompany the knobs.

Waddell Manufacturing Company

Coldbrook and Taylor, N. W. **Grand Rapids, Mich.**

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The Automatic Electric Screw Driver is small. It weighs only 6 pounds and everything larger than this is impracticable for driving wood screws.

With an automatic your men can drive screws all day long and not get tired out and it will do the work so much faster than the hand brace, that you will be putting two-thirds the men now driving screws on to more profitable work where their skill will count.

Ask for Bulletin 1 now and learn how to drive wood screws the MODERN way.

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Canadian Agents: The Jas. Buckley Co., St. Nicholas Street, Montreal, Canada.

Samples of our Workmanship

Everything we make is the very best that skill and high-grade materials can produce. We are ready for your Boiler order.

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The Door Carrier System

Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

Ask for catalogue.

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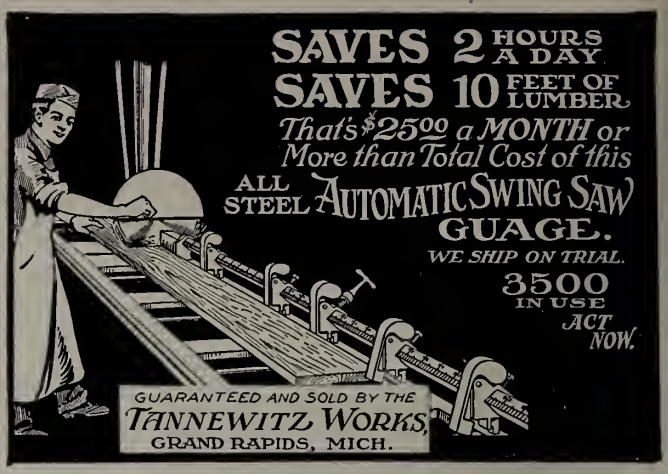
SAVES 2 HOURS A DAY
SAVES 10 FEET OF LUMBER
That's $25.00 a MONTH or More than Total Cost of this
ALL STEEL AUTOMATIC SWING SAW GUAGE.
WE SHIP ON TRIAL.
3500 IN USE
ACT NOW.
GUARANTEED AND SOLD BY THE
TANNEWITZ WORKS,
GRAND RAPIDS, MICH.

Seeing is Believing

No trouble at all to see Francis Modern Hydraulic Veneer Press Equipment in operation under conditions similar to yours. It is in use in representative panel, furniture, door, piano and other faactories most everywhere. It must be seen in use to be fully appreciated.

Permanency is the Proof

Every one of the many users of Francis Outfit is as enthusiastic over it today as ever, because the principle is right, the construction is right. The work is done in the quickest, most satisfactory and most economical manner.

Easily installed, readily understood. Anybody can operate it.

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Originators and Manufacturers of Modern Glue Room Equipment

Every Furniture Designer and Manufacturer

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Lenygon's "Furniture in England"

It is an encyclopaedia of artistic suggestion—an education in itself.

Upwards of 400 exquisite half-tone and color plates on pages 14 ins. x 10 ins.

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Toronto, Ontario

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Manufacture the Best

PLANER KNIVES and CUTTERS

OF ALL DESCRIPTIONS

The Peter Hay Knife Co., Limited
GALT, ONTARIO

NAILS AND WIRE

For Every Need in the Woodworking Industry

Bale ties, Nails and Wire of every description are manufactured by us. We manufacture to your order.

Laidlaw Bale-Tie Co., Ltd.

A. T. Diggins, Toronto, Ont. H. E. O. Bull, Montreal, Que.
Harry F. Moulden & Sons, Winnipeg, Man.

Head Office and Works: HAMILTON, CANADA

The Largest Table Company
In The World

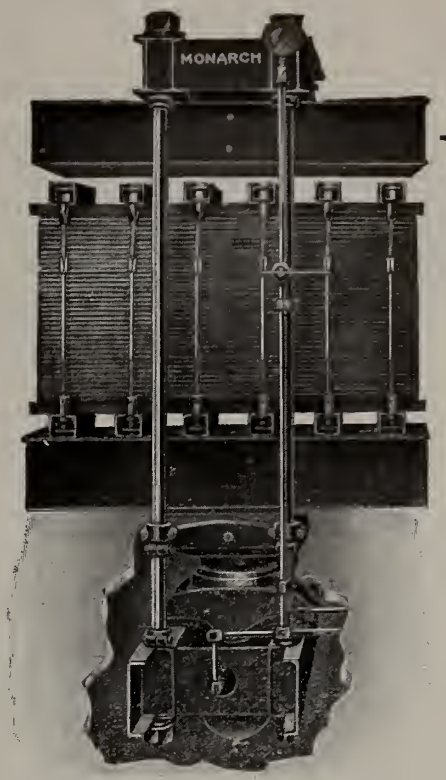
The Imperial Furniture Co.
Grand Rapids

are replacing their Dry Kilns
by a battery of up-to-date

GRAND RAPIDS VAPOR KILNS

Grand Rapids Veneer Works
Grand Rapids, Mich. Seattle, Wash.

FARQUHAR



HYDRAULIC PRESSES

This is our Standard Monarch Hydraulic Veneer Press built in six sizes, all designed for 100-lbs. working pressure. We also manufacture an up-to-date line of Pumps, Accumulators, Valves, and other equipment, as well as Special Presses of all types to suit individual requirements.

Write for new Catalogue No. 19, which illustrates a number of recent installations, and explains the efficiency and economy of Farquhar construction.

A. B. FARQUHAR CO., Ltd., Box 171 YORK, PA.

¶ If, "The proof of the pudding is chewing the bag strings", then repeat orders must be proof that you deliver the goods.

¶ We are now putting in Five repeat orders, and Three of them are Third orders.

¶ Better write some of our kiln users, we will furnish a list if desired.

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Reg. Trade Mark
LONDON CANADA

The SIDMANS of CANADA
Ventilating and Heating Engineers
Lumber Curing Specialists
LONDON : ONTARIO

Every Man at His Bench

No man can do two things at the same time and do them both well—his production stops while he **walks** across the floor to the big power saw or jointer—but his pay goes on just the same.

Make it possible for every man to increase his output—his earning power by **Adopting the Wallace Idea at Every Bench.**

Adopt The WALLACE IDEA At Each Bench

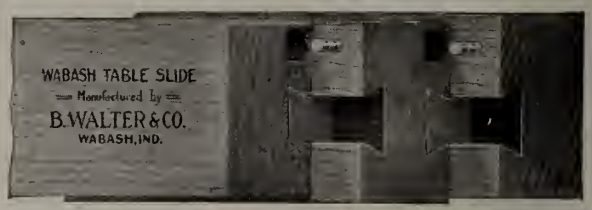
By placing a Wallace Bench Machine at every Bench your men will be able to do 75% to 80% of their cabinet, pattern, fitting and assembling work right at the Bench.

Their entire attention can be concentrated on the work at their benches without interruption—the very speed of the machines is contagious—they will do more and better work with less physical effort. Send for illustrated description of the Wallace Bench Machines showing how to keep **Every Man At His Bench**—producing Economically.

The Wallace 4" Bench Planer
The Wallace 6" Bench Jointer
The Wallace Universal Bench Saw
The Wallace Plain Bench Saw
The Wallace 14" Band Saw

J. D. WALLACE & CO.
1414 W. Jackson Boulevard
CHICAGO, ILL.

THE SLIDE IS THE HEART OF YOUR EXTENSION TABLE



If the Slide Does Not Work Properly Your Whole Table is Condemned

Wabash Slides insure Satisfied Customers

SLIDE MAKING is a SPECIALTY BUSINESS

We can Furnish Better Slides for Less Cost

Eliminate Slide Troubles by using WABASH SLIDES

MADE BY

B. Walter & Company

Edsall St., Wabash, Ind.

Cut Miles without Grinding

A Characteristic Experience

Richmond, Indiana.

G. M. Diehl Machine Works,
Wabash, Ind.

Gentlemen:—

You may possibly be interested in an experience which we had recently in our factory with your Diehl Heads and Cutters.

Our Sticker man recently made a run of 10,000 stiles, each piece being 73 inches long, of hardwood, in which we cut a groove ¼ inch wide by 9/16 inch deep, and we made the entire run without taking the Heads or Bits off the machine and without re-sharpening, which makes a total run of a little more than 11½ miles. The Bits would, no doubt, have run quite an additional number of feet before it would have been absolutely necessary to sharpen them. We consider this a very good performance, especially in view of the fact that these stiles were all run from the rough wood and the Heads being used on a four-sided Sticker

Very truly yours,

RICHMOND FURNITURE MFG. CO.,
Per O. H. BRUBAKER, Manager.

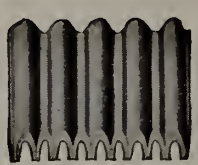
Send for Catalogue

The G. M. Diehl Machine Works

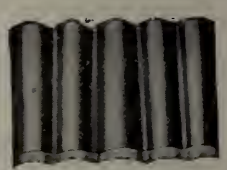
WABASH, INDIANA - U. S. A.

On the Banks of the Wabash

Cary's SUPERIOR QUALITY Corrugated Fasteners



SAW EDGE



PLAIN EDGE

According to final decision, after long litigation, we have been granted the SOLE RIGHT to manufacture a Saw Tooth Corrugated Fastener with a continuous cutting edge. Our fastener is beveled evenly on both sides, which enables fasteners to be driven in straight, and much easier than any other fastener made. Our Corrugated Fastener is made in various widths and corrugations, also in coils wound right and left. Try our products and you will use no other.

Samples and prices on request.

CARY MFG. CO., Brooklyn, N.Y.

The Largest Plant in America devoted exclusively to the manufacture of special table parts for the table maker

TABLE SLIDES
TABLE RIMS
TABLE PEDESTALS

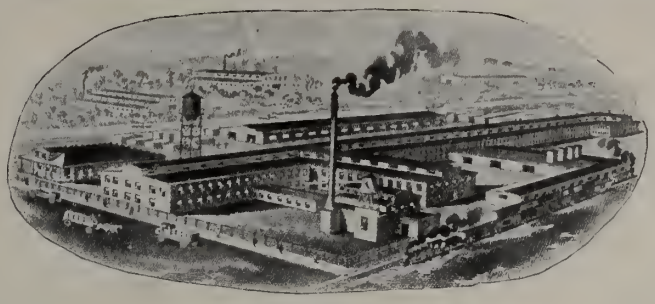


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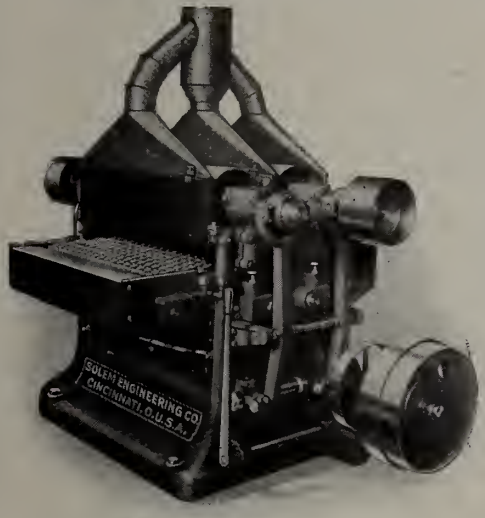
TABLE LEGS

THE JEFFERSON WOODWORKING CO., Inc. **Louisville, Ky.**

Greater Production
with
Less Experienced Help



The No. 370 Drum Sander is so simple and accident proof that any boy or girl can feed and take away with absolute safety.

Write for descriptive bulletin.

Patented May 6, 1919

The patented RUBBER PADS used for the bed of this sander are decidedly an improvement and are used in large quantities on every make of Endless Bed Sander. Ask for sample.

Solem Machine Company
ROCKFORD, ILL., U. S. A.

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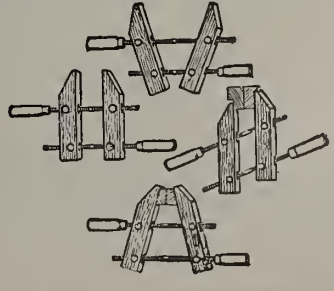
For Veneer and Veneer Drying

Made in Canada

William R. Perrin
Limited
Toronto

Adjustable Clamp Company
216 N. Jefferson St., Chicago, U.S.A.



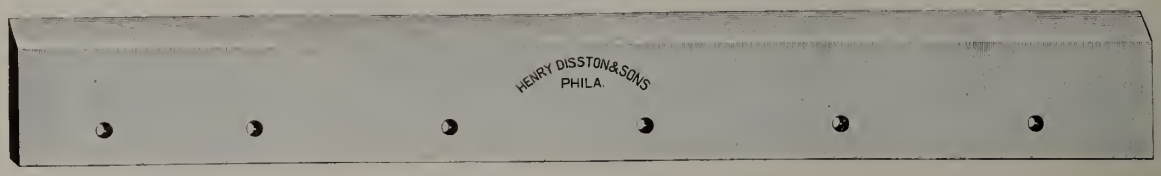
Manufacturers of the
"JORGENSEN"
the Original
Adjustable Steel
Spindle Clamp

Adjustable to any position. Well made to give the service. Efficient in every way they are bound to win your approval.

If you cannot buy them from your Jobber write us direct.

DISSTON

ALL STYLES OF KNIVES FOR WOODWORKERS



Are you getting the maximum production from your knife equipment? With the present necessity for greatly increased production, be sure your knives will give you the best possible results.

Disston knives cut fast and clean ,and hold their cutting edge.

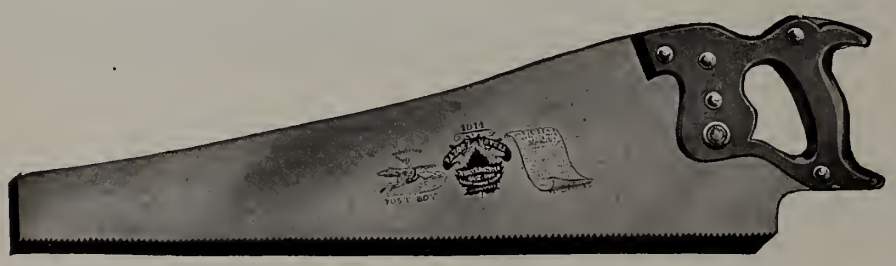
Write for the Disston booklet on Machine Knives.

HENRY DISSTON & SONS LIMITED
TORONTO CANADA
Branch: Vancouver, B. C.

The Same Dependability

Another of the Famous

MAPLE LEAF SAWS

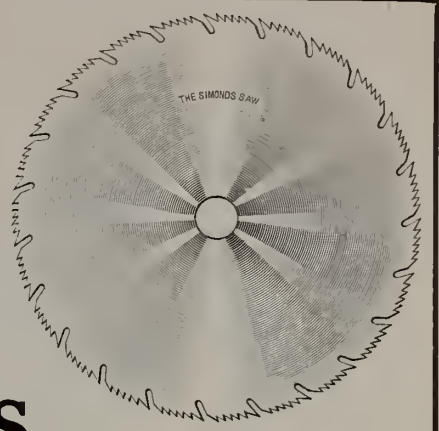


For almost half a century Maple Leaf Saws have been establishing a greater reputation for reliability in quality and service. From the heavy saws for heavy work to the light saws for the finest work Maple Leaf Saws are daily giving the utmost of satisfaction. The illustration shows the Maple Leaf Hand Saw, a sturdy, well built saw with the saw steel continuing through the handle as an assurance against the breakage of the handle. Made with the care and skill characteristic of all Maple Leaf saws—you'll appreciate the merits of this saw.

Write for a copy of our catalog today.

Shurly-Dietrich Co., Limited

Vancouver, B. C. GALT, ONTARIO Ottawa Ont.



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SAWS AND KNIVES

The woodworkers' friend. They are satisfactory and guarantee the best results. Made of Simonds Special Crucible Steel, they are evenly tempered, uniform in construction and have the cutting qualities.

We make all kinds of Saws and Knives for either wood or metal cutting

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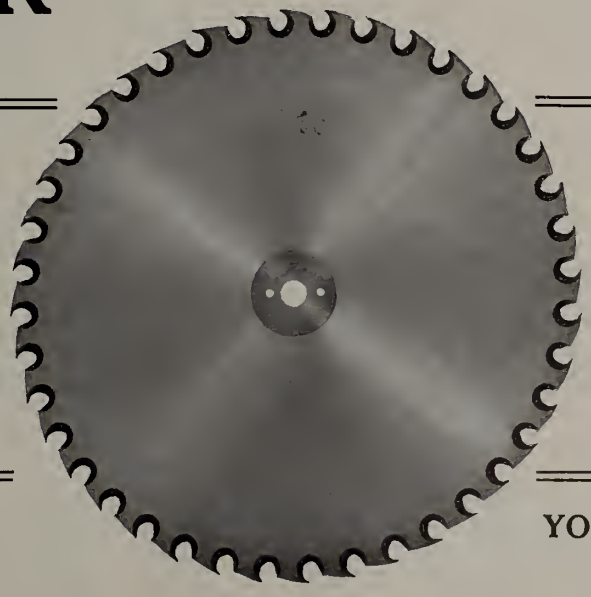
BEAVER BRAND SAWS

We manufacture a complete line of saws suitable for the furniture, phonograph cabinet and general woodworking trade. If you have any difficult problems of manufacture consult us. We have helped many factories to increase their output by using saws where formerly old, out of date hand operations were used.



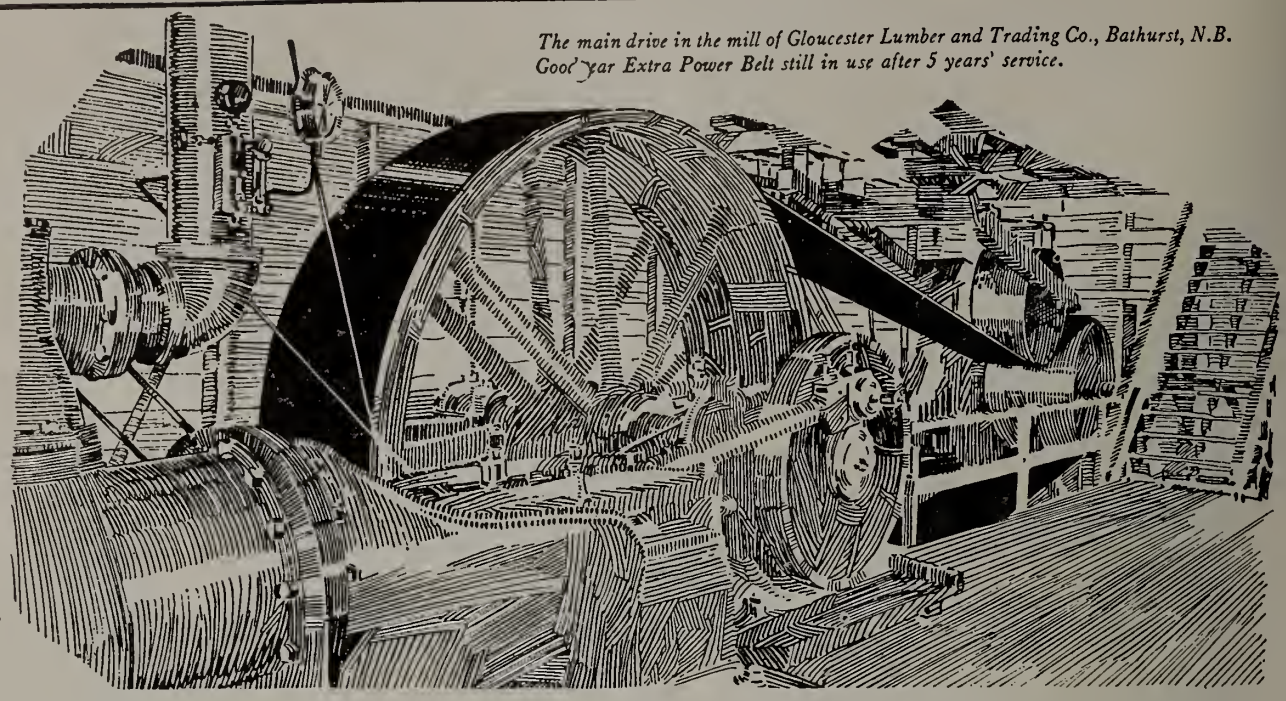
You can always rely upon the quality of "Beaver" Saws. Nothing but selected, high-grade steel is used, and the workmanship is executed by men who are expert in the craft. They may not be the best saws in the world, but you'll have a hard time beating them.

WE CAN SOLVE YOUR SAW TROUBLES

Radcliff Saw Manufacturing Company, Limited

1550 Dundas Street West **TORONTO, ONT.**

AGENTS FOR L. & I. J. WHITE CO., MACHINE KNIVES



The main drive in the mill of Gloucester Lumber and Trading Co., Bathurst, N.B. Goodyear Extra Power Belt still in use after 5 years' service.

Master Belts of Industry

Goodyear has solved the problem of belting the great main drives of industry—the backbone of production.

Experience, in a thousand Canadian plants, says Goodyear Extra Power Belts.

Because these belts are *strong*—with the strength of properly selected fabric, every thread perfect.

Yet *flexible*, hugging pulleys, taking advantage of every inch of pulley surface. Flexible because in Goodyear Extra Power Belting high-grade rubber is forced through and through the fabric in generous quantities. Every strand is cushioned in it. No stitching to stiffen or weaken the belt. No separation of plies.

Its *friction* surface grips, even through dampness or dust. No slipping with Extra Power. No need for extra tight belts, pulling pulleys out of line. No need for belt dressing. No lost power.

The testimony for Goodyear Extra Power on main drives is very complete. For instance:—

The Norfolk Milling Company, of Simcoe, writing about their main drive belt, purchased a year ago, say:—

"Has been in continuous operation for one year, and has not stretched nor given us the slightest bit of trouble."

There are many others—some selected at random are:—

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The complete story of Goodyear Extra Power Belts on main drives is interesting. There are facts about other types of drives just as important to you. Let a Goodyear belting man call and talk to you. No obligation. Just phone, wire or write the nearest branch.

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Branches:—Halifax, St. John, Quebec, Montreal, Ottawa, Toronto, Hamilton, London, Winnipeg, Regina, Saskatoon, Calgary, Edmonton, Vancouver. Service stocks in smaller cities.

GOODYEAR

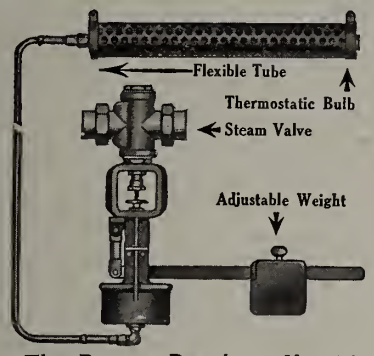
MADE IN CANADA

EXTRA POWER BELTING

Mechanical Appliances Release High Priced Workmen

You can relieve the labor situation by using machines on automatic jobs and releasing high priced men for work machines can't do.

The Powers Automatic Heat Regulator



The Powers Regulator No. 15

Specially designed to control temperature in dry kilns, ovens, varnish and dry room. Entirely automatic and self-contained.

With this mechanical watchman on the job you know that the temperature in your varnish room or dry kiln is uniform and correct; that your glue pot cannot get too hot or too cold. It brings peace of mind and prevents loss and damage.

We have been studying heat regulation for over thirty years. We can help you with your problems. Write us for Bulletin No. 138, or better still, give us the details of the process where you want heat control and we'll give you the benefit of our experience.

We will be glad to send the Regulator best suited to your requirements and if you are not satisfied that it does what we claim for it, return it to us within thirty days and we'll cancel the charge.

The Canadian Powers Regulator Co.
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Specialists in Automatic Heat Control
82 Chestnut Street - Toronto, Ont.

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This Heater has a Place in Every Shop and Factory

"INTERNATIONAL" Electric Glue Heaters

Fireless cooker principle conserves and utilizes every bit of heat generated. Holds glue at correct working temperatures without guesswork. Average cost of operation about one cent per day. Keeps glue at correct temperature for greatest tensile strength. Properly glued joints never fail. This heater has a place in every shop and factory. Sizes, one pint to 50 gallons. Heavy spun copper construction. No seams or soldered joints. Three heats. No water bath. Clean, safe, economical. Portable. Fits any lamp socket. Used by prominent concerns everywhere.

Write for folder "Correct Temperature in the Glue Room."

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Plain, Straight and Spiral Grooved

"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co.
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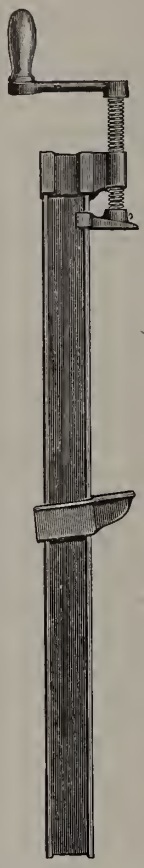
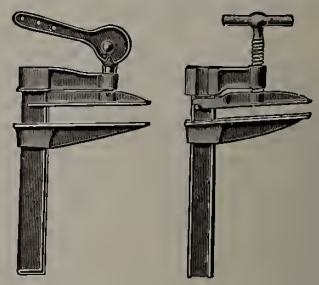
Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

Colt's Clamps

for the

Woodworker



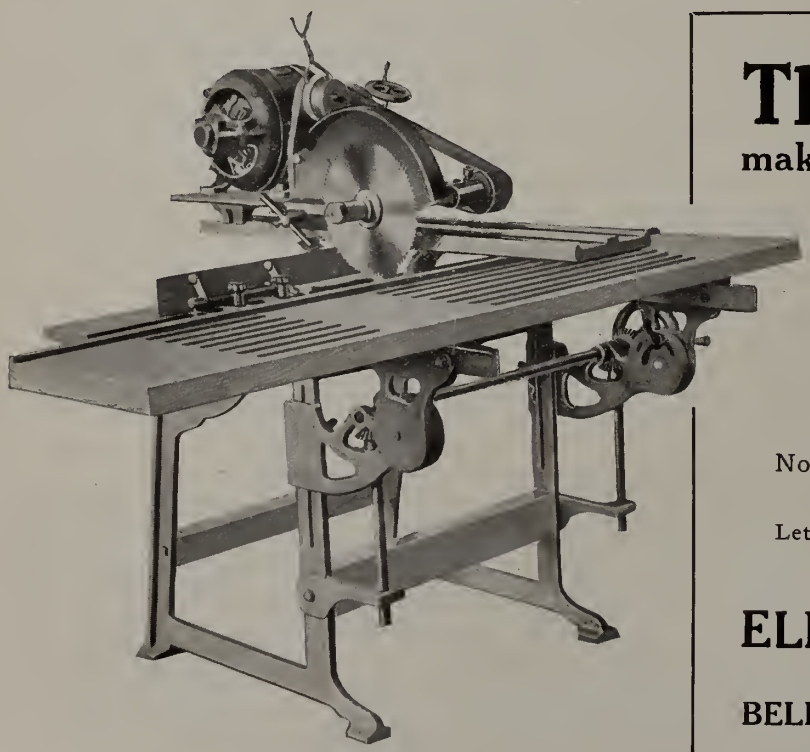


Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

For further information write for Catalogue No. 294.

Batavia Clamp Co.
235 Centre St. BATAVIA, N. Y.



Pat. 1910-1914.

This Machine

makes money for its owner

Take the machine to the work. Requires no line or countershaft.

Will not chip the finest veneer.

Makes a trim cut 5" thick if necessary.

Will dado from 1/16" to 2" wide, at any angle or mitre, for shelving, etc.

No plant too large or too small to benefit from its installation.

Let us send you a copy of your satalog—it will interest you.

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Company, Limited
BELLEVILLE · ONTARIO

Plant of Andrew C. Sisman Co., Detroit, Michigan.

The Biggest Return on Investment

in Dry Kilns is obtained when Complete Automatic Apparatus is installed in Simple, Inexpensive Buildings.

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NOTE : a. Plain tile walls.
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And with it all you secure the best dry kiln.

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BOX BANDS
Cary Mfg. Company, Brooklyn, N.Y.
Laidlaw Bale-Tie Co., Hamilton, Ont.

BOX MAKERS' MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Morgan Machine Co., Rochester, N.Y.
Neilson & Company, J. L. Winnipeg, Man.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CABINET PLANERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CANE WEBBING
Overseas Reed and Cane Co., Ionia, Mich.

CARVING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.

CASTERS
Faultless Caster Co., Evansville, Ind.
Foster, Merriam Co., Merriden, Conn.

CIRCULAR SAWS
Wallace & Co., J. D., Chicago, Ill.

CLAMPS
Adjustable Clamp Co., Chicago, Ill.
Batavia Clamp Company, Batavia, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

CLAMP CARRIERS
Taylor Mfg. Co., Poughkeepsie, N.Y.

CORRUGATED FASTENERS
Cary Mfg. Company, Brooklyn, N.Y.

CUT-OFF SAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company. Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

CUTTER HEADS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Diehl Machine Works, G. M., Wahash, Ind.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Fischer Mfg. Co., Williamsport, Pa.
Garlock-Walker Machinery Co., Toronto, Ont.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Shimer Cutter Head Co., Galt, Ont.
Yates Machine Co., P. B. Hamilton, Ont.

CYLINDER HEADS
Cowan & Company, Galt, Ont.

DOOR CARRIERS FOR DRY KILNS
Dry Kiln Door Carrier Co., Indianapolis, Ind.

DOVETAILING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

DOWEL MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Williams Machinery Co., A. R., Toronto, Ont.

DOWELS
Canada Wood Specialty Co., Ltd., Orillia, Ont.

DRY KILNS
Canadian Blower & Forge Co., Kitchener, Ont.
Grand Rapids Veneer Works, Grand Rapids, Mich.
National Dry Kiln Co., Indianapolis, Ind.
Sidmans, London, Ont.
Standard Dry Kiln Co., Indianapolis, Ind.

DUST COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

DUST SEPARATORS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

EDGERS (Single Saw)
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

EDGERS (Gang)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

END MATCHING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

EXHAUST FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Toronto Blower Company, Toronto, Ont.

EXHAUST SYSTEMS
Canadian Blower & Forge Co.
Toronto Blower Company, Toronto.

FIBRE CORD
Grand Rapids Fibre Cord Co., Grand Rapids.

FLOORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

FLUTING HEADS
Fay & Egan Co., J. A., Cincinnati, Ohio.

FURNITURE DESIGNERS
Otto A. Jiranek, Grand Rapids, Mich.

FURNITURE LEATHER
Eagle-Ottawa Leather Co., Grand Haven, Mich.

FURNITURE TRIMMINGS
Faultless Caster Co., Evansville, Ind.
Foster, Merriam Co., Meriden, Conn.

GARNET PAPER AND CLOTH
Carborundum Co., Niagara Falls, N.Y.
Macdonald, Norman, Toronto, Ont.
Oakey & Sons, Limited, John, London, S.E.I. (Wellington Emery & Black Lead Mills).

GRAINING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N.Y.

GLUE
Bloede Company, Victor G., Baltimore, Md.
Casein Mfg. Company, New York, N.Y.
Lefeber, H., Montreal, Que.
Perkins Glue Company, South Bend, Ind.

GLUE CLAMPS
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane, & Company, Kitchener.

GLUE HEATERS
Cincinnati Glue Heater Co., Cincinnati, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
International Electric Co., Indianapolis, Ind.
Jackson, Cochrane, & Company, Kitchener.
Pringle, R. E. T., Toronto, Ont.

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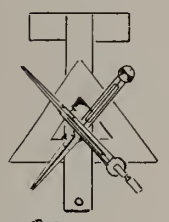

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"Canadian Woodworker" Buyers' Directory—Continued

GLUE JOINTERS
Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GLUE SPREADERS
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane, & Company, Kitchener.

GLUE ROOM EQUIPMENT
Perrin & Company, W. R., Toronto. Ont.

GRINDERS (Cutter)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

GRINDERS (Knife)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane, & Company, Kitchener, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N.Y.

GROOVING HEADS
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.

GUM LUMBER
Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
Anderson-Tully Co., Memphis, Tenn.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Brown & Co., George C., Memphis, Tenn.
Churchill-Milton Lumber Co., Louisville, Ky.
Cornelius Lumber Co., St. Louis, Mo.
Darnell-Love Lumber Co., Leland, Miss.
Gum Lumber Association, Memphis, Tenn.
Hyde Lumber Company, South Bend, Ind.
Merceau-Hawkins Tie Co., Huntington, W.Va.
Nickey Bros, Memphis, Tenn.
Paepcke-Leicht Lumber Co., Chicago, Ill.
Probst Lumber Co., Cincinnati, Ohio.
Sondheimer Co., E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Thomas & Proetz Lumber Co., St. Louis, Mo.

HAND SCREWS
Fay & Egan Co., J. A., Cincinnati, Ohio.

HANDLE & SPOKE MACHINERY
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.

HARDWARE
Laidlaw Bale-Tie Co., Hamilton, Ont.

HARDWOOD LUMBER
Aberdeen Lumber Co., Pittsburgh, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
American Oak Mfrs.' Assn., Memphis, Tenn.
American Walnut Association, Washington, D.C.
Anderson-Tully Co., Memphis, Tenn.
Astoria Mahogany Co., New York, N.Y.
Atlantic Lumber Company, Toronto, Ont.
Baker-Matthews Lumber Co., Memphis, Tenn.
Banning, Leland G., Cincinnati, Ohio.
Barr- Holaday Lumber Co., Greenfield, Ohio.
Boland Lumber Co., Grand Rapids, Mich.
Bonner & Sons, J. H., Memphis, Tenn.
Brown & Company, Geo. C.
Bury & Company, Robert, Toronto, Ont.
Buskirk Rutledge Lumber Co., Cincinnati, O.
Cornelius Lumber Co., St. Louis, Mo.
Canadian General Lumber Co., Toronto, Ont.
Churchill-Milton Lumber Co., Louisville, Ky.
Clark & Sons, Edward, Toronto.
Darby Hardwood Lumber Co., Memphis, Tenn.
Darnell-Love Lumber Co., Leland, Miss.
Des Moines Sawmill Co., Des Moines, Iowa.
Dooley Lumber Co., F. T., Memphis, Tenn.
Evansville Band Mill Co., Evansville, Ind.
Felger Lumber & Timber Co., Memphis, Tenn.
Gayoso Lumber Co., Memphis, Tenn.
Hart & McDonagh, Toronto. Ont.
Heeney, Percy E., Kitchener, Ont.
Hunt, Wellington & Smith, Nashville, Tenn.
Hyde Lumber Co., South Bend, Ind.
Kersley, Geo., Montreal, Que.
Korn-Conkling Co., Cincinnati, Ohio.
Kosse, Shoe & Schleyer Co., Cincinnati, O.
Kraetzer-Cured Lumber Co., Greenwood, Miss.
Lawrence & Co., P. J., St. Louis, Mo.
Long-Knight Mfg. Co., Indianapolis, Ind.
McLennan Lumber Co., Montreal, Que.
Memphis Band Mill Co., Memphis, Tenn.
Merceau-Hawkins Tie Co., Huntington, W.Va.
Mowbray & Robinson, Cincinnati, Ohio.
Paepcke Leicht Lumber Co., Chicago, Ill.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City.
Pickrel Walnut Co., St. Louis, Mo.
Probst Lumber Co., Cincinnati, Ohio.
Reese Sherriff Lumber Co., Williamsport, Pa.
Shafer Hardwood Co., John I., South Bend, Ind.
Sondheimer Co., E., Memphis, Tenn.
Spencer, C. A., Montreal, Que.
Stark & Co., Jas. E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Stimson & Co., J. V., Owensboro, N.Y.
Thompson, Katz Lumber Co., Memphis, Tenn.
Utley-Holloway Co., Chicago, Ill.
Warren-Ross Lumber Co., Jamestown, N.Y.
Woodruff Powell Lumber Co., South Bend, Ind.
Yellow Poplar Lumber Co., Coal Grove, Ohio.

HYDRAULIC VENEER PRESSES
Perrin & Company, Wm. R., Toronto, Ont.

KNOBS
Waddell Mfg. Co., Grand Rapids, Mich.

JOINTERS
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Onio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochane & Company. Kitchener. Ont.
Mattison Machine Works, Rockford, Ill.
Petrie. H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Smith, C. W., Grand Rapids, Mich.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

LEATHER (Artificial)
Burch Co., A. F., Grand Rapids, Mich.
Fibro Mfg. Company, Beverly, N. J.

MACHINE KNIVES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

METALINE NAILS
Canada Tack & Nail Co., Hamilton, Ont.

MIRRORS
Hart Mirror Plate Co., Grand Rapids, Mich.

MITRE SAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

MOTOR TRUCK EXTENSIONS
Swedish Crucible Steel Co., Windsor, Ont.

MOULDERS
Hall & Brown Woodworking Machine Co., St. Louis, Mo.

MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.

MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

NAILS
Laidlaw Bale-Tie Co., Hamilton, Ont.

NAILING MACHINES
Morgan Machine Co., Rochester, N.Y.

OIL STONE GRINDERS
Mummert-Dixon Co., Hanover, Pa.

PANELS
Rutherford & Sons, Montreal, Que.
Waetjin & Co., L., Milwaukee, Wis.

PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago. Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PERIOD MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.

PERIOD TURNINGS
Walter & Sons, J., Kitchener, Ont.

PLANERS
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PORTABLE DRILLS
Wisconsin Electric Co., Wisconsin, U.S.A.

PRESSES (Veneer)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

REED
Overseas Reed and Cane Co., Ionia, Mich.

RESAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A. Cincinnati, Ohio.

RIP SAWING MACHINES
American Woodworking Machinery Company Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Waddell Mfg. Co., Grand Rapids, Mich.

RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.

SAFETY DEVICES
Cowan & Company, Galt, Ont.

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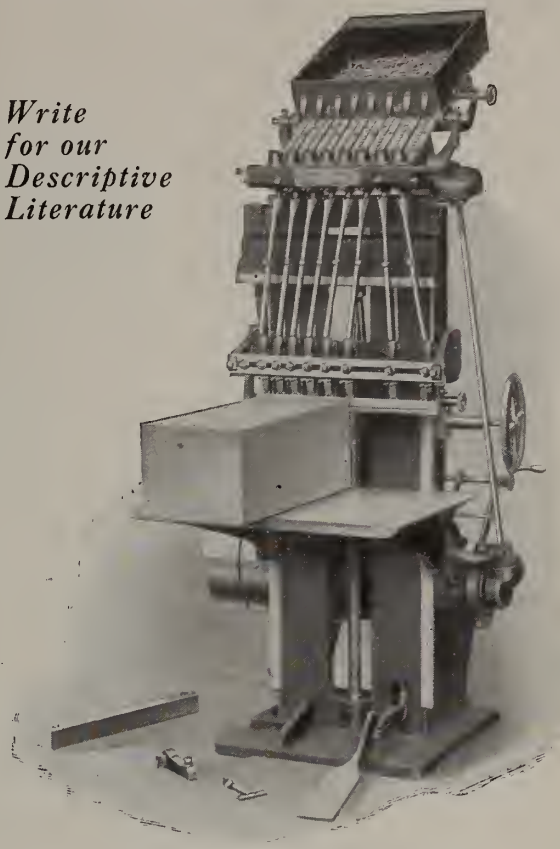

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Gardiner Lumber Company, Galt, Ontario.

Irvin Lumber Company, Toronto, Ontario.

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"Canadian Woodworker" Buyers' Directory—Continued

SANDERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Solem Engineering Co., Sheboygan, Wis.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAND PAPER
Manning Abrasive Company

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Elliot Machinery Co., Belleville, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R,, Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS
Atkins & Co., E. C., Indianapolis, Ind.
Disston & Sons, Henry, Toronto, Ont.
Elliot Machinery Co., Belleville, Ont.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Silver Mfg. Company, Salem, Ohio.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.

SAW BENCH
Sidney Machine Tool Co., Sidney, O.

SAW FITTING TOOLS
Crowell, D. J., Buffalo, N. Y.

SAW SWAGES
Cowan & Company, Galt, Ont.
Crowell, J. D., Buffalo, N.Y.
Disston & Sons, Henry, Toronto, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES
Canada Machinery Corporation, Galt, Ont. ..
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Company, Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont. ..
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY
Reynolds Machine Co., Massillon Ohio.

SCREW HOLES
Stine Screw Holes Co., Waterbury, Conn.

SCROLL SAWS
Canada Machinery Corporation, Galt, Ont. ..
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane, & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamiltonfi Ont.

SECOND-HAND MACHINERY
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Osborne Sexton Machinery Co., Columbus, O.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto. Ont.

SHAPERS
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

STAINS
Ault & Wiborg, Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ohio.
Shannon Co., Ed. J., Cincinnati, Ohio.
Standard Paint & Varnish Co., Windsor, Ont.

SINGLE SPINDLE BOXING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE
Whitney & Son, Baxter D., Winchendon, Mass.

STEEL DOOR MATS
Cary Mfg. Company, Brooklyn, N.Y.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Colladay Machine Works, Indianapolis, Ind.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Tannewitz Works, Grand Rapids, Mich.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohoa.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES
Jefferson Woodworking Co., Louisville, Ky.
Walter & Company, B., Wabash, Ind.

TEMPERATURE REGULATORS
Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Compan, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS
International Business Machines Co., Toronto, Ont.

TRIMMERS
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Preston Woodworking Machinery Company, Pretson, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS
National Dry Kiln Co., Indianapolis, Ind.

TWINES & WEBBING
Doon Twines, Ltd., Kitchener, Ont.

UPHOLSTERY FABRICS
Burch Co., A. F., Grand Rapids, Mich.

UPHOLSTERY SUPPLIES
Burch Co., A. F., Grand Rapids, Mich.

UPHOLSTERERS' TACKS & NAILS
Canada Tack & Nail Co., Hamilton, Ont.

VARNISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto. Ont.
Penfound Varnish Co., Toronto, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N.Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS
Astoria Mahogany Co., New York, N.Y.
Batesville Lumber & Veneer Co., Lawrenceburg, Ind.
Birds Eye Veneer Co., Escanaba, Mich.
Bury & Compny, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christmann Veneer & Lumber Co., St. Louis, Mo.
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Evansville Veneer Co., Evansville, Ind.
Freiberg Lumber Co., Cincinnati, Ohio
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Geo. Kersley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Litton Veneer Co., Rockford, Ill.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Veneer Co., New Albany, Ind.
Southern Veneer Mfg. Co., Louisville, Ky.
Stimson Veneer & Lnmber Co., Memphis, Tenn.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Underwood Veneer Co., Wausau, Wis.
Veneer Manufacturers Co., Chicago, Ill.
Waetjen & Co., George L., Milwaukee, Wis.

VENEER TAPE
Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.

VENEER JOINTERS
Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY
Garlock-Walker Machinery Co., Toronto. Ont.

VENEER PRESSES (Hand and Power)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Company, Wm. R., Toronto, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Johnson Co., O. E., Chicago, Ill.

WOOD FINISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Penfound Varnish Co., Toronto, Ont.

WALNUT LUMBER
American Walnut Mfrs. Assn., Chicago.
Des Moines Saw Mill Co., Des Moines, Iowa.
Pickrel Walnut Company, St. Louis.
Purcell Walnut Lumber Co., Frank, Kansas City.

WIRE
Laidlaw Bale-Tie Co., Hamilton, Ont.
Pakanship Company, Brooklyn, N.Y.

WIRE BOX STRAPPING
Cary Mfg. Company, Brooklyn, N.Y.

WOOD SCREWS
Robertson Mfg. Co., P. L., Milton, Ont.

WOOD TURPENTINE
Brown Corporation, Quebec, Que.

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Garlock-Walker Machinery Co., Toronto, Ont.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WODD LATHES
Colladay Machine Works, Indianapolis, Ind.

44 Yates No. 275
30 and 60-in. Automatic
Knife Grinders,
Brand New, at
One-half Price

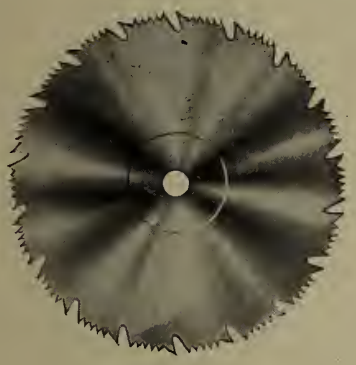
Machines arranged for Motor Application as per cut, or regular belt drive, if wanted.

8 New Andrew Mutiple Vertical Borers, 20, 30, 42 and 60-in., any number of heads.

7 New Hermance Molders, 8, 10 and 12-in., stationary and slip-on heads.

Band rip saw, Fay & Egan, 42-in.
Band saws, 32, 36 and 38-in.
Borer, Andrew, 10-ft., 13-spindle, power table.
Borers, Andrew mult. vert., 20, 42 and 60-in., new.
Carver, 5-spindle, Moore.
Door clamp, Fay-Egan, heavy.
Edgers, two, three and four saws.
Glue cookers and retainers. Glue spreaders.
Hogs, two, Mitts & Merrill.
Jointers, 8, 12, 16, 20, 24 and 30-in.
Knife grinders, two 32-in., F. & E.
Lathe, Ober spoke and handle, almost new.
Lathes, Mattison, No. 8 auto; No. 6 block mach.
Lathes, speed, eight, mounted on iron bed.
Lock-corner machine, Morgan No. 8, full set.
Matcher, American Northwest, 24x8-in., 3 sides.
Matcher, end, Sherman, fine condition.
Matcher, 24x6-in., 3 and 4 sides.
Automobile spoke machines, Defiance, complete set.
Band resaw, 50-in., Fay & Egan, tilting rolls, full set of filing room tools.
Molder, Smith 14-in. outside, latest style, practically new.
Molders, 4-side, 9, 10 and 12-in. American.
Molder, Fay & Egan No. 184, 12-in. outside.
Molders, inside, 13-in. American and Woods.
Mortiser and router, Fay & Egan No. 124.
Mortiser, chain saw, New Britain No. 1, 25 chains.
Mortiser, chain saw, New Britain No. 7, new.
Mortisers, F. & E. vertical, hollow-chisel; also plunger type.
Nailers, two, Morgan No. 8, used three months.
Nailing machines, 2 closed back, 4-track, 4d, 15-in. spread.
Pony planers, 16, 20 and 24-in.
Relisher and mortiser, Greenlee.
Rip saws, self-feed, Hoosier, F. & E., Greenlee.
Router for stair stringers, H. B. Smith, flexible arm with adjustable table and forms.
Sand belt, closet seat and similar work.
Sander, H. B. Smith, spindle and disc, practically new.
Sanders, 30 and 42-in. Columbia; 30, 42 and 48-in. Invincible; 30-in. double Invincible.
Saw, 8-ft. double cut-off, roller table.
Saws, combination and variety, single and double arbor, also tilting arbor, stationary and tilting table, 24 and 30-in. circular resaw.
Saw, circular re-slab, 40-in. blade, power feed rolls.
Shapers, Fay single-spindle reversible, also Shimer single with overhead routing attachment.
Surfacer, 30-in. double, cabinet, B. & M., practically new.
Surfacer, Whitney 30-in. double, sectional roll and sectional chipbreaker; American No. 4½, 36-in. sectional and solid; Fay & Egan No. 140, 27 and 30-in. double divided rolls; also 18, 20, 24 and 30-in. single cylinder panel planers.
Tenoners, B. & M. double-end, also several single-end tenoners with and without copes.
Timber sizer, Fay-Egan s4s, 17x12-in.
Window frame machines, Smith & Phillips combination.
Wood-worker, universal, Fay & Egan and Bentel & Margedant. One lot of glue room machinery.

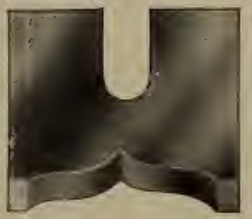
The Osborne & Sexton Machinery Co.
Re-manufacturers **COLUMBUS, OHIO**



ATKINS
STERLING QUALITY
SAWS and KNIVES

The best steel—the most careful and accurate workmanship—the equipment that will eventually save you money.

Atkins Sterling Quality Saws and Knives are proving their superiority by competitive tests in the largest plants of the country. We welcome your most careful investigation, as we know the satisfaction that will result.

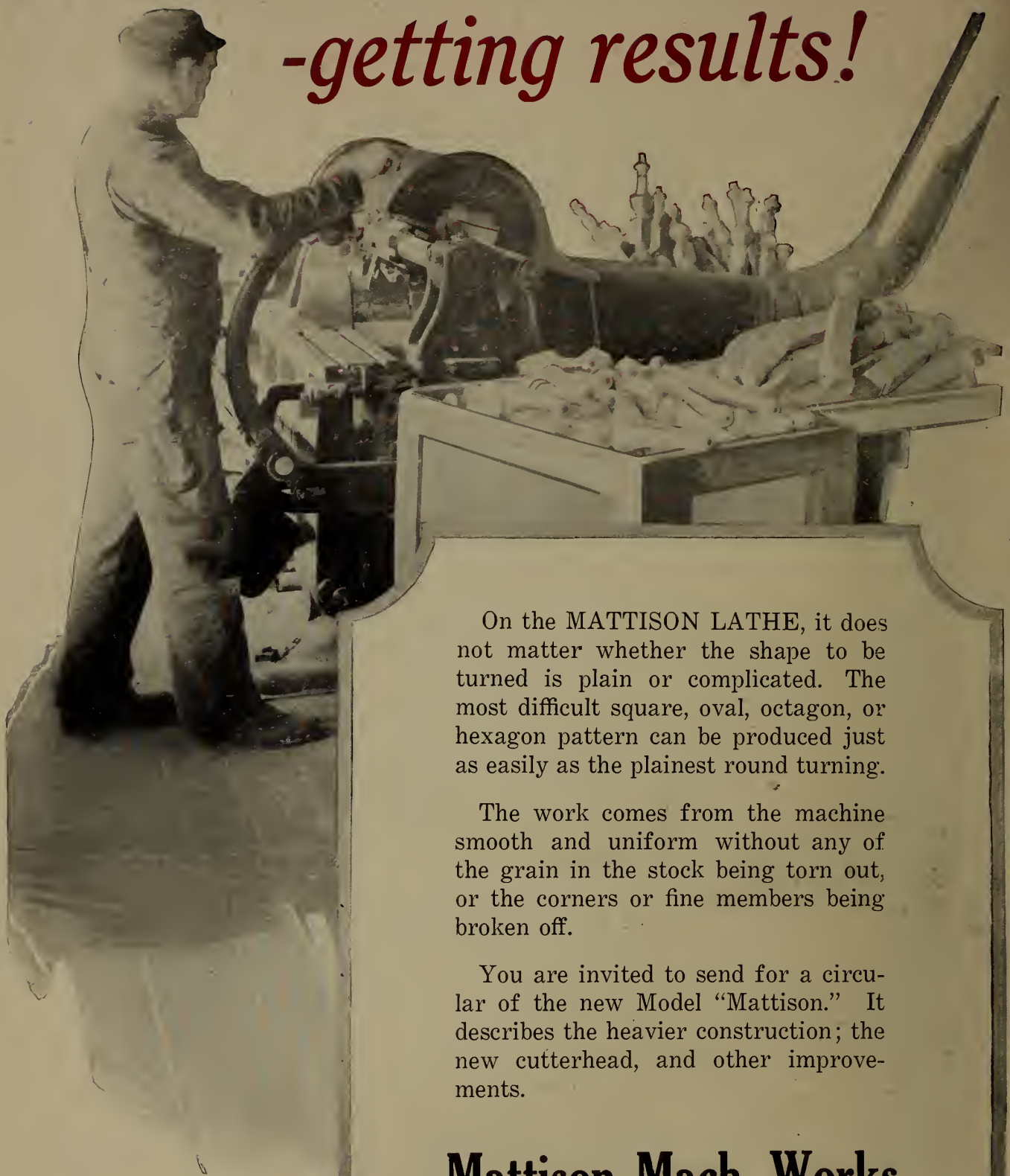


Write to-day for our Knife Booklet "C W" and Pattern Template Paper.

E. C. ATKINS & CO.
Makers of Sterling Saws

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

-getting results!



On the MATTISON LATHE, it does not matter whether the shape to be turned is plain or complicated. The most difficult square, oval, octagon, or hexagon pattern can be produced just as easily as the plainest round turning.

The work comes from the machine smooth and uniform without any of the grain in the stock being torn out, or the corners or fine members being broken off.

You are invited to send for a circular of the new Model "Mattison." It describes the heavier construction; the new cutterhead, and other improvements.

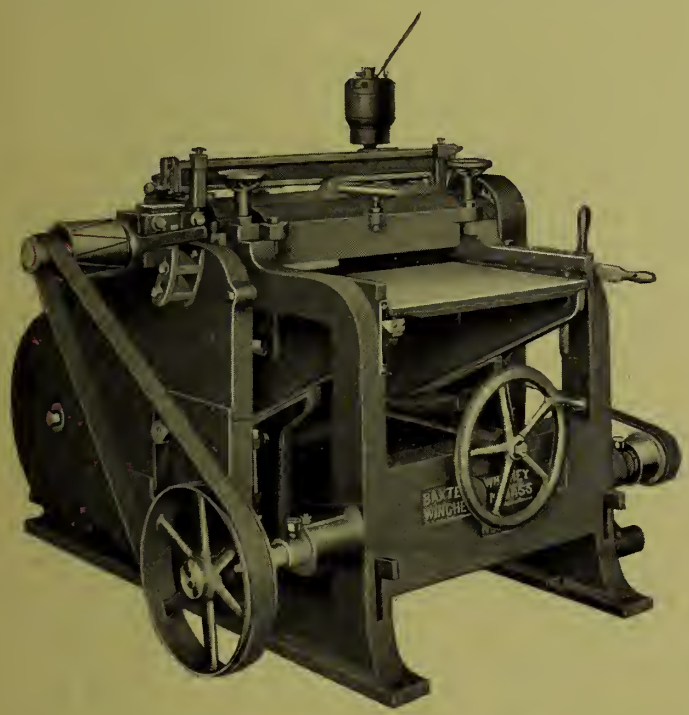
Mattison Mach. Works

Rockford, Illinois, U. S. A.

Volume Twenty TORONTO, JUNE, 1920 Number Six

CANADIAN WOODWORKER and Furniture Manufacturer

THE WHITNEY
30" No. 32 Single Planer
with Round Cutter Head and Electric Grinder
has special features that appeal to every woodworker, such as the



30" No. 32 Single Planer—Round Cutter Head and Motor Grinder

RIGID FRAME with ample weight of metal.

BED raised and lowered on Solid Wedges operating on wide tracks.

HARDENED CENTRE TABLE made extra thick.

AUTOMATIC CHIPBREAKER working concentric with the cutter head.

SIDE CLAMP CUTTER HEAD BOXES easily detached.

CUTTER HEAD with long bearings of large diameter.

REMOVABLE BABBITTED FEED SHAFT BOXES.

SECTIONAL FEED ROLLS to handle narrow and uneven stock.

MACHINE CUT GEARS.

Whitney Planers are equipped with motors coupled direct to the cutter heads when desired.

These machines can be furnished with two or four-knife Square Cutter Heads or four-knife Round Cutter Heads, Flexible or Sectional Chipbreaker and Motor-driven Grinders and Devices.

Write us for further information about this machine.

BAXTER D. WHITNEY & SON, Inc., Winchendon, Mass.

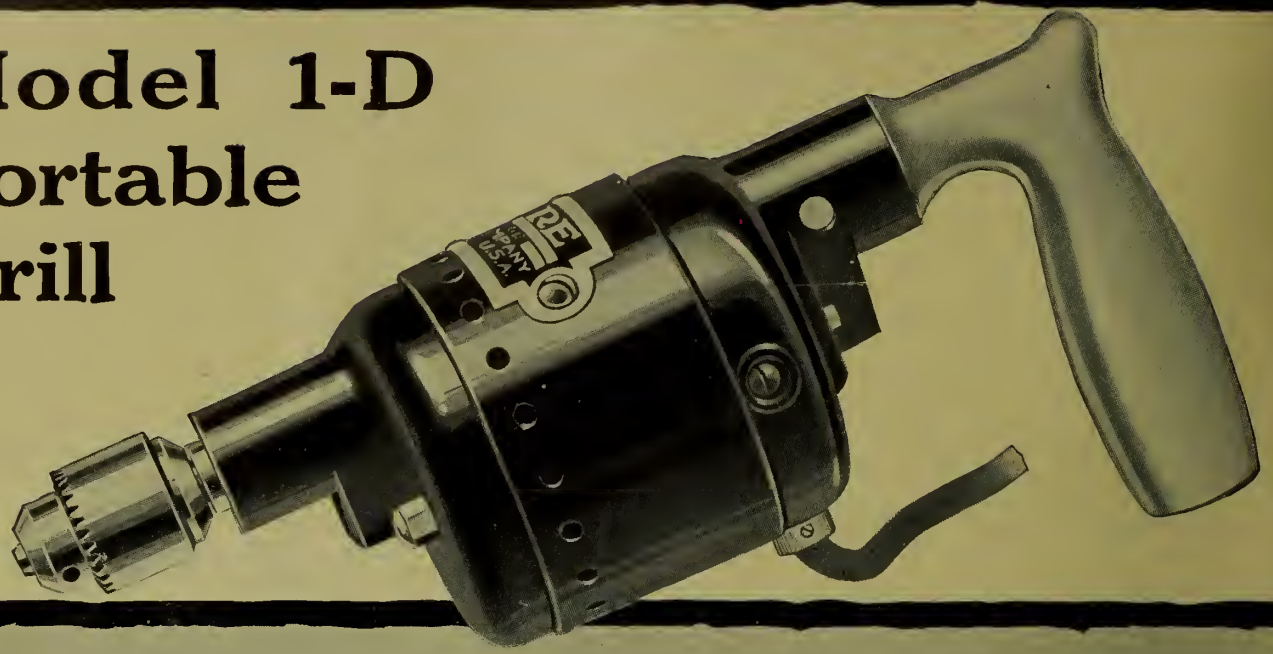
H. H. Plummer & Co.
451-453 Monadnock Bldg.,
San Francisco, Cal.

New York Office:
World's Tower Building,
110 West 40th Street.
C. L. Babcock, Manager.

Canadian Representatives:
H. W. Petrie, Limited
Toronto, Ontario.

Alphabetical Index to Advertisers, Page 12

Model 1-D Portable Drill



HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—4¾ pounds.

Capacity—Steel, 0 to 3/16". Wood and alloys, 0 to 1/4".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3⅜ inches.

Spindle—Offset from center 3/4".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

Jacob's Chucks used as a regular equipment.

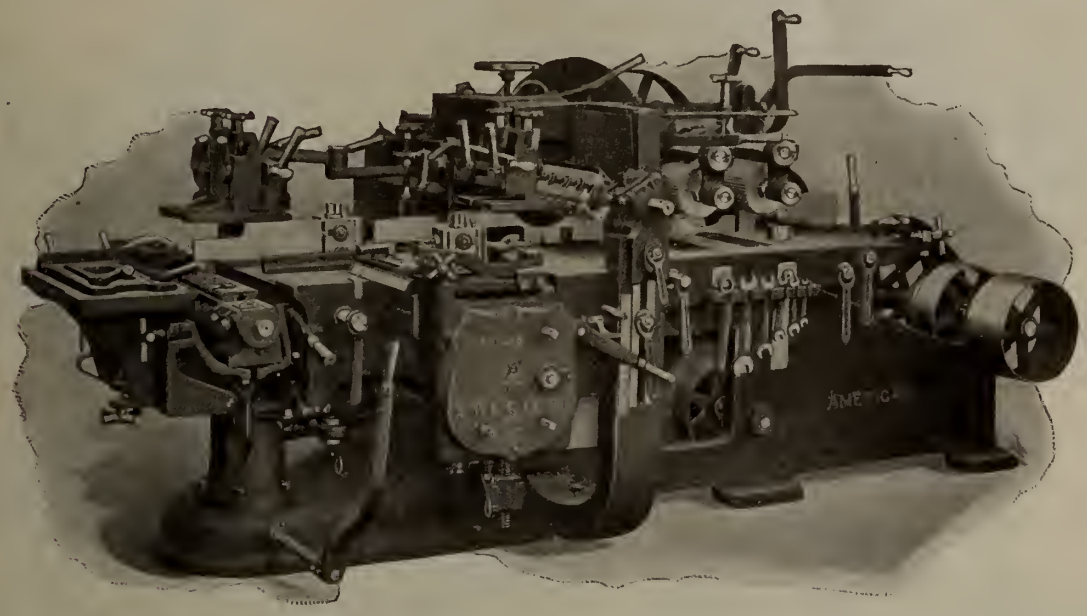
FOR speed in drilling and countersinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

Wisconsin Electric Company
7124 Sixteenth Street, Racine, Wisconsin, U. S. A.

DUMORE GEARED ELECTRIC DRILLS

American No. 26 Four Sided Outside Moulder



A fast-feed machine—slip on and off heads— quick adjustments — heavy type—chip-breaker throws back out of the way when applying or changing cutters—Large size feed rolls with chain drive—and many other improvements which make possible quicker setting up and operation on this outside Moulder.

American No. 25 Edging Saw

Large size arbor and pulley allows high speed with plenty of power. Two chains in table and four sets upper feed rolls. Strong and accurate feed. Owing to arrangement of upper feed rolls very short stock can be fed through this machine. Compact, but with strength in every line and dimension.

Both of these machines for delivery from our Toronto warehouse.

Write for further particulars

Garlock-Walker Machinery Company, Limited

MONTREAL TORONTO WINNIPEG

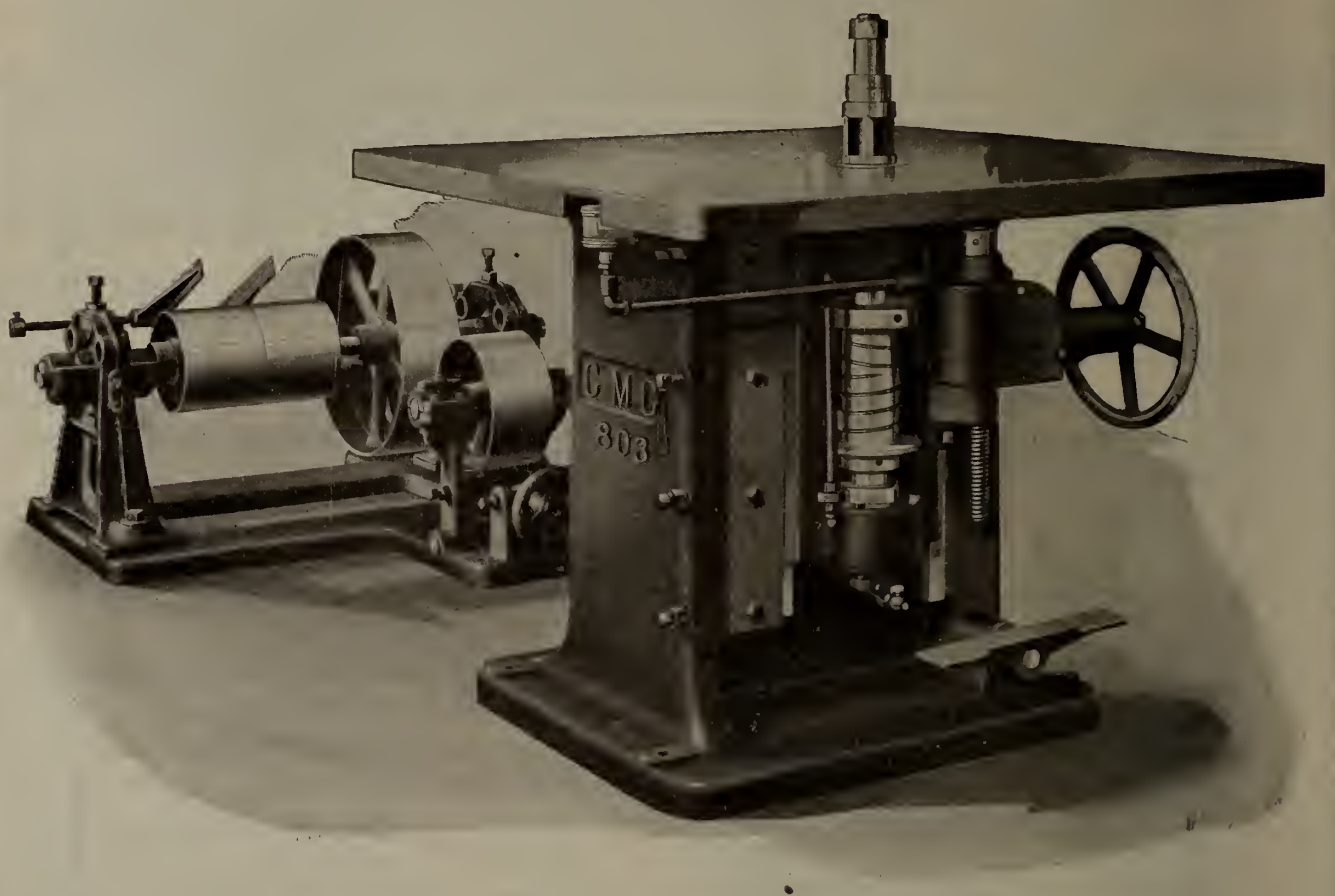
"Everything in Machinery"

C.M.C.

The Belt is the Limit!

The Ball Bearings in our 803 High Speed Shaper as originally applied to this service by us are guaranteed to run satisfactorily at a speed at 12,000 revolutions per minute—High Speed Means High Profit.

Consequently the Quality of the Belting used is the only speed limit.

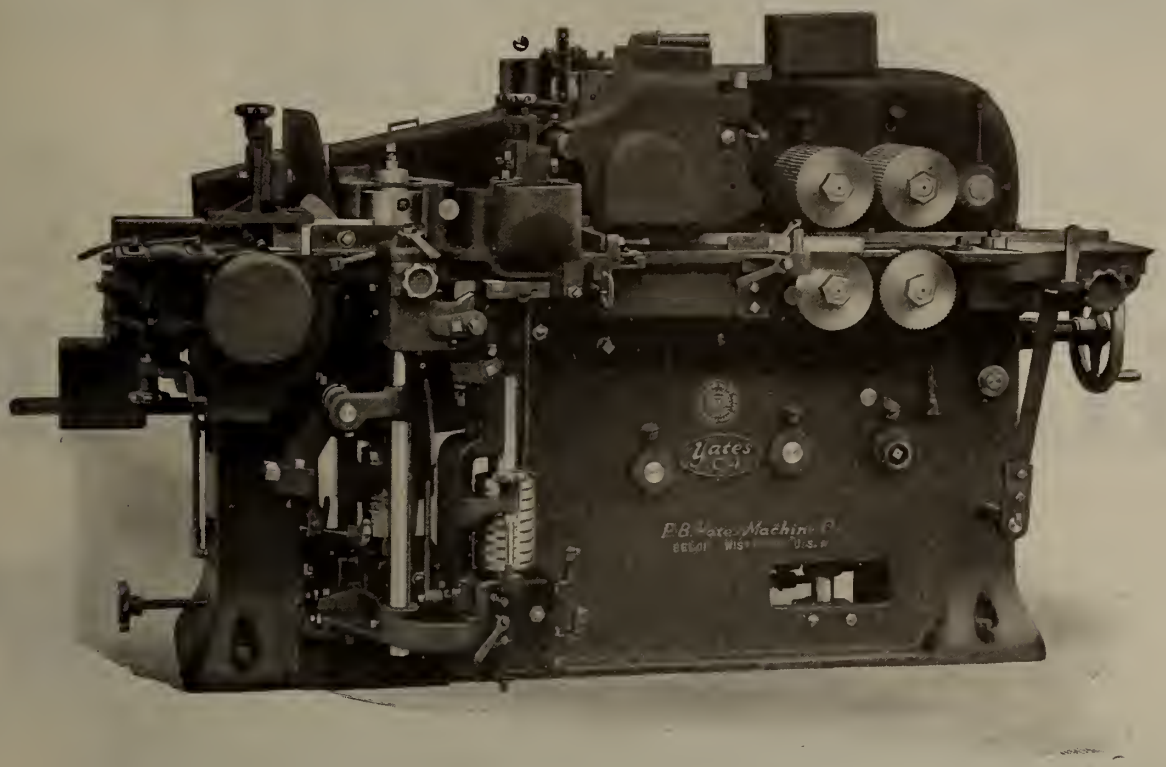


The C. M. C. High Speed Ball Bearing Shaper

Has points of advantage that no intending Shaper purchaser can afford to overlook. It cuts with or against the grain and saves you money.

CANADA MACHINERY CORPORATION, GALT, ONTARIO
LIMITED

Toronto Office and Warerooms, Brock Avenue Subway



Production!

The world's great need to-day is production. The world's great shortage is that of the hands to do the producing. The shortage of hands must be off-set by a greater use of machinery. The Yates C-4 Moulder is one of the most useful machines known to the woodworking trade. Look it up. You'll be glad that you did.

P. B. Yates Machine Company Ltd.

HAMILTON, ONT. CANADA

U. S. Plant, Beloit, Wisconsin

Will do the work of Five Hand Jointers in making Glue Joints

This is the guarantee given with our

No. 4 Continuous Feed GLUE JOINTER

Strongest and most complele machine on the market.
Any part may be readily removed or renewed.
Feeds in opposite direction, giving 100 feet per minute.
Works material from six inches up to any length desired.
Also from one quarter to 3 inches thick, and from three-quarters of an inch wide up to any width.
1 set Shimer Special Jointer Heads supplied with machine.

Investigate the merits of this machine—it will pay you!

Jackson, Cochrane & Company

KITCHENER - CANADA

The "Shimer" Round Safety Cylinder

Why is it different from all others?

It is the only cylinder on the market on which you will find the adjusting nuts properly located for easy and quick adjustment of the knives. This adjustment may be made to within 1/1000 of an inch, a feature that is very desirable for fine work. The Shimer way of holding the knives at the proper cutting angle does away with the old style of tapping into the head.

The Shimer Round Safety Cylinder with High Speed Knives, is made in any diameter and length and for any make of machine.

Write for Full Particulars and Prices

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

GALT, ONTARIO

BOOKS FOR SALE

The following books are offered at special prices subject to previous sale:

Common-Sense Handrailing, by Fred T. Hodgson. Published by Frederick J. Drake & Company, Chicago. 114 pages, illustrated. Price 50c.

"Woodwork Joints," by Evans Bros., London England; 214 pages, with 430 illustrations and a complete index of eleven hundred references. Price $1.50.

" Carpentry," by Ira S. Griffith. Published in 1916 by The Manual Arts Press. 188 pages, illustrated. Price $1.00.

"Details of Cabinet Construction," by Evans Bros., London, England; 203 pages, fully illustrated. Price $1.50.

"Machine Molder Practice," recently published by the Practical Books Co. 172 pages, 100 illustrations. Flexible leather binding. Price $3.00.

Seasoning of Wood; A Treatise of the Natural and Artificial Processes Employed in the Preparation of Lumber for Manufacture, with Detailed Explanations of its Uses, Characteristics and Properties, by Joseph Wagner. Published by D. Van Nostrand Co., in 1917. 274 pages, illustrated. Price $3 00.

"The Kiln Drying of Lumber," a Practical and Theoretical Treatise, by Harry Donald Tiemann, M.E., M.F. Just published, by J B. Lippincott Co. 316 pages, illustrated. Price $5.00.

The Woodworker Publishing Co., Limited

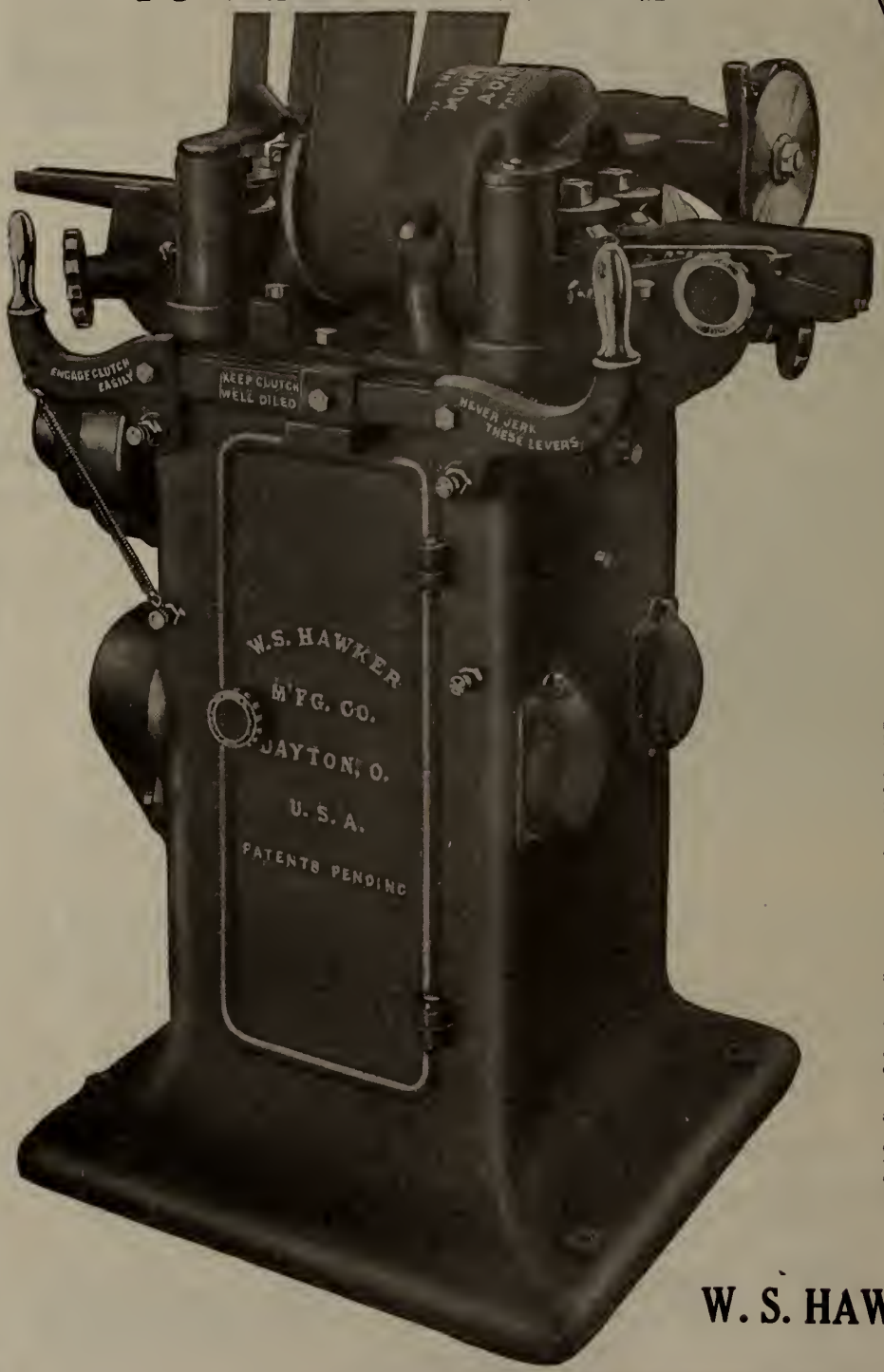
345 Adelaide Street West, Toronto, Ont.

UNIVERSAL ADJUSTABLE CUTTER HEAD Patented
Infringements (maker or user will be vigorously prosecuted.

Two Heads

that have put 100% more profit in the production of Dowel Stock.

FOR SHIP TREENAILS



W. S. HAWKER.

Inventor and Designer of the World's most efficient Tubular Turning Machinery

THE

Money Maker Adjustable Rod

and

Dowel Machine

The machine that is sent under a guarantee to show you a gain of from 100 to 400 per cent. before you buy it.

The improved dowel machine that 90 per cent. of the largest and oldest machinery builders and dealers now endorse and recommend in preference to the solid chuck machines they themselves previously built.

One cutter head turns from 1/4 in. to 2 in. diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

Works stock as short as five inches.

Rolls automatically centre variations in squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid chuck dowel machine.

We can save you from one dollar out of every two, to four out of every five, that the operation of solid chuck machines costs you.

Engagements for competitive test solicited.

Formal orders not solicited. All sales made after demonstration.

The only question is, are you willing to cut cost of your dowel turning to one-half or one-third of what it costs with any make of solid chuck machine?

Machine delivers the goods before you buy.

State conditions of stock closely.

Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY

DAYTON, OHIO.

Efficiency Counts

IN

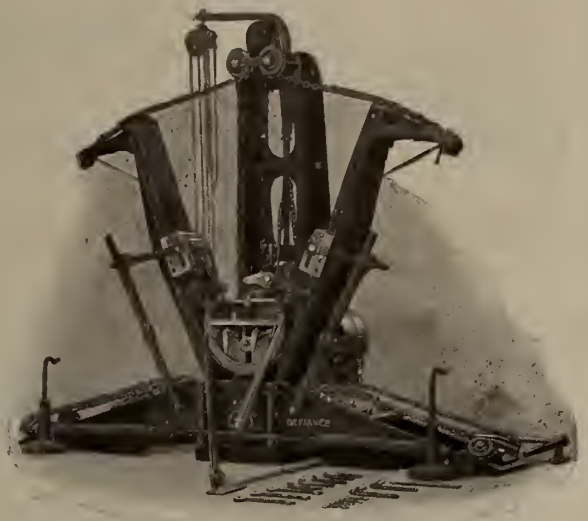
Wood Bending Methods

The Defiance Bending Machines

will increase your present output and reduce your losses in breakage to a minimum. Wood Benders throughout the world are using Defiance Bending Machines.

The Defiance High Productive Wood Bending Machinery

is built in various designs and sizes, and is particularly adapted to bending rims for artillery wheels, automobile, auto-truck, wagon and carriage wheels, table rims, plow and truck handles, hames, bows for vehicle tops and steering wheel rims.



12" Patent Rim, Felloe and Hound Bending Machine

Write for illustrated and descriptive circular on this machine

THE DEFIANCE MACHINE WORKS

New York City *DEFIANCE, OHIO, U.S.A.* *London, England*

HART MIRROR PLATE CO.

IMPORTERS AND MANUFACTURERS OF

MIRRORS

GRAND RAPIDS QUALITY

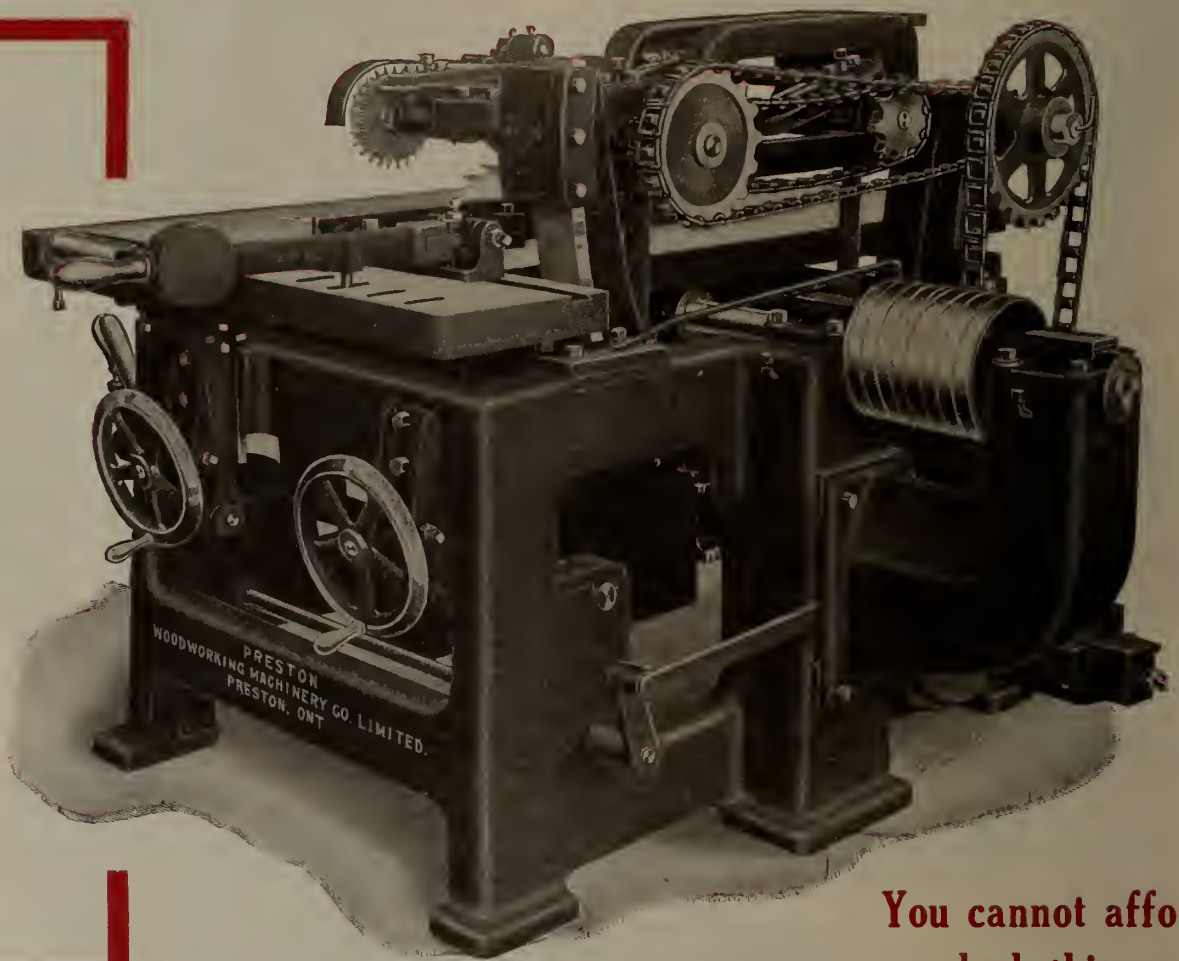
Grand Rapids, Mich.

Largest manufacturers of high grade mirrors in America serving the furniture trade exclusively.

A Machine that gives

100% Service—100% of the Time

"PRESTON" No. 129 Power Feed Rip Saw



You cannot afford to overlook this machine

A thorough investigation of the predominating merits of the "Preston" No. 129 Power Feed Rip Saw will prove what we say—the installation of one of them in your plant will be one of the best investments in machinery you ever made.

In design and construction it is made to give the utmost in service and capacity. The frame is in one solid casting, each bearing self oiling, table and upper works easily adjusted by hand wheels and quickly regulated variable feed.

Our Catalogue describes it

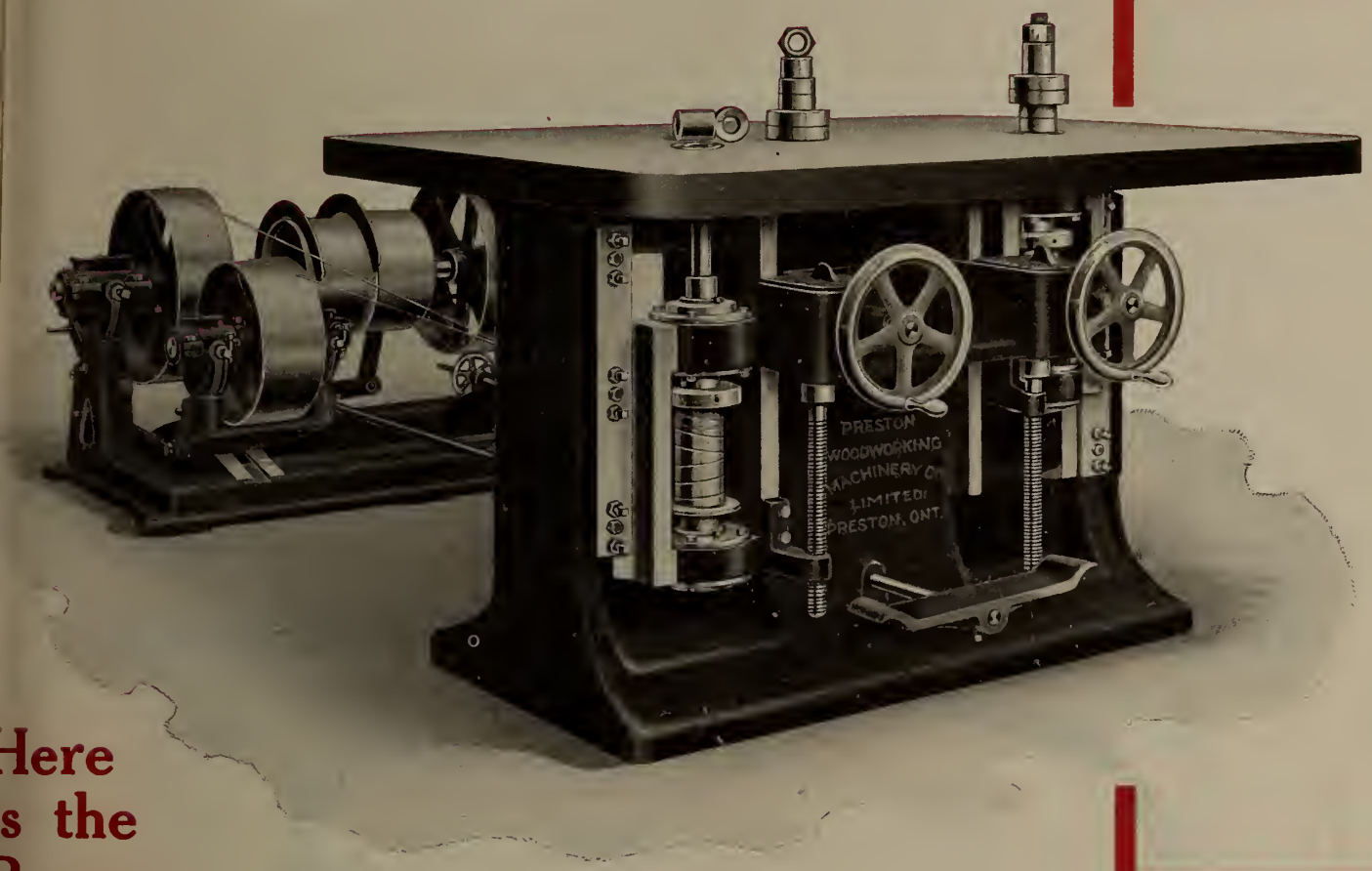
The Preston Woodworking

PRESTON

If You Need a New Shaper

It will pay you to get a

"PRESTON" No. 162



Here is the Reason

It is the best all round shaper on the market, designed and built by the pioneer shaper people of Canada. It is equipped to handle the heaviest kind of work as well as the smaller jobs.

Here are some of its chief features that have won for it the high esteem of the Canadian Woodworking industry: SKF Ball Bearings; 7,000 to 8,000 R.P.M., Single or Double Spindle as desired; High Speed, absolutely under the control of the operator; and a shipping weight of 2,750 lbs.

This shaper, along with our complete line of our "Better" Woodworking machinery, is completely described in our catalogue. Have you a copy of it? If not let us send you one.

Machinery Company Ltd.

ONTARIO

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Wood Working Machinery

BELT SANDER 319

CONVENIENT, SIMPLE, SUBSTANTIAL, EFFICIENT. TABLE 5½′ or 8′.

COWAN & COMPANY OF GALT, LIMITED, Galt, Canada

What Does Overhead Mean to You?

It probably means administrative expense, rent, insurance, etc.—unavoidable expense, other than labor and materials, that adds to the cost and decreases the profit on every article manufactured.

But to S K F Bearing Engineers overhead also means FRICTION—an invisible drag on machinery that reduces plant efficiency and cuts deep into dividends. For in the average mill, friction destroys at least 25 per cent. of all the power produced or bought.

Yet this enormous waste can be largely eliminated through the aid of our Consulting Bearing Engineers—salesmen only as they serve.

This S K F service is part of a laboratory-built ideal that seeks to co-operate with the manufacturer and furnish advice of a practical and impartial character. The fund of knowledge constantly available in the S K F Research Laboratories is applied to your particular problems in order to cut down that unnecessary and costly overhead caused by friction.

Manufacturers are invited to avail themselves of this bearing service at any time

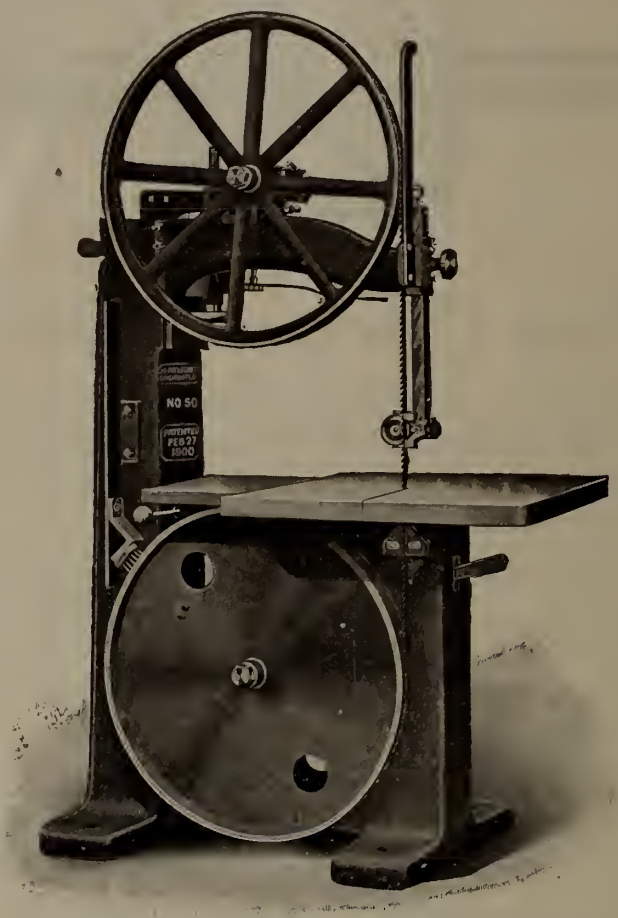
CANADIAN SKF COMPANY, LIMITED

412 St. James St.
MONTREAL

83 King Street W.
TORONTO

SKF INDUSTRIES

Hess-Bright Ball Bearings
S K F Ball Bearings
Atlas Steel Balls
Gronkvist Chucks
Transmission Hangers



Save 25% to 50% of Blade Upkeep and Power Cost
Get Two, Even Three Times As Much Work

It's not the blades that wear out that cost, it's those that break.

It's the broken blades that cut down productive time and cost to repair and to replace.

Blade breakage is reduced to a minimum on Fay-Egan No. 50—36" **Square Column "Lightning Line" Band Scroll Saws.**

The Fay-Egan "Knife Edge" Blade Tension, made on the principle of a fine laboratory balance scale, is so sensitive that it compensates for changes in atmospheric conditions—yet, so flexible, you can pass a block between blade and wheel, while running, without breaking the blade. Folks tell us blade expense on "No. 50" averages 50 to 75 per cent. less than on the old timers.

The solid lower wheel acts like the fly wheel on your engine, its momentum carrying the load, so that the power consumption is reduced fully one-half, while at the same time it controls the light-spoked upper one, preventing over-running and choking down on a heavy cut.

The heavy square column eliminates vibration and permits the wheels to be revolved at 50 to 100 per cent higher speed, increasing the cutting capacity to double, and in some cases, triple that of the ordinary band saw.

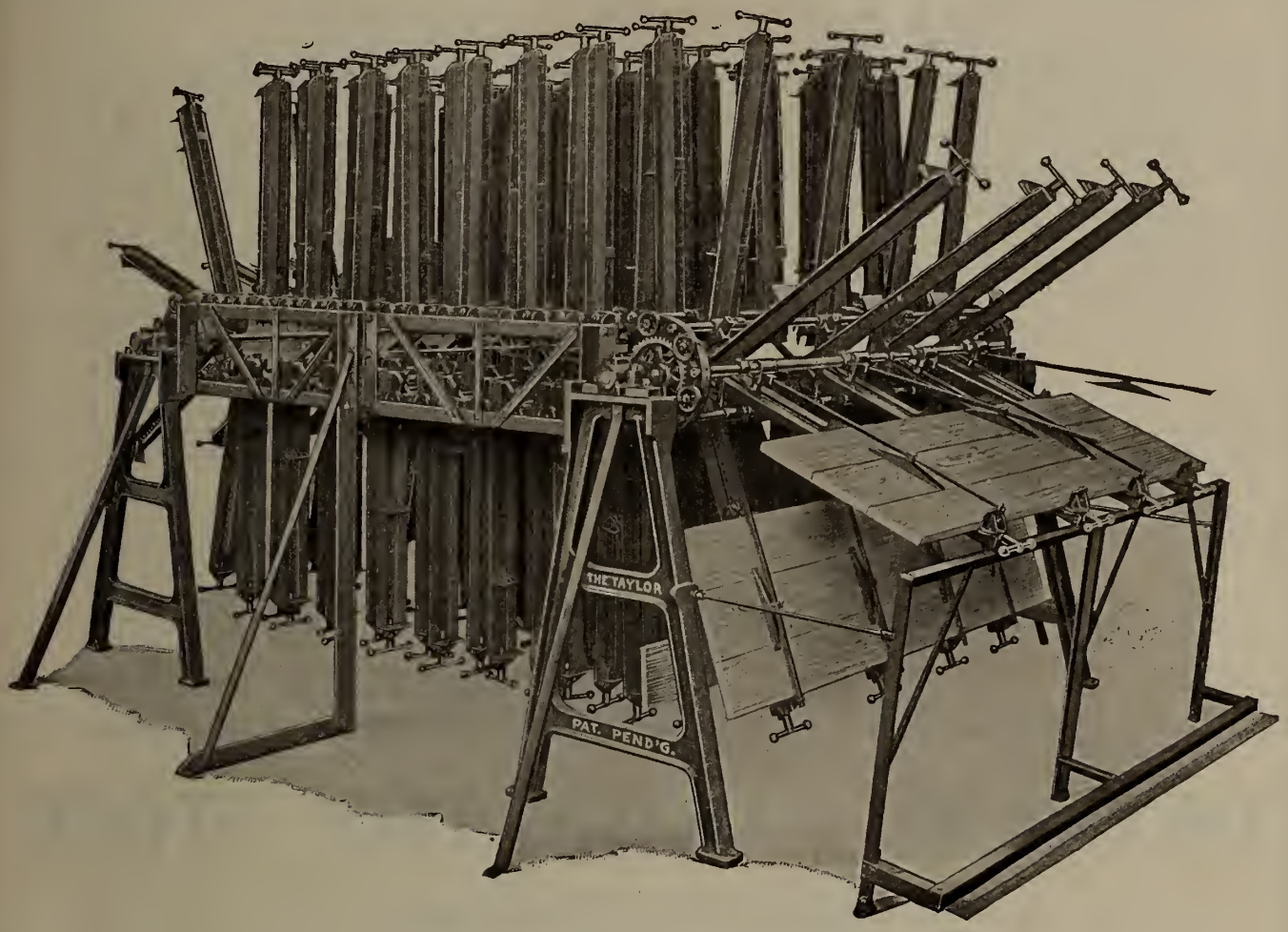
As a user of saws, you cannot afford to ignore what Fay-Egan Square Column Band Saws are doing for others and can do for you. An investigation does not obligate you.

Write for Bulletin M-4

J. A. FAY & EGAN CO.

153-163 W. Front St. **CINCINNATI, O.**

CLAMP The Taylor TRADE MARK CARRIER



Forty section machine carrying 160 clamps, measuring 8 ft. 2½ in. between shaft centers.

The clamp is one of the most interesting features of the clamp carrier. A remarkable strain can be applied with greatest ease; the work it turns out—both thick and thin stock—is 100 per cent. perfect.

An Engineering concern recently wrote:

"I am recommending Taylor clamps to the Germain Mfg. Co. because I have proven the clamps more efficient through scientific time studies on both and all existing types of gluing-up machines and devices."

As a result of the above recommendations, The Germain Mfg. Co. referred to bought two Taylor carriers. They installed them, and tested them and have since purchased two more. We can tell you numerous instances where customers are using from two to nine Taylor carriers each as a result of similar experiences.

Let us prove the truth of these claims by showing you one of these carriers in operation, or you can try the clamps out on your own work. Ask for C. C. Folder and further information.

A. R. Williams Machinery Co., Toronto, Canada — Representatives

James L. Taylor Manufacturing Co.

POUGHKEEPSIE, N. Y.

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DRY AND PARTLY DRY STOCK

Ready for Shipment

RED GUM

1 Car 6/4 FAS Qtd.
3 " 6/4 No. 1 Common and Select Qtd.
1 " 6/4 No. 2 Common
5 " 6/4 FAS Plain
10 " 6/4 No. 1 Com. and Sel. Plain
3 " 6/4 No. 2 Common Plain
2527' 5/4 FAS Figured
4400' 5/4 No. 1 Com. and Btr. Plain
1 Car 5/4 No. 2 Common Plain
5 " 4/4 FAS Plain
7 " 4/4 No. 1 Com. and Sel. Plain
3575' 4/4 No. 1 Com. and Btr. Figured
4225' 4/4 No. 1 Com. and Btr. Plain
5 Cars 4/4 No. 2 Common Plain

SAP GUM

1 Car 8/4 No. 2 Common and Better
5 " 6/4 FAS
10 " 6/4 No. 1 Com. and Select
5 " 6'4 No. 2 Common
2 " 6/4 No. 3 Common
2 " 5/4 FAS
1 " 5/4 No. 1 Common and Select
2995' 5/4 No. 2 Common
1280' 5/4 No. 3 Common
2 Cars 4/4 13-17" Box Boards
2 " 4/4 9-12" Box Boards
4 " 4/4 FAS
10 " 4/4 No. 1 Common and Select
10 " 4/4 No. 2 Common

LOUISIANA CYPRESS

4290' 8/4 No. 1 Common
2500' 8/4 No. 3 Common
5 Cars 6/4 Select
3 " 6/4 Shop
3067' 6/4 No. 1 Common
8000' 6/4 No. 2 Common
1 Car 6/4 Dog Boards, small % 8/4"
5800' 5/4 No. 2 Common
1 Car 4/4 Select
8600' 4/4 Shop and Better.
1 Car 4/4 Shop
5 " 4/4 No. 1 Common
2 " 4/4 Pecky
1 " 4/4 No. 2 Boxing

OAK

2800' 4/4 FAS Qtd. Red
1540' 4/4 No. 1 Com. and Select Qtd.
1 Car 4/4 No. 2 Com. Qtd. White
5709' 4/4 No. 3 Common Qtd. White
1 Car 4/4 Log Run Qtd. Red
2 " 4/4 No. 1 Common Red
5 " 4/4 FAS Mixed
5 " 4/4 No. 1 Com. and Select Mixed
4 " 4/4 No. 2 Common Mixed
5 " 4/4 No. 3 Common Mixed
3500' 8/4 Common and FAS Mixed
2 Cars 4/4 Sound Wormy
3920' 5/4 No. 2 Common Red

ELM—GREEN

1 Car 10/4 Log Run
1 " 4/4 No. 3 C. & B., mostly No. 2 & 3
2000' 6/4 No. 1 Common and Better

LOUISIANA WHITE ASH

1 Car 5" No. 1 Common and Better
1 " 3" No. 1 Common and Better
1 " 8/4 Common and Better
1 " 10/4 and 12/4 Common and Better
3900' 6/4 and 8/4 Log Run
7450' 6/4 and 8/4 No. 3 Common
7 Car 8/4 No. 2 Common
2 " 6/4 No. 1 Common and Better
8110' 6/4 No. 2 Common
1 Car 4/4 No. 1 Common
2 " 5/4 No. 2 Common
2 " 4/4 No. 2 Common
7725' 4/4, 8/4 an d12/4 Log Run

PECAN—GREEN

1000' 8/4 Log Run
660' 4/4 Log Run
4000' 8/4 Flitches
1200' 5/4 No. 3 Common
4500' 8/4 No. 2 Common

ARKANSAS YELLOW PINE

1 Car 4/4 B. and Better.
5 " 4/4 x 4" to 12" No. 1, 2, 3 Com.

ABERDEEN LUMBER COMPANY, Pittsburgh, Pa.

Tennessee Aromatic Red Cedar

STRAIGHT CARS OR MIXED WITH HARDWOODS

Quartered Sap Gum

4 cars 4/4" Common & Better
3 " 6/4" Common & Better

Plain Sap Gum

3 cars 4/4" 1st and 2d, 13/17" w.
10 " 4/4" No. 2 Common
5 " 4/4" No. 3 Common
5 " 4/4" No. 2 & 3 Common
2 " 6/4" Common & Better
1 " 6/4" No. 1 Common
10 " 6/4" No. 2 Common
5 " 6/4" No. 2 & 3 Common
5 " 6/4" No. 3 Common
1 " 4/4" 9/12" Box Boards

Plain Red Gum

3 cars 4/4" 1st and 2nd
3 " 4/4" No. 1 Common
2 " 4/4" No. 2 Common
1 " 6/4" No. 2 Com. & Btr.
1 " 8/4" No. 2 Com. & Btr.
2 " 8/4 No. 3 Common

Quartered Red Gum

2 cars 4/4" 1st and 2nd.
2 " 4/4" No. 1 Common
2 " 6/4" Common & Better
2 " 6/4" No. 2 Com. & Btr.
1 " 8/4" 1st and 2nd
1 " 8/4" No. 1 Common

Red Gum Figured Wood

2 cars 4/4" Com. & Btr. Plain
2 " 4/4" 1st and 2nd—Qtd.
2 " 4/4" No. 1 Common Qtd.
1 " 8/4" Com. & Btr. Qtd.
1 " 10/12/4 Com. & Btr. Qtd.

Plain Red Oak

2 cars 4/4" Common & Better
3 " 4/4" No. 1 Common
1 " 6/4" No. 2 Com. & Btr.

Quartered Red Oak

1 car 4/4" No. 1 & 2 Common

Plain White Oak

2 cars 4/4" 1st & 2nd
5 " 4/4" No. 1 Com. & Btr.
5 " 4/4" No. 2 Common

Quartered White Oak

1 car 4/4" Common & Better
1 " 4/4" No. 1 & 2 Common
1 " 4/4" 2" to 5½" Clear Strips Snd.

Miscellaneous

5 cars 4/4" No. 3 Com. Mixed Oak
1 " 8/4 & 10/4 No. 3 Com. & Btr. Mixed Oak
1 " 4/4" L. R. Pl. Black Gum
1 " 4/4" L. R. Qtd. Black Gum
1 " 8/4" L. R. Elm
1 " 10/4" L. R. Elm
2 " 6/4" No. 3 Common Elm
1 " 8/4" No. 3 Common Elm
1 " 10/4" No. 3 Common Elm
1 " 4/4, 5/4 & 6/4 No. 3 Com. Ash
1 " Shop & Better Cypress

St. Francis Basin Hardwoods

GEO. C. BROWN & COMPANY

Mills — PROCTOR, Ark., COSGROVE, Ark., GRENADA, Miss.

Main Office — MEMPHIS, Tenn.

Canadian Representative: M. E. Cummings, 814 Richmond Ave., Buffalo, N. Y.

QUALITY

AMERICAN HEADQUARTERS

SERVICE

FOR

QUARTER-SAWN WHITE OAK

What are your requirements?

Memphis Band Mill Co.

Makers of High Grade Lumber

MEMPHIS, TENN.

Boland Lumber Company

Murray Bldg., Grand Rapids, Mich.

Manufacturers and Wholesalers Northern and Southern Hardwoods

Northern Woods:

Ash, Basswood, Beech,
Birch, Hard Maple,
Quartered Maple,
White Maple, Soft Maple,
Soft Elm, Rock Elm.

Southern Woods:

Cherry, Chestnut,
Cottonwood, Cypress, Gum,
Hickory, Magnolia,
Oak, Poplar, Sycamore,
Walnut, Willow.

Please send us your inquiries and it will be a pleasure to quote you and describe our stocks

Band Mill and Yards, Memphis Plant.

The stock listed below is band sawn lumber of our own high grade manufacture and is ready for prompt shipment. All stock listed is subject to prior sale. Wire your inquiries at our expense and we will take pleasure in quoting you.

ASH

7M	5/4	FAS
75M	10/4	Common and Better
200′		20 and 24/4 Com. and Btr.
3500′	4/4	No. 1 Common
5M	5/4	No. 1 Common
3M	6/4	No. 1 Common
50M	5/4	No. 2 Common
9M	5/4	No. 3 Common
15M	6/4	No. 3 Common
3M	8/4	No. 3 Common

COTTONWOOD

30M	4/4	No. 1 Common
15M	4/4	No. 1, 2 & 3 Common
13M	4/4	No. 2 and 3 Com.

CYPRESS

19M	4/4	Shop
13M	4/4	No. 1 Common
25M	6/4	No. 1 Common
4M	6/4	No. 2 Common
20M		4 x 6″ Pecky

ELM

5M	4/4	Log Run
50M	8/4	Log Run
150M	10/4	Log Run
45M	12/4	Log Run
11M	6/4	No. 3 Common
50M	8/4	No. 3 Common

QRT'D RED GUM

1M	4/4	FAS
4M	6/4	FAS
200M	8/4	Common and Better
15M	4/4	No. 1 Common
1M	5/4	No. 1 Common
12M	6/4	No. 1 Common
10M	10/4	No. 1 Common
12M	12/4	No. 1 Common

PLAIN RED GUM

15M	4/4	FAS
15M	4/4	No. 2 Common
2M	5/4	No. 2 Common

QRT'D RED GUM
(SAP NO DEFECT)

15M	10/4	Common and Better
50M	12/4	Common and Better
125M	4/4	No. 1 Common
50M	5/4	No. 1 Common
50M	6/4	No. 1 Common
38M	8/4	No. 1 Common
5M	8/4	No. 2 Common

PLAIN SAP GUM

6M	6/4	FAS
80M	4/4	No. 1 Common
70M	6/4	No. 1 Common
40M	4/4	No. 2 Common
70M	6/4	No. 2 Common
4M	8/4	No. 2 Common
5M	12/4	No. 2 Common
7M	6/4	No. 2 Common
90M	8/4	No. 2 Common
4M	10/4	No. 3 Common
1M	12/4	No. 3 Common

MAPLE

20M	10/4	Log Run

TUPELO GUM

150M	4/4	FAS
2M	5/4	FAS
15M	6/4	FAS
175M	4/4	No. 1 Common
2M	5/4	No. 1 Common
15M	6/4	No. 1 Common

QRT'D WHITE OAK

50M	4/4	FAS
65M	5/4	FAS.
150M	4/4	No. 1 Common
100M	5/4	No. 1 Common
100M	6/4	No. 1 Common
12M	4/4	No. 2 Common
14M	5/4	No. 2 Common
10M	6/4	No. 2 Common

QRT'D RED OAK

6M	4/4	FAS
50M	5/4	FAS
15M	6/4	FAS
100M	4/4	No. 1 Common
100M	5/4	No. 1 Common
25M	6/4	No. 1 Common

PLAIN RED OAK

30M	4/4	FAS
50M	5/4	FAS
15M	6/4	FAS
40M	12/4	Common and Better
40M	5/4	No. 1 Common
15M	6/4	No. 1 Common
15M	10/4	
6M	4/4	No. 2 Common
9M	5/4	No. 2 Common
60M	6/4	No. 2 and 3 Common
2M	8/4	No. 2 and 3 Common
90M	5/4	No. 3
70M	6/4	No. 3
7M	8/4	No. 3

PLAIN WHITE OAK

10M	4/4	FAS
7M	6/4	No. 1 Common
12M	8/4	No. 2 and 3 Common

SOUND WORMY OAK

65M	4/4	
30M	5/4	
80M	6/4	

POPLAR

10M	4/4	FAS
6M	4/4	Saps and Selects
15M	4/4	No. 1 Common
15M	4/4	No. 2 Common

DIRECT FROM PRODUCER TO CONSUMER.
WIRE YOUR ORDERS AT OUR EXPENSE.

GAYOSO LUMBER COMPANY

P.O. Box 1097 MEMPHIS, TENNESSEE U.S.A.

Reese Sheriff Lumber Co.

WILLIAMSPORT, PENNSYLVANIA

Manufacturers of

Northern and Southern Hardwoods White Pine, Spruce and Hemlock

With special attention to **Oak, Chestnut, Poplar, Cherry, Walnut, Gum and Basswood.**

OUR MOTTO

REASONABLE PRICES—that you can afford to pay.
EFFICIENT SERVICE — that you have a right to expect
FAIR TREATMENT — that you can depend on getting

We would appreciate an opportunity of furnishing a portion of your lumber requirements.

RED GUM

"AMERICA'S FINEST CABINET WOOD"

The really successful merchant, it matters not in what line, is he who takes the trouble to ascertain

WHAT THE PUBLIC WANTS

This is especially true in its application to the furniture manufacturer and his retailer. He *has to* study his public—or he soon will have no public.

That portion of his public which is influenced by the principles of good taste wants RED GUM furniture—Why? Because the color, grain and soft, velvety quality of this, the finest of America's cabinet woods, when handled by a master cabinet-maker, results in a thoroughly charming piece of furniture—the kind that people of nice discrimination like to have around—and want strongly enough to *ask for*. Then can YOU supply it?

Makers and dealers desiring to see samples of RED GUM, both rough and finished, are invited to correspond with us at once.

ADDRESS: RED GUM DIVISION

AMERICAN HARDWOOD MANUFACTURERS' ASSOCIATION

1314 Bank of Commerce Bldg., Memphis, Tennessee

I offer the following West Virginia stock for immediate shipment:

100,000 Ft. 4/4 Sound Wormy Chestnut.
100,000 " 5/4 " " "
75,000 " 6/4 " " "
70,000 " 8/4 " " "

No. 1 Common and Better Chestnut

100,000 Ft. 4/4
100,000 " 6/4
100,000 " 8/4 60% 14 and 16 feet long, 50 to 60% 10" and wider.
15,000 " 4/4 FAS Plain White Oak.
75,000 " 4/4 No. 1 Com. Pln. Wh. Oak.
100,000 " 6/4 No. 1 Com. Pln. Wh. Oak.

I have also a car of 4/4 No. 1 C & B Tennessee Red Cedar in transit.

I can make immediate shipment of Crating Lumber, Excelsior and Wood Wool.

Write, Wire or Phone for Prices.

PERCY E. HEENEY
202 Weber Chambers, KITCHENER, ONT.

H. W. Darby Hardwood Lumber Company

Manufacturers of

Hardwood Lumber

Red and Sap Gum a Specialty

Gum, Oak, Tupelo, Poplar
Ash, Elm, Cypress

Rooms 1531-33 Bank of Commerce & Trust Bldg
MEMPHIS, TENN.

Mills at :
Sidon, Miss Money, Miss.
Greenwood Miss.

"YES!" IS THE WORD FOR AMERICAN OAK TODAY!

to ALERT FURNITURE MAKERS: "A WHISPER IS ENOUGH"

From FILING CABINETS and other Office Furniture to "the bones of great ships"—OAK is **OAK.** (Supreme.)

From ***DELICATELY CARVED FURNITURE*** for the ***DILETTANTE TASTE*** to the sills and ribs of great structures whose nobility is in their sheer strength (and to the historic beams of Westminster Abbey) OAK is **OAK.** (Supreme.) ***GOOD*** **OAK FURNITURE is "COMING *IN.*"**

Without a rival, without an apology, without a substitute, OAK is indeed

"*The* WORLD'S PREMIER HARDWOOD"

(has been, is and ever shall be), AND EVERYBODY KNOWS IT.

Nature will never grow another wood as good as OAK for the uses for which it is historically appropriate.

No need to mention Economy—*you know it.*

AMERICAN OAK is PLENTIFUL, ECONOMICAL, INDISPENSABLE.

ADMIRE IT. TRUST IT. INSIST ON IT. ***SPECIFY*** *IT. USE IT.* WRITE us. TELL us. ASK us. *We will give you a Straight Personal Letter in prompt reply—WITH ALL THE FACTS.*

Address: Oak Division,
AMERICAN HARDWOOD MFRS. ASSOCIATION
1408 BANK OF COMMERCE BLDG., MEMPHIS, TENNESSEE

The Hotel Pennsylvania Used Walnut

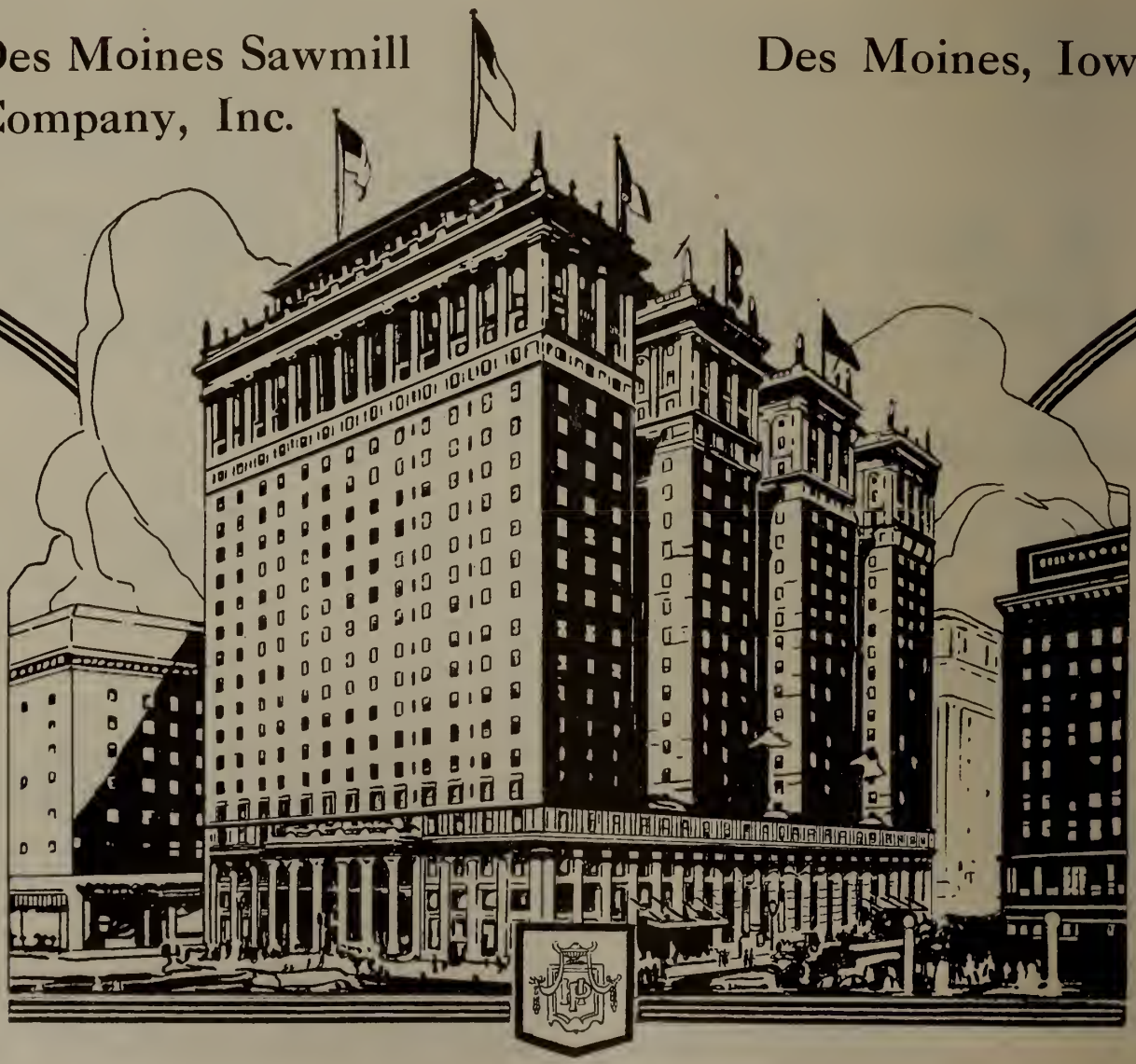
They selected American Walnut because they believed it to be the most practical and yet the most distinctive wood obtainable. Later they confirmed their own judgment by consulting the preferences of the public they serve. The management in a recent statement say:—

> "The fact that we have chosen Walnut as a furniture wood and for the interior trim for the largest hotel in the world, and a hotel which is designed for New York's most discriminating hotel patrons, speaks for itself. Could we say more?"

Use Walnut for all furniture and interior trim and especially insist upon the Iowa variety in both lumber and veneers.

Des Moines Sawmill Company, Inc.

Des Moines, Iowa



"Hartzell's Choice Walnut"

Are you a believer in the fact that

"Quality Counts"

Have you ever experienced that delightful sensation of accidently overhearing a person speaking in a complimentary way of the "Quality of your Product."

"We emphasize Quality"

If your finished product is made from Hartzell's American Walnut Lumber and Veneers you will have the last word in "Quality"

There is a difference and it will pay you to think it over.

Samples submitted and quotations made upon application.

Our Motto is
"Satisfied Customers."

Geo. W. Hartzell - Piqua, Ohio

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

WHITE ASH

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	22,000	3,800	60,000	95,000
1¼ in.	78,000	5,500	108,000	35,000
1½ in.	26,900	1,200	10,000	36,000
2 in.	85,300	500	19,000	58,000
2½ in.	50,500	.....	10,000	5,500
3 in.	59,500	.....	15,500	7,500
4 in.	500	.....	1,000	500

BUTTERNUT

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	12,300	35,800	23,600	.....
2 in.	8,400	17,000	10,000	.....
2½ in.	3,000	3,000	.....	.....

CHERRY

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	13,500	210,200	94,500	62,000
1¼ in.	11,500	9,600	18,500	41,900
1½ in.	22,000	20,700	78,300	36,000
2 in.	4,100	22,200	31,900	5,500
2½ in.	4,500	2,100	1,200	.....
3 in.	20,700	2,500	2,300	.....
4 in.	9,900	.....	.....	.....

CHESTNUT

	1 & 2	Clear Strips	No. 1 Com.	S.W.& No. 2 Com.
¾ in.	.....	.....	.....	.....
1 in.	15,900	1,500	49,300	180,500
1¼ in.	149,800	1,800	68,200	125,200
1½ in.	116,500	.....	86,000	29,000
2 in.	33,200	.....	54,300	91,200
2½ in.	4,000	.....	1,150	500
3 in.	2,800	.....	1,300	500
4 in.	1,500	.....	300	.....

PLAIN RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
⅜ in.	30,200	.....	.....	.....
¾ in.	43,000	.....	30,400	20,200
⅝ in.	2,500	.....	87,000	53,600
1 in.	193,200	.....	38,000	73,400
1¼ in.	94,700	2,400	4,000	1,200
1½ in.	157,900	4,300	39,200	40,000
2 in.	83,100	.....	92,800	20,000
2½ in.	61,100	.....	10,000	2,100
3 in.	28,800	.....	14,500	11,000
4 in.	16,600	.....	8,900	.....

PLAIN WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
⅜ in.	1,000	.....	.....	.....
½ in.	.....	.....	.....	.....
⅝ in.	25,150	.....	2,000	16,900
¾ in.	37,900	.....	95,000	6,000
1 in.	29,300	1,200	75,000	60,200
1¼ in.	73,300	.....	6,000	8,000
1½ in.	48,500	.....	21,000	9,000
2 in.	47,000	.....	80,000	50,000
2½ in.	166,800	.....	47,500	3,000
3 in.	75,800	.....	51,800	14,400
3½ in.	5,500	.....	3,000	1,500
4 in.	72,000	.....	18,500	2,000

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	300	.....	3,700	200
1 in.	20,200	2,300	500	.....
1¼ in.	2,000	.....	.....	.....
1½ in.	150	.....	500	.....
2 in.	1,000	.....	7,400	.....

QUARTERED WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
½ in.	5,500	.....	.....	.....
¾ in.	18,500	.....	44,600	9,000
⅝ in.	5,800	.....	6,500	.....
1 in.	41,400	9,000	22,400	17,000
1¼ in.	6,000	.....	400	1,300
1½ in.	9,500	.....	8,000	.....
2 in.	31,500	.....	25,100	4,700
2½ in.	1,000	.....	.....	.....

POPLAR

	1 & 2 18" & up	1 & 2 13" & up	Box Boards	Bright Saps
⅝ in.	.....	17,600	.....	.....
1 in.	.....	45,000	4,600	11,200
1¼ in.	2,800	9,300	.....	2,000
1½ in.	4,300	.....	.....	9,000
2 in.	.....	13,600	.....	1,000
2½ in.	.....	44,800	.....	11,000
3 in.	.....	27,900	.....	20,600
4 in.	.....	6,000	.....	7,300

POPLAR (Continued)

	Stained Saps	No. 1 Com.	No. 2 Com.	No. 3 Com.
⅝ in.	10,800	22,300	2,600	.....
1 in.	40,600	160,900	171,000	40,000
1¼ in.	7,600	23,600	8,000	.....
1½ in.	6,700	41,000	9,500	4,000
2 in.	4,000	118,500	27,500	.....
2½ in.	3,700	2,000	500	500
3 in.	1,500	21,000	47,000	10,000
4 in.	700	17,750	5,000	.....

Also Large Stock of BEECH, BIRCH and MAPLE

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

Brown & Hackney, Inc.

MEMPHIS, TENN.

Manufacturers of High Grade
Bandsawn Southern Hardwood

LUMBER

June 1920—Stock List

BROWN & HACKNEY, Inc., LITTLE ROCK, ARK.

QUARTERED WHITE OAK

5,000 ft.	5/8" 1s&2s
60,000 ft.	5/8" No. 1 Common
15,000 ft.	4/4" 1s&2s
100,000 ft.	4/4" No. 1 Common
30,000 ft.	4/4" No. 2 Common
1,500 ft.	6/4" 1s&2s
2,000 ft.	6/4" No. 1 Common
10,000 ft.	8/4" 1s&2s
50,000 ft.	8/4" No. 1 Common
10,000 ft.	6/4&8/4" No. 2 Common

PLAIN OAK

20,000 ft.	3/4" 1s&2s Plain Red Oak
40,000 ft.	3/4" No. 1 Common Plain Red Oak
20,000 ft.	3/4" No. 2 Common Plain Red Oak
40,000 ft.	3/4" Sound Wormy Oak
30,000 ft.	4/4" 1s&2s Plain Red Oak
100,000 ft.	4/4" No. 1 Common Plain Red Oak
30,000 ft.	4/4" No. 2 Common Plain Red Oak
30,000 ft.	4/4" No. 1 Common Plain White Oak
50,000 ft.	4/4" Sound Wormy Oak

PLAIN GUM

6,000 ft.	4/4" 13"-17" Sap Gum Box Boards
100,000 ft.	4/4" No. 1 Common Sap Gum
15,000 ft.	4/4" No. 2 Common Sap Gum
15,000 ft.	4/4" Common & Better Plain Black Gum

QUARTERED GUM

30,000 ft.	4/4" Common & Better Quartered Black Gum
5,000 ft.	8/4" Common & Better Quartered Black Gum
15,000 ft.	6/4" Common & Better Quartered Sap Gum

MISCELLANEOUS

15,000 ft.	6/4" No. 2 & No. 3 Common Elm, 70% No. 2 Com
30,000 ft.	8/4" No. 1 Common Cypress
30,000 ft.	4/4" Pecky Cypress
9,000 ft.	4/4" Long Run Maple
3,000 ft.	4/4" Log Run Elm
1,000 ft.	4/4" Log Run Lynn

BROWN & HACKNEY LUMBER COMPANY
TRANSYLVANIA, La.

QUARTERED WHITE OAK

20,000 ft.	4/4" 1s&2s
40,000 ft.	4/4" No. 1 Common
12,000 ft.	4/4" No. 2 Common

QUARTERED RED OAK

14,000 ft.	4/4" 1s&2s
20,000 ft.	4/4" No. 1 Common

PLAIN OAK

20,000 ft.	4/4" 1s&2s Plain Red Oak
10,000 ft.	4/4" 1s&2s Plain White Oak
40,000 ft.	4/4" No. 1 Common Plain White Oak
40,000 ft.	4/4" Sound Wormy Oak
30,000 ft.	4/4" No. 3 Common Oak

PLAIN GUM

8,000 ft.	3/4" Log Run Sap Gum
50,000 ft.	4/4" 1s&2s Sap Gum
75,000 ft.	4/4" No. 1 Common Sap Gum

QUARTERED GUM

20,000 ft.	6/4" 1s&2s Quartered Red Gum
30,000 ft.	8/4" No. 1 Common & Better Quartered Red
100,000 ft.	6/4" No. 1 Common Quartered Sap
50,000 ft.	8/4" No. 1 Common Quartered Sap

CYPRESS

12,000 ft.	4/4" 1s&2s	15,000 ft.	8/4" 1s&2s
15,000 ft.	4/4" Selects	15,000 ft.	8/4" Selects
20,000 ft.	4/4" Shop	15,000 ft.	8/4" Shop
50,000 ft.	4/4" No. 1 Common		

ELM

30,000 ft. 6/4" No. 2 Common 15,000 ft. 6/4" No. 3 Common

PECAN

30,000 ft. 8/4" Log Run

WRITE US FOR PRICES

HAVE you considered contracting for 1920 Hardwood requirements?

Edward Clark & Sons, Limited
807-9 Bank of Hamilton Bldg.
Toronto, - Ont.

If Dryness Counts--You Can't Beat This

Bone Dry Plain Oak

402,500'	2	"	No. 1	Com.	White	and Red.
239,600'	2	"	No. 2	"	"	" "
106,800'	2½	"	No. 1	"	"	" "
12,400'	2½	"	No. 2	"	"	" "
83,900'	3	"	No. 1	"	"	" "
15,600'	4	"	No. 2	"	"	" "

We also have a good stock of dry Oak in other thicknesses of both Plain and Quartered. Prices on request.

James E. Stark & Co., Inc.

MEMPHIS, TENN.

Canadian Hardwoods

Good Stocks, Right Goods,
Prompt Shipment

C. A. SPENCER, Limited

LUMBER MERCHANTS

Offices—500 McGill Building
MONTREAL - - Quebec

WARREN ROSS LUMBER CO.

JAMESTOWN - N. Y.

Please let us quote you on the following:—

455'	3/4" 1s and 2s Tanguile Mahogany.	2,000'	6/4" No. 1 C. Cherry
		4,000'	8/4" 1s and 2s Cherry
156,000'	4/4" 1s and 2s Tanguile Mahogany	2,000'	8/4" No. 1 C. Cherry
		7,000'	4/4" No. 1 C. Walnut
468'	5/4" 1s and 2s Tanguile Mahogany	2,000'	5/4" No. 1 C. Walnut
		2,000'	6/4" No. 1 C. Walnut
450'	10/4" 1s and 2s Tanguile Mahogany	12,000'	8/4" No. 1 C. Walnut
		7,000'	8/4" No. 2 C. Walnut
360'	12/4" 1s and 2s Tanguile Mahogany	12,000'	4/4" 1s and 2s Pl. Oak
		4,000'	5/4" 1s and 2s Pl. Oak
6,900'	4/4" No. 1 Com. Mhog.	4,000'	6/4" 1s and 2s Pl. Oak
1,300'	5/4" No. 1 Com. Mahog.	20,000'	8/4" 1s and 2s Pl. Oak
20,000'	4/4" 1s and 2s Cherry	4,000'	5/4" No. 1 C. Pl. Oak
12,000'	4/4" No. 1 C. Cherry	4,000'	6/4" No. 1 C. Pl. Oak
4,000'	6/4" 1s and 2s Cherry	10,000'	8/4" No. 1 C. Pl. Oak

J. H. Bonner & Sons

Memphis, Tenn.

Mills:
Jonquil and Ruffwood, Ark.

Manufacturers

Band Sawn Hardwood Lumber

Write or wire for prices on

Gum, Oak, Elm, Etc.

Hardwood Lumber

Wire collect, or write for delivered prices on any or all of the following DRY STOCK

100	M'	4/4 No. 2 Com. & Btr. Soft Maple.
50	M'	10 & 12/4 No. 1 Com. & Btr. Soft Maple.
12	M'	8/4 No. 1 Common Ash.
30	M'	6/4 No. 2 Com. & Btr. Beech.
75	M'	4/4 Sound Wormy Chestnut.
85	M'	5 & 6/4 Sound Wormy Chestnut.
30	M'	8/4 Sound Wormy Chestnut.
50	M'	8/4 No. 2 Com. & Btr. Sap Gum.
35	M'	6/4 No. 1 Common Sap Gum.
50	M'	5, 6 & 8/4 No. 1 C. & B. Pl. Red Gum.
17	M'	8/4 No. 1 Com. & Btr. Qtd. Red Gum.
15	M'	12/4 No. 1 Com. & Btr. Hackberry.
75	M'	12/4 No. 1 Com. & Btr. Sycamore.
90	M'	4/4 No. 2 Com. & Btr. Sycamore.
15	M'	4/4 No. 1 C. & B. Pl. & Qtd. Tupelo.
28	M'	12/4 Bone dry No. 1 C. & B. Pl. Oak.

The Woodruff-Powell Lumber Co.

South Bend, Indiana

J. R. EATON & SONS, LIMITED

MANUFACTURERS OF HIGH GRADE WOOD PRODUCTS

Wood Turnings, Hardwood Dowels, Turned Table Legs, Kitchen Tables, Kitchen Cabinets, Oak Extension Tables, Oak Library Tables, "Empire Brand" Hardwood Flooring in Maple, Birch, and Plain or Quarter Cut Oak, Solid Pine and Veneered Hardwood Doors.

A Large Factory equipped with up-to-date machinery is at your service to furnish "WHAT YOU WANT"— WHEN YOU WANT IT."

YOUR ENQUIRIES SOLICITED

Orillia Ontario Canada

E. SONDHEIMER CO.

MEMPHIS, TENN., U.S.A.

Manufacturers and Exporters of

AMERICAN HARDWOODS

Specializing in RED GUM and SALIX

Dry Stock for Immediate Shipment

3	Cars	5/8" Com. & Btr. Sap Gum.	3	"	10/4	No. Com. & Btr. Qtd. Red Gum	1	" 5/4 FAS Qtd. Red Oak.
3	"	3/4 No. 1 Com. Sap Gum.	3	"	4/4	FAS Qtd. Figured Red Gum.	3	" 4/4 No. 1 Com. Qtd. Red Oak.
10	"	4/4 FAS Sap Gum.	5	"	4/4	to 8/4 No. 1 Com. Figured Red Gum.	1	" 5/4 No. 1 Com. Qtd. Red Oak.
20	"	4/4 No. 1 Com. Sap Gum.					2	" 5/4 No. 2 Com. Qtd. Red Oak.
20	"	4/4 No. 2 Com. Sap Gum.	2	"	4/4	FAS Plain White Oak.	1	" 4/4 No. 1 Common Magnolia.
5	"	5/4 FAS Sap Gum.	5	"	4/4	No. 1 Com. Plain White Oak.	5	" 4/4 No. 2 Com. Cottonwood.
2	"	6/4 No. Com. & Btr. Sap Gum.	5	"	4/4	FAS Salix.	10	" 5/4 No. 1 Com. Cottonwood.
5	"	4/4 No. 1 Com. & Btr. Qtd. Sap Gum	10	"	4/4	No. 2 Com. Salix.	10	" 6/4 No. 1 Com. Cottonwood.
2	"	5/4 No. 1 Com. & Btr. Qtd. Sap Gum	15	"	5/4	Log Run Salix.	20	" 4/4 to 6/4 No. 2 Com. Cottonwood.
3	"	12/4 No. 1 Com. & Btr. Qtd. Sap Gum	3	"	6/4	No. 1 Com. Salix.	5	" 4/4 No. 1 Com. Ash.
1	"	3/4 FAS Plain Red Gum.	5	"	8/4	No. 1 Com. & Btr. Salix.	2	" 5/4 No. 1 Com. Ash.
2	"	3/4 No. 1 Com. & Btr. Pl. Red Gum	3	"	4/4	FAS Plain Red Oak.	1	" 6/4 No. 1 Com. Ash.
5	"	4/4 FAS Plain Red Gum.	1	"	4/4	FAS Qtd. White Oak.	1	" 8/4 No. 1 Com. Ash.
5	"	4/4 No. 1 Com. Plain Red Gum.	2	"	4/4	No. 1 Com. Qtd. White Oak.	3	" 4/4 to 6/4 No. 2 Com. Ash.
5	"	4/4 No. 1 Com. & Btr. Qtd. Red Gum	2	"	4/4	No. 2 Com. Qtd. White Oak.		
10	"	8/4 No. 1 Com. & Btr. Qtd. Red Gum	5	"	4/4	FAS Qtd. Red Oak.		

Also Pecan, Hickory, Sycamore, Black Gum, Poplar, Tupelo, Circassian Figured Red Gum

Distributing Yard and Sales Office
McLean & Chelsea Ave., Memphis, Tenn. U.S.A.
Cable Address : "Sonderco"

We have Four Band Mills :
Sondheimer, La., Tallulah, La., Ferriday, La., Baton Rouge, La.

Walnut Lumber with Mahogany

Straight or Mixed Cars

WALNUT VENEERS

Plain---Striped---Figured---Circassian Effect

Let Us Know Your Requirements

The Kosse, Shoe & Schleyer Company

Eastern Branch
Baltimore, Md.

325 Powers Theater Bldg.,
Grand Rapids, Mich.

Main Office and Band Mill
Cincinnati, O.

WHEN IN NEED OF HARDWOOD LUMBER——WRITE TO

Wheeler-Timlin Lumber Co.

WAUSAU, WISCONSIN

Our new cut is now dry and we are particularly anxious to move a few cars of the following:—

1 " No. 2 Common and Better Basswood.
1½" No. 2 Common and Better Basswood.
1¼" No. 2 Common and Better Basswood.
2 " No. 2 Common and Better Basswood.
2½" No. 1 Common and Better Basswood.
1 " No. 1 Common and Better Birch.
1½" No. 1 Common and Better Birch.
2½" No. 1 Common and Better Birch.
1 " No. 2 Com. and Btr. Wisconsin Plain Red Oak.
1½" No. 1 Common Hard Maple.
2½" No. 1 Common and Better Hard Maple.
3 " No. 1 Common and Better Hard Maple.
1½" No. 2 Common and Better Soft Elm.

Good Grades, Prompt Service, give us an opportunity to serve you.

Bone Dry

Right now dry lumber is scarce. Here's a list of dry stock ready for prompt shipment. Remember there's 30 years' experience back of every board.

1 car 5/8 FAS Plain Red Oak.
1 car 5/8 No. 1 Com. Plain Red Oak.
10 cars 4/4 No. 2 Com. and Btr. Plain Red Oak.
1 car 5/4 FAS Plain Red Oak.
1 car 5/4 No. 1 Com. Plain Red Oak.
2 cars 6/4 FAS Plain Red Oak.
2 cars 6/4 No. 1 Com. Plain Red Oak.
1 car 8/4 FAS Plain Red Oak.
1 car 8/4 No. 1 Com. Plain Red Oak.
3 cars 10/4 FAS Plain Red Oak.
1 car 10/4 No. 1 Com. Plain Red Oak.

Write for our Complete List with Prices

North Vernon Lumber Co.

NORTH VERNON, IND.
LOUISVILLE, KY. DYERSBURG, TENN.
Every Board Branded "NVLCO." Quality Guaranteed

The Hyde Lumber Co.

Band Mills: LAKE PROVIDENCE LA.
Southern Office: MEMPHIS, TENN.
Bank of Commerce Bldg.
Northern Office: SOUTH BEND, IND.

MANUFACTURERS

Plain Red Gum
Quartered Red Gum
Plain Sap Gum
Quartered Sap Gum
Cottonwood, Cypress
Tupelo, Ash, Elm, Oak

CHARLES O. MAUS
Canadian Representative

Overseas Reed and Cane Co.

Manufacturers Rattan Products

including

BASKET RATTAN, BROOM RATTAN, BINDING CANE, CHAIR CANE AND WEBBING

Ionia - Michigan

British Columbia Forest Products

British Columbia Lumber Commissioner

No. 1 Adelaide St. E., Toronto
(Street Floor)

Personal calls or correspondence cordially invited from Dealers and others interested in British Columbia Woods

Telephone Main 6872. Note: We do not quote prices.

An American Walnut Tree Selected For Our

LUMBER

PURCHASING AGENTS:—

Owing to embargoes and shipping delays, it is practically necessary for purchase orders to be placed thirty days earlier than in former years—we think this is especially advisable in Walnut today.

The years of experience of our buyers and the time and care used by them in selecting the raw material, for our output, terminates in the high character and quality of our lumber.

ALL GRADES AND THICKNESSES—American Walnut Exclusively

Pickrel Walnut Company

St. Louis, Missouri

Aromatic Tennessee Red Cedar

CAR LOAD LOTS
OR LESS

Earthman Lumber Co.
Murfreesboro, Tenn.

American Hardwood Lumber Co.

St. Louis, Mo.

Large stock of—

Dry Ash, Quartered Oak Plain Oak and Gum

Shipments from — NASHVILLE, Tenn., NEW ORLEANS, La., and BENTON, Ark.

A name that should be on your inquiry list for Hardwood Lumber

American Column & Lumber Co.
Brunson Building, COLUMBUS, OHIO

—Manufacturers of—

West Virginia

Soft Yellow Poplar
Plain White Oak
Plain Red Oak
Quartered White Oak
White Oak Timbers and Plank

Chestnut	Butternut
Basswood	Ash
Maple	Cherry
Hickory	Walnut
Beech	Sycamore
Buckeye	Black Gum
Birch	Hemlock

Oak and Hardwood Dimension Stock

Steele & Hibbard Lumber Co.

ST. LOUIS, MO.

52 Years in Business

We carry a large stock of dry

Hardwood Lumber

25 Different Kinds
Quick Shipment
Write or wire for Prices

We specialize Oak cut from Mild Texture Missouri Timber with thin sap both plain and quarter sawed.

We ship also from Sawmills direct ; Red as well as Sap Gum and Poplar, both plain and quarter sawed Sound Wormy Chestnut, Cypress and Ash.

F. Huntington Smith
Canadian Representative.

QUALITY—SERVICE

AT RIGHT PRICES

MANUFACTURERS OF

Cabinet parts	Enamel bath seats
Turned office stool tops	Special cabinet work of all descriptions
Turned piano stool tops	
Turned restaurant stool tops	Sanitary seats
Turned bath room stool tops	Toilet seats

Algoma Wood Products Co.
ALGOMA, WIS.

Subscribe for the
Canadian Woodworker
and
Furniture Manufacturer
Only $1.00 per year

30 Million Feet Hardwoods Yearly

Manufactured by

Darnell-Love Lumber Co.

Leland, Mississippi

We own and operate two large band mills with sufficient timber to supply these mills, at present capacity, fifteen to twenty years

Cutting

Oak, Ash, Gum, Elm Cypress, Pecan

and various other Native Woods

Our Specialties are—

3/8", 1/2", 5/8" and 3/4" in Gum and Oak

and

8/4" Quartered Red Gum

8/4" Quartered Red Gum Sap No Defect

WE SOLICIT YOUR INQUIRIES AND ORDERS

GUM

Churchill-Milton Lumber Company

GUM

General and Sales Office: LOUISVILLE, KY. Mill: GREENWOOD, MISS.

Let us have your inquiries for—

Ash
Plain Oak
Quartered White Oak
Quartered Red Oak
Elm
Tupelo
Cottonwood

Plain Red ..... G
Quartered Red ..... U
Sap ..... M
Qtd. Red, Sap / No Defect

GUM

Our Specialty is DELTA GUM

GUM

F. T .DOOLEY, President. T. E. JONES, Secy.-Treas.

F. T. Dooley Lumber Co.

Inc.

MANUFACTURERS and WHOLESALERS of

SOUTHERN HARDWOODS

Plain and Quartered Oak
Cypress, Gum, Ash
Soft Maple and Elm

Send us your inquiries

Memphis ∴ ∴ Tennessee

Hardwoods

We can furnish you immediately Factory Stock including all grades and thicknesses of

Walnut, Chestnut
Mahogany, Teak, Oak
Ash, Cypress

ALSO

VENEERS

Oak, Maple, Walnut and other Fancy Woods

The McLennan Lumber Co.

Limited

MONTREAL

Felger Lumber and Timber Company

MANUFACTURERS AND WHOLESALERS

NORTHERN AND SOUTHERN HARDWOODS

Main Office:
GRAND RAPIDS
373 Mich. Trust Bldg.

Southern Office:
MEMPHIS, TENN.

Yellow Poplar Lumber Co.

Manufacturers of Band Sawed

Poplar Plain Oak
Quartered Oak
Chestnut Basswood

Capacity 50,000,000 per annum

SPECIALTY: Monogram Brand Oak Flooring

CANADIAN ENQUIRIES SOLICITED

COAL GROVE, OHIO, U. S. A.

We Offer For Prompt Shipment

SAP GUM
2 Cars..... 5/8 No. 1 Common and Select
1 Car ..... FAS
3 Cars..... 4/4 No. 1 Common and Select
5 Cars..... 4/4 No. 2 Common
2 Cars..... 6/4 No. 2 Common

QUARTERED RED GUM
(Sap No Defect)
5 Cars..... 4/4 No. 1 Common and Select

PLAIN RED GUM
2 Cars..... 4/4 FAS
3 Cars..... 4/4 No. 1 Common and Select
5 Cars..... 4/4 No. 2 Common
4 Cars..... 6/4 No. 1 Common and Select
1 Car ..... 8/4 No. 1 Common and Better

QUARTERED RED GUM
1 Car ..... 6/4 FAS
1 Car ..... 6/4 No. 1 Common and Select
1 Car ..... 8/4 No. 1 Common and Better

COTTONWOOD
5 Cars..... 4/4 No. 1 Common and Selects
3 Cars..... 4/4 No. 2 Common
1 Car ..... 4/4 13-17 Box Boards
1 Car ..... 4/4 9-12 Box Boards

PLAIN RED OAK
4 Cars..... 4/4 FAS
4 Cars..... 4/4 No. 1 Common and Select
6 Cars..... 4/4 No. 2 Common
10 Cars..... 4/4 No. 3 Common

QUARTERED RED OAK
4 Cars..... 4/4 FAS
3 Cars..... 4/4 No. 1 Common and Better
3 Cars..... 4/4 No. 1 Common and Select

ELM
2 Cars..... 4/4 No. 2 Common and Better
1 Car ..... 6/4 No. 2 Common and Better
1 Car ..... 12/4 No. 2 Common and Better

PECAN
2 Cars..... 6/4 No. 2 Common and Better
4 Cars..... 8/4 No. 2 Common and Better
4 Cars.....10/4 No. 2 Common and Better

Send us your inquiries, as this is only a partial list of the stock we have at our mill

"CLAYTON QUALITY" TENSA DETA SOUTHERN HARDWOODS

UTLEY-HOLLOWAY COMPANY

General Office: 1226 Conway Bldg., CHICAGO, ILL. Band Mill: Clayton, La.

ASTORIA MAHOGANY

LUMBER & VENEERS

"Astmahco" No. 3, returned from Central America, discharging Mahogany logs at the cribs adjacent to our mills, Long Island City.

Two Sister Ships Join the Astoria Fleet

Recognizing the frequent inability to secure sufficient bottoms for the transportation of our required volume of Mahogany logs we have recently added two modern ships to the Astoria Fleet.

Backing up the promise to serve with the ability to fulfill the promise has, over a period of nearly fifty years, made us the Country's largest organization devoted to the production, manufacture and distribution of Mahogany Lumber and Veneers.

Astoria Mahogany Company, Inc.

347 Madison Ave., New York

Successors to

Huddleston-Marsh Mahogany Co.
Astoria Veneer Mills and Dock Co.
F. W. Kirch, Inc.

Mills and Yards, Long Island City, New York

BRANCHES:

44 North Market Avenue
Grand Rapids, Mich.

2256 Lumber Street
Chicago, Ill.

OAK

Plain and Quartered
Uniform Color—Soft Texture

Poplar, Ash

and other

Hardwoods

We have 35,000,000 feet dry stock—all of our own manufacture, from our own timber grown in Eastern Kentucky

Prompt Shipments

The Mowbray & Robinson Co.

(INCORPORATED)

Manufacturers

Office: CINCINNATI, OHIO

MILLS

Quicksand, Ky.; Viper, Ky.; West Irvine, Ky.

Canadian Representative:
M. E. CUMMINGS, 814 Richmond Ave., Buffalo, N. Y.

SPECIAL—DRY STOCK

Ready for Immediate Shipment in Straight or Mixed Cars

PLAIN WHITE OAK

		Feet
4/4	FAS	4,992
5/4	"	1,875
6/4	"	4,935
8/4	"	200
4/4	No. 1 Com.	99,523
5/4	"	8,458
6/4	"	8,190
8/4	"	5,540
4/4	No. 2 Com.	26,756
5/4	"	975
4/4	No. 3 Com.	4,278

PLAIN RED OAK

4/4	FAS	27,643
5/4	"	437
6/4	"	855
4/4	No. 1 Com.	56,005
5/4	"	9,396
6/4	"	4,447
8/4	"	1,810
4/4	No. 2 Com.	31,812
5/4	"	2,817
4/4	No. 3 Com.	15,041

QRTD. WHITE OAK

4/4	FAS	22,651
5/4	"	243
6/4	"	1,852
8/4	to 16/4 FAS	2,175
4/4	No. 1 Com.	28,720
5/4	"	14,561
6/4	"	10,237
8/4	"	1,300
8/4	to 16/4 No. 1 Com.	3,795
4/4	No. 2 Com.	5,719

QRTD. RED OAK

4/4	FAS	6,297
4/4	No. 1 Com.	17,442
5/4	"	2,112
6/4	"	1,116
8/4	"	2,240
4/4	No. 2 Com.	6,108

POPLAR

4/4	No. 1 Com.	13,395
5/4	"	1,787
6/4	"	4,297
8/4	"	2,480
4/4	No. 2 Com.	1,715
6/4	"	2,167
8/4	"	1,440

PLAIN RED GUM

		Feet
4/4	FAS	4,912
5/4	"	2,193
6/4	"	2,610
8/4	"	902
4/4	No. 1 Com.	13,482
5/4	"	12,319
6/4	"	6,045
8/4	"	5,704

PLAIN SAP GUM

4/4	FAS	26,720
5/4	"	23,990
8/4	"	4,320
4/4	No. 1 Com.	21,984
5/4	"	437
6/4	"	1,170
8/4	"	4,420
4/4	No. 2 Com.	5,453
5/4	"	2,193
6/4	"	3,360

QRTD. RED GUM

4/4	No. 1 Com.	14,686
8/4	"	1,200
8/4	No. 1 C. & B.	10,548
4/4	No. 2 Com.	41

QRTD. SAP GUM

8/4	FAS	21,120
8/4	No. 1 Com.	7,240

SOUTHERN ELM

4/4	Log Run	11,317
5/4	" "	1,334
6/4	" "	34,172
8/4	" "	10,884
10/4	" "	23,692
6/4	No. 3 Com.	1,766
10/4	"	812

SOUTH'N SOFT MAPLE

4/4	Log Run	31,642
5/4	" "	2,356
6/4	" "	5,760
8/4	" "	26,212
10/4	" "	43,724
8/4	No. 3 Com.	40
12/4	"	4,500

WALNUT

4/4	Log Run	2,900
8/4	" "	990

WHITE ASH

		Feet
4/4	FAS	22,709
5/4	"	27,106
8/4	"	10,424
10/4	"	12,097
12/4	"	4,680
4/4	No. 1 Com.	37,980
5/4	"	17,587
6/4	"	4,888
8/4	"	11,540
10/4	"	10,487
12/4	"	495
4/4	No. 2 Com.	8,318
5/4	"	1,112
6/4	"	15,253
8/4	"	1,616
10/4	"	4,605
12/4	"	21,360
4/4	No. 3 Com.	4,391
5/4	"	75
6/4	"	450
8/4	"	3,630
10/4	"	490
12/4	"	9,780

CYPRESS

4/4	FAS	10,542
5/4	"	450
6/4	"	12,165
8/4	"	1,440
4/4	Select	30,921
5/4	"	5,827
6/4	"	52,819
8/4	"	8,020
4/4	Shop	37,343
5/4	"	1,125
6/4	"	8,383
8/4	"	9,214
4/4	No. 1 Com.	72,737
5/4	"	3,818
6/4	"	4,241
8/4	"	1,680
4/4	No. 2 Com.	36,729
5/4	"	3,500
6/4	"	14,040
8/4	"	600

COTTONWOOD

4/4	FAS 6-10"	14,636
4/4	" 11 and up	6,327
5/4	FAS	4,312
4/4	BB 13-17"	1,440
4/4	BB 9-12"	2,505
4/4	No. 1 Com.	38,249
5/4	"	4,400
6/4	"	144
8/4	"	896

WRITE OR WIRE FOR ATTRACTIVE DELIVERED PRICES

Baker-Matthews Lumber Co.

Memphis, Tennessee

Indiana

Quartered Red and White

OAK

1,000,000 feet of dry stock carried at all times

ALSO PLAIN OAK AND ASH

We manufacture all stock carriea

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
GEO. H. FOOTE, Vice-Pres. & Treas.
JOSEPH WALTMAN, Secretary

Mills at EVANSVILLE, Indiana

SPECIALS!

For Immediate Shipment

QUARTERED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.

PLAIN SAWED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.
5 " 1¼" Common.

QUARTER SAWED OAK

10 cars 1" No. 1 Com. and Btr., White.
10 " 1" No. 1 Com. and Btr., Red.

Thomas & Proetz Lumber Company

No. 3400 Hall St. St. Louis, Mo.

GUM

Sap Red Tupelo Black

Prompt Shipments any Time

Cypress Cottonwood Oak
Ash Elm Beech Sycamore
Crating Fir Spruce
Yellow Pine

INQUIRIES SOLICITED

Manufacturers & Wholesalers

Cornelius Lumber Co.

Home Office—Arcade Building, St. Louis, Mo.
Northern Office—Lumber Exchange, Chicago, Ill.
Northwestern Office—Bremer Arcade, St. Paul.
Southern Offices—Tupelo, Miss., Memphis, Tenn.
Saw Mills—Drew, Miss., Osmeek, La., Lake City, Fla.

ATTENTION:

"Auto Body and Furn. Manfgs."

We are one of the few firms in the country handling

White Ash Exclusively

We sort it to meet all requirements. **Tough** texture and **Medium** texture. Can furnish **Special Widths** and **Lengths** one to four inches thick. Write or wire when needing WHITE ASH.

THOMPSON, KATZ LUMBER CO.

Memphis, Tenn.

Cable Address "TomKats"

Tustin Hardwood Lumber Co.

MEMPHIS **TENN.**

KILN DRIED AND AIR DRIED SOUTHERN HARDWOODS

We operate five mills and Memphis yard, specializing in KILN DRIED Sap Gum, Elm, Maple, Ash. *Send us your inquiries.*

Will quote low prices on following to points not embargoed:

4 cars 4/4 No. 1 C. & B. Qtd. White Oak.
1 " 4/4 Fas Qtd. Red Oak.
1 " 4/4 No. 1 Com. Qtd. Red Oak.
2 " 4/4 Fas Plain Red Oak.
5 cars 4/4 No. 1 Com. Plain Red Oak.
3 " 8/4 No. 1 C. & B. Qtd. Red Gum.
4 " 8/4 No. 1 C. & B. Qtd. Sap Gum.

Johnson Brothers Hardwood Co.

(OUR NAME IS EASY TO REMEMBER)

Sales Agents:
Arko Lumber Co.
Arkansas City, Ark.

Bank of Commerce & Trust Building
Memphis, Tenn., U.S.A.

Double Band Mill Capacity
100,000 ft. per day

Manufacturers and Wholesalers

Southern Hardwoods

3,000,000 ft. dry stock on hand and 5,000,000 in process of drying—all thicknesses, ½" to 4", plain and quartered.

White and Red Oak—Red Gum—Sap Gum—Tupelo—Black Gum—Cottonwood—Salix—Willow—Pecan—Sycamore—Elm—Soft Maple—Magnolia.

We offer for quick Sale the following Bone Dry Stock:

3 cars 4/4 Log Run Hackberry.
3 " 4/4 Log Run Magnolia.
2 " 4/4 Log Run Sycamore.
5 " 4/4 Log Run Willow.
5 cars 4/4 FAS Cottonwood.
1 " 6/4 FAS Cottonwood.
5 " 8/4 Log Run Elm.
2 " 8/4 Log Run Hickory.

Wire us at our expense for quotations

Frank Purcell
Walnut Lumber Co.

Plenty of logs like the portion of our stock shown above have made possible the million and a half foot stock of well manufactured American Walnut Lumber which we now have to offer.

Prompt shipment
All grades and thicknesses
Guaranteed Inspection

12th AND BELT LINE
Kansas City - Kansas

Dacus-Richards Hardwood Co.

A. P. DACUS - H. J. RICHARDS

MANUFACTURERS
Southern Hardwood
Specializing in
RED GUM
SAP GUM
PLAIN AND QUARTERED
OAK

Randolph Building,
Memphis, Tennessee.
Mills at EVANSVILLE, Miss., and PRITCHARD, Miss.

Perkins Brothers
Kelso, Ark.

Manufacturers of
Southern Hardwoods

Quartered and Plain White Oak, Plain Red Oak, Gum Elm, Maple, Ash and Cypress

We are also prepared to cut dimension stock to order in Ash, Oak, Gum, Hickory and Elm.

Let us know your requirements.

Band Sawn Poplar, Plain and Quartered White and Red Oak— Quartered Red Gum, Sap No Defect

Below we offer, subject to prior sale and immediate acceptance, the following stock:—

POPLAR

4/4" FAS Yellow, 6" to 17"	46,000 ft.
4/4" Selects	10,000 "
4/4" No. 1 Common	120,000 "
4/4" No. 2 Common, 70% 2A	86,000 "

QTRD. WHITE OAK

4/4" 2" to 3½" Clear Strips	11,000 "
4/4" 4" to 5½" Clear Strips	15,000 "
4/4" FAS, 15% 10" and wider	45,000 "
5/4" FAS	6,000 "
4/4" No. 1 & 2 Com., 70% No. 1 C.	120,000 "
5/4" No. 1 Common	8,000 "
4/4" 6" & Wdr. Sd. Wormy Qtrd. Red & White Oak	10,000 "

PLAIN WHITE OAK

4/4" No. 1 & 2 Com. 70% No. 1 C.	25,000 "
4/4" No. 3 Common	25,000 "

QRTD. RED OAK

4/4" FAS	10,000 "
4/4" No. 1 & 2 Com. 80% No. 1 C.	82,000 "

PLAIN RED OAK

4/4" FAS	51,000 ft.
5/4" FAS	19,000 "
4/4" No. 1 Common	15,000 "
4/4" No. 2 Common	25,000 "

QTRD. RED GUM—Sap no Defect

6/4" No. 1 Com. and Btr.	34,000 ft.
8/4" No. 1 Com. and Btr.	32,000 "

QTRD. RED GUM

4/4" No. 1 Common and Better	22,000 ft.

PLAIN RED GUM

4/4" FAS	2,700 ft.

PLAIN SAP GUM

4/4" No. 2 Common and Better	28,000 ft.

QTRD. BLACK GUM

4/4" No. 2 Common and Better	18,000 ft.

We own our stumpage and operate our own band mill in Bude, Miss., manufacturing ten million feet annually, on which we specialize in Quartered White Oak, manufactured from genuine forked leaf White Oak,and Yellow Poplar of fine soft texture grown in the hills of Southern Mississippi.

Our grades are dependable and the manufacture of our stock is unsurpassed. We respectfully solicit your enquiries, which will receive our prompt and courteous attention.

L. D. Murrelle Lumber Company

General Sales Office: 1524 Exchange Bldg., Memphis, Tennessee

Band Mill: Bude, Miss.

Stimson Veneer and Lumber Co.

(Inc.)

Office and Mill: McLean Ave. and Union Belt R.R.

Memphis - Tenn.

We sell only the product of our own mills and make band sawn lumber in all Southern Hardwoods.

We specialize in Quartered White Oak, Red Oak, and Red Gum.

With allied companies we make fifty million feet annually.

J. V. Stimson Hardwood Co.

Manufacturers and Exporters

Band Mills: Memphis, Tenn., Helena, Ark.

Memphis - Tenn.

STOCK LIST

QUARTERED WHITE OAK
- 3 cars 4/4" 1s and 2s.
- 5 cars 4/4" No. 1 Common.
- 2 cars 4/4" No. 2 Common .

QUARTERED RED OAK
- 5 cars 4/4" 1s and 2s.
- 10 cars 4/4" No. 1 Common.
- 4 cars 4/4" No. 2 Common.
- 2 cars 6/4" No. 1 Common and Better.

QUARTERED RED GUM
- 10 cars 4/4" 1s and 2s.
- 3 cars 4/4" 1s and 2s Fig.
- 2 cars 5/4" 1s and 2s.
- 2 cars 6/4" 1s and 2s.
- 15 cars 4/4" No. 1 Common.
- 2 cars 5/4" No. 1 Common.
- 2 cars 6/4" No. 1 Common.

QUARTERED RED GUM, Sap no Defect
- 5 cars 6/4" No. 1 Common and Better.
- 10 cars 8/4" No. 1 Common and Better.

ASH
- 4 cars 10/4" No. 1 Common and Better.
- 1 car 12/4" No. 1 Common and Better.
- 1 car 6/4" No. 1 Common and Better.
- 2 cars 4/4" No. 1 Common.
- 2 cars 4/4" No. 2 Common.

SAP GUM
- 10 cars 4/4" 1s and 2s.
- 20 cars 4/4" No. 1 Common.
- 10 cars 4/4" No. 2 Common.
- 2 cars 4/4" 18" up Panel.
- 5 cars 4/4" 13-17" Box Boards.

PLAIN RED OAK
- 2 cars 4/4" 1s and 2s.
- 2 cars 6/4" No. 1 Common and Better.
- 2 cars 10/4" No. 1 Common and Better.

PLAIN WHITE OAK
- 4 cars 4/4" No. 1 Common Plain.

COTTONWOOD
- 2 cars 4/4" 1s and 2s.
- 15 cars 4/4" No. 1 Common.
- 5 cars 4/4" No. 2 Common.

ELM
- 2 cars 4/4" Log Run.
- 10 cars 10/4" Log Run.
- 10 cars 12/4" Log Run.

MAPLE
- 4 cars 12/4" Log Run.

WE are pleased to announce the organization of The Frank A. Conkling Company, recently formed, with offices located in the Randolph Building, this city.

While appearing under a new name, the members of our organization are not unknown to the trade, having all been engaged in the Hardwood lumber business for a number of years.

We will specialize in Southern Hardwoods, particularly Red Gum and Quarter Sawed White Oak. Our band mill at Percy, Miss., is operating daily and we are accumulating a well assorted stock. We have behind this operation one of the best tracts of virgin timber located in Mississippi and are constantly acquiring additional timber, thus assuring the operation of our mills for years.

All departments of our organization will come under direct supervision of experienced management, thus assuring prompt and satisfactory service to our patrons.

The

Frank A. Conkling Company

Memphis, Tenn., U.S.A.

W. W. Gary, Pres't.
Frank A. Conkling, V-Pres't.

E. Austin Neely, Sec'y.
A. A. Volkert, Treas.

West Virginia Oak

Thoroughly Dry, Accurately Sawn, Soft Textured, and Uniform in Color.

Write us when needing choice stocks. All lumber produced from virgin timber of large size and excellent quality.

Twenty Million Feet Hardwood Ready for Immediate Shipment

OAK

Yellow Poplar, Ash, Hickory, Beech, Chestnut, Basswood, Walnut, Maple

THE THOMAS HALL LUMBER COMPANY

Manufacturers

CHARLESTON, WEST VIRGINIA

M. BROWN, Canadian Representative. Address: 31 Sprucehill Rd., Balmy Beach, Toronto

Tallahatchie Lumber Company

MEMPHIS, TENN.

Manufacturers of

Band Sawn Hardwoods

Graded so as to be especially attractive to Furniture Manufacturers.

Careful attention to every detail of service.

SEND US YOUR INQUIRIES

Mercerau-Hawkins Tie Company

Huntington - W. Va.

Manufacturers and Wholesale Dealers

West Virginia and Southern

HARDWOODS

We specialize in

Oak Tie Siding
White and Red Oak
Yellow Poplar
Basswood
Chestnut and
Gum Lumber.

Canadian Sales in Charge of

C. W. PETERS

Vice President and Manager of Lumber Dept.

BEDNA YOUNG Lumber Company

Jackson - Tennessee

Manufacturers of
Quartered White and Quartered Red Oak

Please let us quote you on the following:—

1 car 5/8".FAS Qtd. White Oak, 6-9".
2 " 4/4" FAS Qtd. White Oak, 6" and up.
1 " 5/4" FAS Qtd. White Oak, 6-9".
1 " 5/8" No. 1 Com. Qtd. Wh. Oak, 4" & up.
1 " 3/4" No. 1 Com. Qtd. Wh. Oak, 4" & up.
3 " 4/4" No. 1 Com. Qtd. Wh. Oak, 3" & up.
1 " 5/4" No. 1 Com. Qtd. Wh. Oak, 4" & up.
1 " 5/4" FAS Qtd. Red Oak, 6" & up.
1 " 6/4" FAS Qtd. Red Oak, 6" & up.
1 " 4/4" No. 1 Com. Qtd. Red Oak, 3" & up.
1 " 5/4" No. 1 Com. Qtd. Red Oak, 4" & up.
1 " 6/4" No. 1 Com. Qtd. Red Oak, 4" & up.

AMERICAN WALNUT

"The Cabinet Wood Superlative"

Little Doors That Open

(without sticking) after centuries of use.

There are little doors—and hidden drawers—that were fabricated 200, 300, 400 or more years ago. Some of them are supposed to open at the light touch of a delicate finger (with rare jewels on it). Some of them may stick (Oh, heavens!). BUT—*some of them are of WALNUT.*
The Walnut ones don't stick, nor jam.
Everybody is glad to know that cabinet-work of that supreme hardwood is still being made—by artisans who are indeed artists. Would you believe it? It is *true!*
Ask your furniture dealer—if you hope (as of course you do) that the furniture you buy today shall become the treasured heirlooms of your great-grandchildren.
"Walnut is Walnut"—there's no getting away from *that.*

The American Walnut Brochure, de luxe, is ready. May we have your written application? (Promptly answered.)

AMERICAN WALNUT MANUFACTURERS' ASSOCIATION
Room 1019, 616 South Michigan Boulevard, Chicago

ALL BRANCHES OF THE FURNITURE TRADE

are feeling strongly the Effects of the series of tributes to our American Walnut which are running continuously in most of the Best Publications in America. Above is an example.

THERE ARE STILL A FEW FURNITURE HOUSES IN THE COUNTRY

who are giving their better-posted competitors a great advantage over them with the Best Trade. WHY? Simply because they "heard somebody say" that American Walnut was getting scarce. *Let them ask us for THE FACTS!* (See address above.)

SOUTHERN HARDWOODS

Well Manufactured from Good Timber

Unexcelled Quality and Service

For twenty-five years Paepcke Leicht quality hardwoods have satisfied the most exacting users in the wood-working industries of the United States, Canada and Europe.

Strict uniformity of inspection and quality year after year, with a truly superior service, have consistently kept old customers on our books.

Your interest, also, lies where you can get the most in satisfaction and value.

We Specialize in Oak and Gum

Paepcke Leicht Lumber Company

GENERAL OFFICES
Conway Building
111 West Washington Street
CHICAGO, ILL.

BAND MILLS
Helena, Ark.
Blytheville, Ark
Greenville, Miss

ROBT. BURY & CO., Canada

LIMITED

Hardwoods and Veneers

LUMBER

Mahogany (250,000 ft. in stock, all kinds)
Walnut
Qtd. White Oak
Plain Red Oak
Poplar
Gum
And all U. S. A. Hardwoods

Birch
Basswood
Maple
Beech
Elm
Ash
And all other Canadian Hardwoods.

VENEERS

SAWN

Qtd. White Oak
Qtd. Red Oak
Plain Oak
Mahogany (all kinds)
English Oak
Teak Ash Cherry

Vermillion Birch
Poplar

ROTARY CUT

Birch, Poplar, Ash, Gum
Walnut, Basswood, Maple

SLICED

Mahogany, Walnut
Figured Gum

Three Ply Fir Panels - Crossbanding

We have now purchased the kilns of The Toronto Kiln Co. and can ship kiln dried lumber promptly.

Head Office and Veneer Warehouse
1 Spadina Avenue, TORONTO

Lumber Yard, Dry Kilns and Mill
Foot Spadina Ave., TORONTO

CANADIAN
WOODWORKER
and
Furniture Manufacturer

A Monthly Publication of Trade News and Practical Information, reaching the factories producing Interior Finish, Doors, Sash, Flooring, Boxes, Aeroplanes, Furniture, Pianos, etc.

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345 Adelaide Street West - - - - - - TORONTO
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The New Sales and Luxury Taxes

The excise taxes and tax regulations as brought down recently by the Canadian Finance Minister, Sir Henry Drayton, in his budget, and made applicable on and from May 19th, 1920, are still a subject of general conversation. In every gathering, on every street and, in fact, everywhere one goes the luxury or sales tax is sure to crop up. The different clauses of the regulations and their application are criticized with more or less heat, depending largely on how they effect the pocketbook of the person speaking.

So many interpretations have been placed on the different taxes and so many diverse rulings have been made that even at this date the application of the various clauses are little known and little understood. To make matters worse it is proposed to bring down certain amendments, the nature of which are not fully known, that, it is understood, will lower the rates on certain articles and impose taxes on others which were not affected in the first instance. In view of this it might be well to discuss the taxes with reference to their application to the woodworking industry.

The first item to consider is that the special war tax of 7½ per cent. which has been collected on the invoice value of all importations is removed and in its place a sales tax of 1 per cent. is to be collected, in addition to existing customs and duties. Thus imports of unmanufactured lumber, that is, stock from the saw, which at one time were admitted into Canada free of duty, and which of recent years were subject to the 7½ per cent. war tax, will be admitted on the payment of this 1 per cent. tax. The same applies to machinery, supplies, finishing material and other similar items. The 7½ per cent. war tax has been lifted and the 1 per cent. tax imposed in its place.

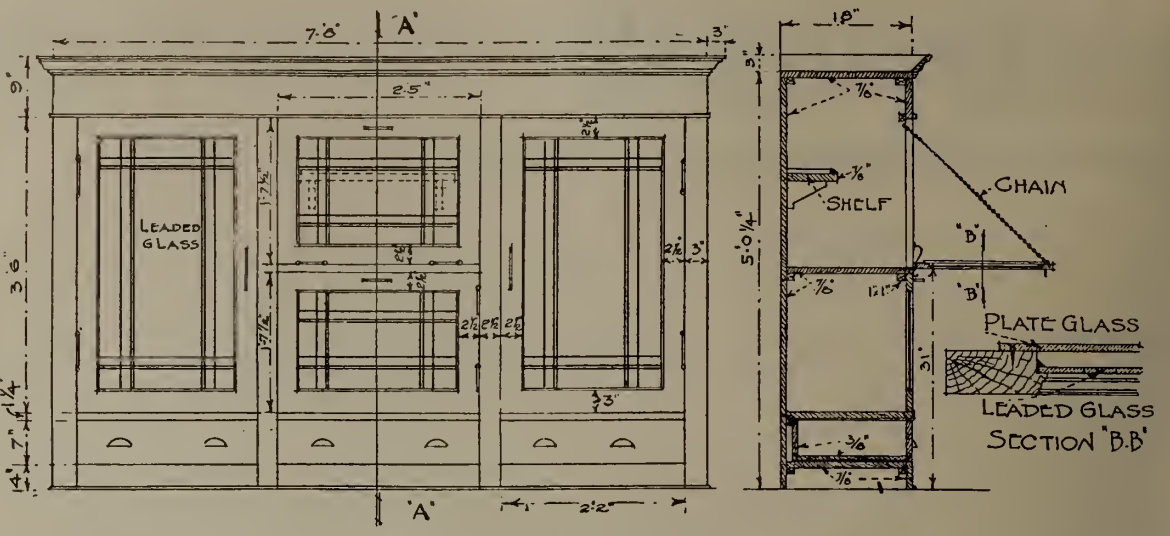
As an instance woodworking machinery has been subject to a duty of 30 per cent. on the invoice value plus the additional duty of 7½ per cent. Under the new regulations the same equipment would come in under a duty of 30 per cent. and the special tax of 1 per cent. This works to the advantage of the American manufacturer and exporter as it removes what really amounted to an additional protection of 7½ per cent. for Canadian industries

The same tax of 1 per cent. is to be levied and collected on all sales by manufacturers and wholesalers. The enactment includes that the purchaser shall be furnished with an invoice showing the amount of the sale and the amount of the tax separately, when not included in the purchase price; that this tax must not be included in the manufacturers or wholesalers costs on which the profit is calculated; that this tax be collected from the purchaser at the time of the sale and remitted to the government in accordance with regulations which may be brought down later. Under recent rulings the operators of sash and door factories and planing mills are classed as manufacturers so that the tax of 1 per cent. must be collected on all sales by furniture and musical instrument manufacturers, planing mills, sash and door factories and other plants manufacturing wood products. In addition these manufacturers will be called on to pay the 1 per cent. on all purchases from wholesalers and other manufacturers.

The piano and phonograph manufacturing industries were hit specially hard by a tax of 10 per cent. on pianos and organs (not including pipe organs) and 20 per cent. on player pianos, phonographs and records. It is understood that under the new amendments which are being considered these levies will be reduced considerably.

Other woodworkers affected are builders of boats, yachts, canoes and motor boats, which are subject to a 10 per cent. tax, payable at the time of the sale. A refund will be granted when it is shown that these boats are to be used for trading and commercial purposes only. Manufacturers of sporting goods are taxed 10 per cent. on such articles as skis. toboggans, canoe paddles, baseball bats, billiards and pool tables.

Furniture was not originally included in the list of articles subject to the luxury tax, the government, no doubt, considering that Canadian furniture, in the main, was not a luxury. It is now proposed to bring in an amendment which will include some of the furniture which they have considered to be in the luxury class, such as antique furniture in costly woods, also other furniture in ebony or teak wood and lacquered furniture, also expensive ornamental or inlaid furniture and tables made specially for games. Liquor cabinets, smoker cabinets, tea waggons, sewing tables, piano lamps, stands, table lamps, jardinieres, pedestals and brick-a-brack made of rosewood, prima vera, solid mahogany, ebony or lacquered or decorated are taxable when made in the woods and styles mentioned.



Convenient combination built-in bookcase and writing desk. Note plate glass on drop shelf

Utility and Convenience in Built-in Furniture

Built-in Features not Confined to Living and Dining Rooms—Contribute to Home-like Appearance of Rooms—Would Improve Many Parts of House.

By H. C. Smith

A house is but partly complete that lacks the built-in features, which when properly designed and placed, become permanent pieces of furniture. add an appropriate artistic touch to the interior treatment and, what is well worth considering, greatly reduce the cost of furnishing.

Many years ago, when most people owned their own homes and lived in them from birth to death, built-in furniture was a usual and essential feature. These utilities created a sense of permanency; they were certain indication of ownership. There was no question of doubt as to the permanent placing of a cupboard or a settee; no question in the mind that their many advantages might be reaped by some succeeding tenant. This built-in furniture literally grew into the fabric of the building and so complemented the domestic convenience as to become an essential element.

There has steadily grown a tendency in the modern house, particularly of moderate cost, to avail of all the various opportunities where built-in furniture can be with advantage located. Probably the dining room, kitchen and library will be the rooms where these features will be more generally found, but the entire house may receive attention with a view to installing built-in conveniences.

China Closets and Sideboards

Closets for china are logically located in the niches formed on either side of the dining room chimney breast. These closets should be in their general aspect, in accord with the trim of the room and treated as their finish in the same way. They may be built low, so as to afford a top that will be convenient for placing decorative jars, or that may be used for the tea and coffee services of such pieces of cut glass as the housewife will pridefully desire to display. These closets may further find a suitable location in the corners at either side of wide windows and above window seats, another type of built-in furniture which may be constructed so as to afford storage for such articles as may properly be placed there.

The most important piece of built-in furniture in the dining-room will be the sideboard. As a matter of fact one of these permanent side-boards presents many advantages, not only from an artistic viewpoint, but also on the score of utility, that are not shared by the usual movable type, generally but indifferently designed and but a makeshift of convenience. More and better closet space and drawers are provided by built-in-types, and when the overhead closets are added, as shown in the illustrations accompanying this article, there is created a very decidedly advantageous feature of economy and efficiency.

Conform to Decorative Features

In the living room, built-in bookcases, low in height and forming a part of the "interior finish," always suggest an air of good breeding and make this important domestic centre a most livable place. These cabinets may be utilized for other purposes than for books, and when the glass fronts are screened by some well-chosen fabric a convenient place is formed where the young people may store away tennis rackets, golf clubs and all the various impedimenta unfortunately often strewn about the house, and serving as a trap during darkness for some unwary one. Window benches with lidded seats are attractive and cozy things to install.

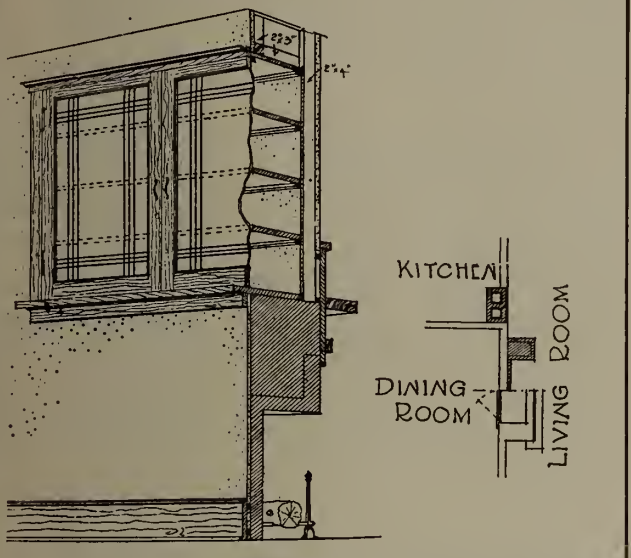
The feature of the modern living room about which the family congregates during long winter evenings or cold and rainy days will be the fireplace. It is just here that a most artistic and desirable placing of built-in furniture may appear. Wide-seated settees with high backs to screen from drafts are appropriate, and they form a place where the older people may sit in semi-seclusion from the noisier younger element. In fact, it would seem to be certain that built-in furniture gives an added charm to the domestic atmosphere. This charm becomes in reality

a part of the house in a truer sense than it is possible to attach to those other pieces of furniture that are movable and which are constantly changing their location.

Kitchen Pantry Done Away With

The modern, well-appointed kitchen is one where built-in furniture has been completely installed to the elimination of the pantry. Closets, cupboards, bins, drop tables and window seats may all properly be placed in the kitchen. The very character of their construction makes for easy cleaning and therefore a better and much-to-be-desired sanitary condition. This feature is equally true of the bathroom. Here linen closets and a window seat may be installed and finished in white enamel, to be in keeping with the porcelain accessories. The effect is one very much to be desired and the first cost, if introduced at the time of building, is no more than would be entailed by the purchase of any of the many things that are sold for modern bathroom equipment.

Unfortunately the modern house is not provided with the closet space that the housewife regards as



China closet constructed over fireplace

necessary to serve the ordinary necessities. There are never enough wardrobes or places where clothes in constant use may be hung against dust and damage. These places are logically in the bed chambers. It is almost always possible to find space for shallow built-in wardrobes. These, like the bookcases in the living room, may be only sufficiently high to permit of hanging skirts and coats or may extend from floor to ceiling with an overhead closet and a mirror let into the panel of the doors. The amount of comfort, convenience and saving that these built-in wardrobes afford is very considerable, and they will repay the moderate outlay necessary for their construction.

Cellar Not Overlooked

Let the cellar not be forgotten when built-in furniture becomes a first sanitary necessity. Here, where coal and ash dust is ever present, there is seldom given the serious consideration to proper closets of bins that there should be. The season's "canning" will be stored here and, in fact, all the impedimenta of the household laid aside for use until the return of certain seasons. Properly speaking, the cellar should be divided so as to form a room that would be dust-proof and contain convenient features.

There are no limits to the directions in which the "handy man about the house" may turn his efforts when he has made his house a home by these methods, provided every simple convenience that will suggest itself in the interior, he may find opportunities out-of-doors on the porches and verandahs. Here there might be built substantial benches, a closet for garden tools and often—a small cupboard where the milkman can leave the milk, the paper man his paper, and the tradesman the various parcels, safe from the depredations of the prowling cat and the ever-hungry dog.

The owner of the low-cost house who is able to use tools will find a constant source of satisfaction in constructing built-in furniture. Particularly if his daily work is of concentrated mental effort will this home carpentry appeal to him, for who does not know that rest is not absence of occupation, but the doing of something different from the absorbing daily activities of bread-winning.—Building Age.

Flooring Completely Finished at Plant

Matched flooring as it usually arrives at the building where it is to be laid has received no finish with fillers, oil, varnish, or with any other material. It has made the journey through the planing mill, has been properly dressed, grooved and tongued but the wood is generally in the natural condition, and it remains so until it has been laid and nailed. After that, it may be scraped, rubbed, or otherwise cleaned, and then the filler, varnish or wax is applied to make a finished job.

An American hardwood flooring manufacturer has been for the past two years finishing all the flooring at the factory. It is claimed that this material may be put down and made ready for use in a single day.

All applications of finishes and oils are attended to in the factory. Not only is the upper or wearing surface given such treatment, but the under surface is also oiled. Of course, no one sees the under side of a floor after it is put down, but the oiling is not done for appearance, but for the purpose of waterproofing the wood. A floor may be in perfect condition when laid, but it is likely to absorb dampness afterwards, and this dampness enters from below as often as from above, and more frequently if the under side of the flooring strips is unprotected.

The flooring is uniformly ⅜ of an inch in thickness, but strips are made in two widths, 1½ and 2 inches. It is shipped from the factory in bundles of twenty-four pieces, packed face to face, with the bundles clamped tight and bound. This is done partly for convenience in shipping, but more as a means of keeping the strips clean.

The nailing is done in the manner common with most matched flooring; that is, the nail is driven at the base of the tongue and neither the head nor any part of the nail is visible when the floor is laid. Holes through which to drive the nails are punched by machinery while the strips are passing through.

Many advantages are claimed for this flooring, one of which is the speed with which floors can be made ready for use. The carpenter does the last work. No oil mop or varnish brush follows. A room a day is the speed expected of a carpenter. The foundation on which strips are laid is the same as that for any other good floor.

Fig. 1—A group of houses designed for Trenton, Ont., Housing Commission by Wm. Lyon Somerville, Architect, of Toronto

Building Utility and Comfort in a Home

Study of Different Plans Brings Out Many Interesting Features—Lighting and Ventilation Given Greater Attention—Rooms Planned to Utilize Stock Lengths

THE study of the types and designs of houses that are being erected by the different housing commissions throughout Canada affords an interesting insight into the trend of architectural design and economical construction. When judging the fitness of any plant there are many points which it is advisable to consider. First of all there is the general appearance of the finished structure. While the quantity construction of houses in groups does not allow for a very wide variation in design, or for designs that might be termed fussy, yet the houses must be attractive in their simplicity.

Not only must the houses be attractive, but comfort and convenience must not be sacrificed to economy. Thus the architect who succeeds in preparing acceptable plans is of necessity forced to study the best ideas in community construction and exercise a fair amount of originality as well.

The illustration accompanying this article show sketches and floor plans of some of the houses which are now being erected by the housing commission of Trenton, Ont. These were designed by Wm. Lyon Somerville, of Toronto. Those shown are four and five room detached residences. The exterior of the

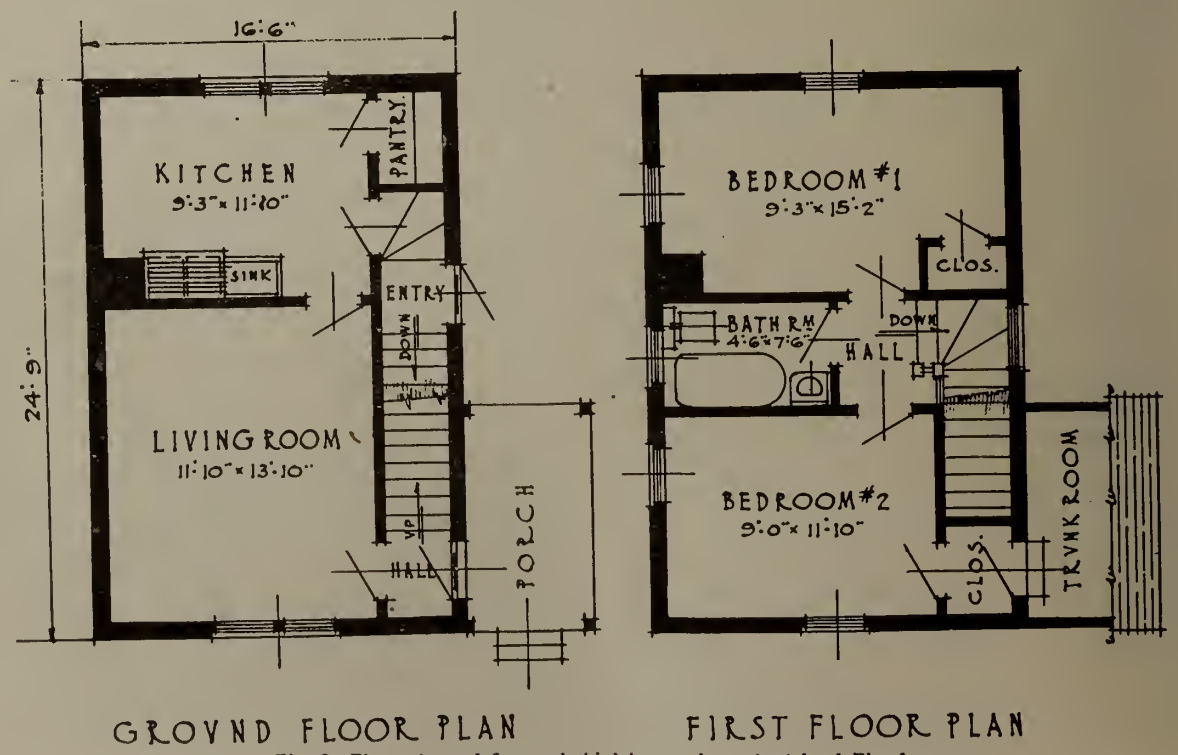


Fig. 2—Floor plans of first and third houses from the left of Fig. 1

houses are varied and the buildings laid out in groups or staggered rows so as to break the monotony and regularity of layout and design so often noticeable in large building schemes.

The four-room residence, which is shown on the right, is a two storey house 16 ft. 6 in. by 24 ft. 9 in. with two good sized rooms on each floor. Entrance is made from the side porch into a very small hall, having a door opening directly into the living room. This room is used as a combination living and dining room.

The grade entrance provides a particularly desirable form of rear entrance. It is convenient to the kitchen, yet gives direct access to the basement. Ashes, vegetables, etc., may be carried up and down without a lot of dirt being tracked through the kitchen. The same idea is embodied in the five roomed house.

Light and ventilation are well provided for by the number, size and location of the windows. In the warm weather, the windows in the front and rear may be thrown open, creating a movement of air that will tend to keep the house comfortable. The second floor may be ventilated in the same way. The upper story consists of two bedrooms and bath room. Here again the hall space is reduced to a minimum. The conservation of space effected by reducing halls and eliminating all waste tends for lower construction costs, less house work and better value for the money expended. On the other hand, it will be noticed that closets and pantries are included wherever needed.

The five-roomed house, while the layout is entirely different, will be found to embody the same ideas. It will be noticed that the same effort was made to reduce waste space, save steps and give a maximum of comfort and convenience. The large shady porch adds to the cosy appearance of the house and should prove particularly attractive during the warm summer evenings.

The lines of this house, which is the second from the right, are the long, low, horizontal lines which are so suggestive of cosiness and comfort. One is immediately attracted to a home of this type. The attraction may not be very well defined, but there is usually the thought that it would be nice to own or live in a house like that.

Those who have made a study of home planning and attractive homes have found that the embodiment of a few long, unbroken, horizontal lines give a cosy home-like appearance that cannot be conveyed in any other way. This is well illustrated by the accompanying sketches. If a choice of one of the houses shown here were to be made there is hardly any doubt as to which type the majority would decide on, with little or no hesitation. This is a point that might well be remembered when working out a design for a home.

If this house were to be built where adequate lighting were to be had on the four sides, the insertion of an extra window in the end wall of the living room and another in the kitchen would be a real improvement. It is desirable where possible to have windows in two walls of a kitchen. The average kitchen is not supplied with an over abundance of light, if such a thing is possible, so that while improving the lighting of this important room, an additional window would tend for better ventilation, as a refreshing current of air could be induced by opening both windows, making the kitchen a more comfortable place to work in.

It will be noticed that most of the rooms are odd sizes, such as the living room 11 ft. 4 in. by 15 ft. 10 in. This is partly by design, as in many cases it enables stock lengths of material, such as floor joists, to be used without waste or cutting—another point that tends for lower costs.

It is just this attention to little things, like the size and utility of the rooms, the cutting down of halls

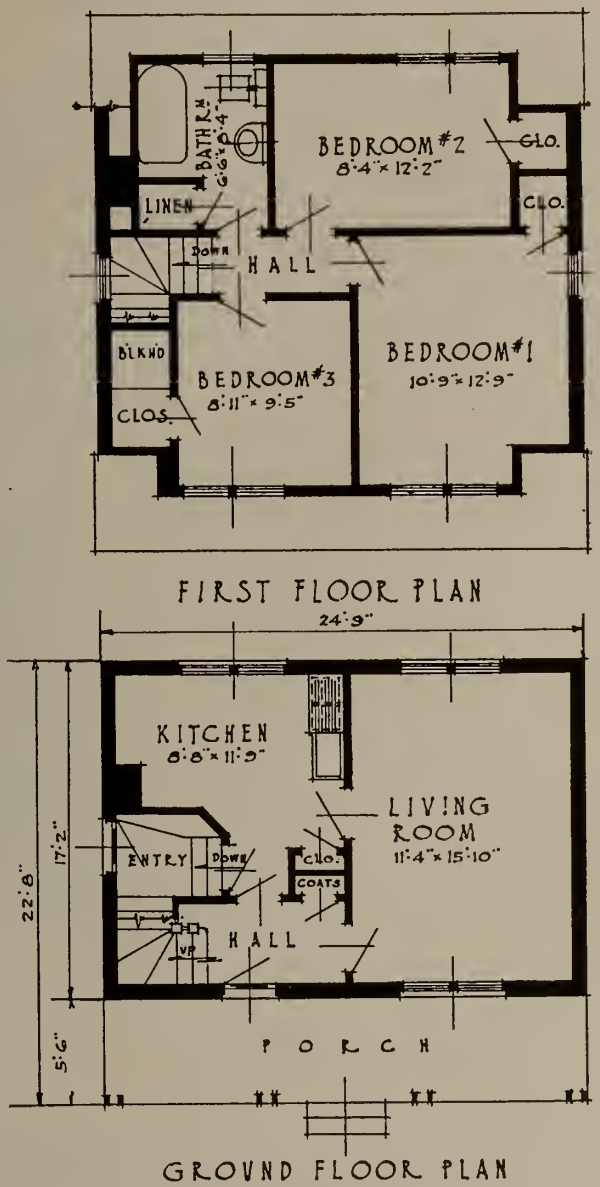


Fig. 3—Plans of second and fourth houses from left of Fig. 1

and other little used space, the lines and outside appearance of the house that, while adding to the desirability of the finished home, often lowers the cost of construction many hundreds of dollars.

Motion Pictures of Piano Industry

A moving picture film was recently taken in the Williams piano factory, Oshawa, Ont. This shows the different operations in the production of pianos from the receipt of the rough lumber to the finished product. The picture was taken under the direction of the Department of Trades and Commerce, Ottawa, and is intended to be shown in foreign countries in an endeavor to assist Canadian manufacturers in securing export business. It is just possible that this will be thrown on the screen at the Canadian Industries Exhibition in London, Eng.

Aggressive Move By Furniture Makers

Furniture Manufacturers Decide on Well-Organized, Far-Reaching Publicity Campaign—Retailer to be Assisted in Extending Market—Outline of Conditions Prevailing in Industry

A successful, well attended general meeting of the Furniture Manufacturers' Association was held in Toronto on Thursday, June 10th. This meeting, which was the culmination of a number of district meetings, was called primarily, to discuss the question of a publicity campaign.

Wm. Cawkell, the secretary, addressed the members present, at some length, in regard to the inauguration of an advertising section of the Furniture Manufacturers' Association. The object of this department would be to strive to create a stronger desire throughout Canada, and especially throughout the rural districts, for better furniture and attractively furnished homes.

An open discussion ensued, speeches being made by many members supporting the idea. It was unanimously decided that the scheme be gone ahead with and that the advisory publicity committee which consisted of G. W. Gibbard, J. H. Baetz, A. A. Schreiter and Geo. Hughes, with W. J. Anderson, the chairman of the Association, be made a permanent one with full power to engage a high class publicity man and organize the department on an efficient line. An adequate pro rata levy will be made to cover this branch of the Association's activities.

The new departure is a very important one and is in line with similar movements being inaugurated by furniture manufacturers' associations in the United States. It is anticipated that very shortly the whole community will be brought to realize the satisfaction and desirability of an attractively furnished home and to the fact that there is as much style to furniture as there is to clothes and automobiles. The committee made it plain that they considered that the successful maintenance of community life is dependent upon the attractiveness of the homes of the people and the taste they display in furnishing them. A tastily furnished home is not only a joy to those who live in it but to all visitors who enter its portals.

The prevailing idea that furniture is bought to last a life time must be uprooted. Many a person who thinks nothing of buying a new automobile every year or so seems content to live in a house filled with furniture that is out of harmony with present day homes and present day standards. Show them, by means of attractive booklets and bright seasonable advertising how they can furnish their homes so that they will be proud of them, teach them to appreciate the beauty and harmony of artistically furnished rooms and a steady enhanced demand for better furniture will naturally follow.

When one stops to consider, this is one of the most economically marketed products in our commercial life. While most commodities are handled by from three to half a dozen middlemen before reaching the ultimate consumer, furniture goes direct from the manufacturer to the retailer and thence into the home. This is a feature that should be kept before the attention of home owners.

While it would be premature to outline the service to be rendered the furniture dealers by the manufacturers as full details of the scheme have not been fully worked out, the "Canadian Woodworker" has been informed that the present intention is that the dealer shall receive every assistance in his advertising and publicity work that it is possible for this bureau to give and that such services shall be absolutely free. In addition a large amount of general advertising will be done in a systematic and thorough manner by the Association. This publicity will be directed so as to reach all sections of Canada and to appeal to all classes of the community.

The whole idea will be broad and thorough in its scope and nothing will be overlooked that might add to its effectiveness. There is no doubt but that this move by the furniture manufacturers will bring about closer co-operation and increased advertising efforts on the part of the retailer and that the whole industry will benefit as a result.

In a general discussion on the probable situation for the next few months it was thought that no amelioration of present conditions need be expected. The cost of raw materials will likely remain at present high levels, with a marked difficulty in securing many items. The Government reports show the cost of living to be mounting higher and higher.

The demand for furniture eased off slightly during the past month. This was not altogether unexpected as this is one of the quiet seasons. Shipments were well maintained during the same period, in fact were above normal. The orders on the books of the different manufacturers are slightly in excess of the amounts usually carried and are sufficient to keep the plants running for some months to come.

Reports received from retailers indicate that business is offering in a very satisfactory volume. The fall demand will be influenced largely by the harvest. So far all reports are favorable. A good crop would ensure an enormous demand for furniture from all sections of the country.

A motion was carried that representation be made to the Government asking that the standing and qualifications of the authorized trustees to be appointed under the new bankruptcy act, which comes into effect on July 1st, be carefully scrutinized and that a copy of this resolution be forwarded to the authorities at Ottawa.

The July Furniture Exhibitions

It is probable that many of the furniture manufacturers will hold a midsummer exhibition in July. Practically all the Kitchener furniture men have decided to exhibit for two weeks from July 5th to July 17th, and have sent out an invitation to the retail furniture trade, asking them to visit the exhibition and promise a good showing of the latest productions, including some new lines. This is the second season for the Kitchener manufacturers to hold a midsummer sale. They were so well satisfied with the results accruing from the July exhibition of last season that they consider it well worth the trouble and expenditure.

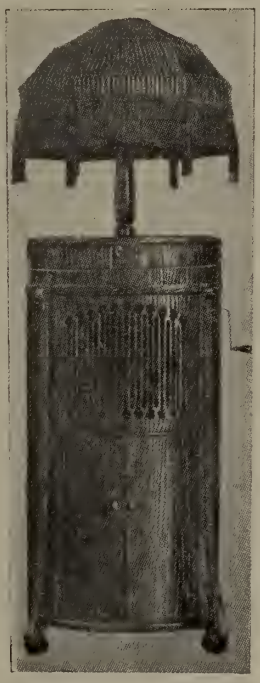
What Other Manufacturers Are Doing

New Ideas in Furniture—Round Phonograph with Parlor Lamp Attached Distinct Novelty—Special Floor Lamp for Twin Beds

By W. Arthur Lynn

New ideas and designs in furniture and house furnishings are being placed on the market in an almost continuous stream. Many of these articles are nothing more or less than freaks, freak in design and freak in construction, and have little to recommend them to the buying public. Other new pieces are more attractive, showing considerable ingenuity in construction and design. Some of these ideas are capable of wide adaptation, and it is with this idea in mind that this article, describing a few of the latter class, has been prepared.

Probably one of the most radical departures from conventional design is that of a circular or round phonograph, with parlor lamp attachment. The accompanying illustration shows this instrument. The makers claim that this departure from the common type of machine is responsible for the demand which exists for the round instrument. There may be something in this claim for the conventional type is seen in so many homes that a departure from the usual style might appeal to the fancy of those who want, and are willing to pay for, something different. The combination of round cabinet and parlor lamp should, if suitable colors are employed in the lamp shade, prove a very attractive addition to any room.



Circular phonograph combined with parlor lamp

Many Odd Combinations Found

In an attempt to get away from the conventional many manufacturers have included a phonograph in some staple article of furnituer. As usual some have carried this idea too far, so that we sometimes run across a phonograph in the base of a table lamp, or in the case of a grandfather's clock, or again in the case of a combination bookcase and writing desk. The trouble here is that many a person desirous of purchasing an instrument does not need or has not room for such an unwieldy article as a combination book-case and writing desk, or does not fancy a large, unwieldy table lamp.

The library table offers the best solution of a combination instrument. Here again the mistake is often made in not catering to convenience as well as utility. This is noticeable in a combination instrument where the whole table top must be raised to get at the phonograph and records. To do this the whole top of the table must be cleared, something that is not always convenient.

Table With Stationary Top

A phonograph recently put on the American market consists of a very attractive library table 48 in. by 28 in., in some of the popular period designs. The main feature of this is that two-thirds of the top is stationary, the section over the phonograph, alone, moving. Thus it is not necessary to clear the table every time the instrument is played. The records are kept in a cabinet built in one end of the table.

Another departure is a cabinet made entirely of reed and cane. The design is the conventional one. An instrument of this type would have a very limited market. It would be most suitable in homes where the living room is furnished in wicker. The demand for wicker furniture is growing and new lines are being brought out, such as reed bedroom suites, complete living room suites, etc. As the popularity of this furniture increases, the reed phonograph should grow in favor. One thing about such an instrument is that it can be moved about without marring or scratching the finish of the case.

Attractive Twin Floor Lamp

Twin beds are being more and more appreciated, so what is more natural than a twin bed lamp? It consists of the usual form of floor lamp with an attractive double bracket at the top of the standard. This bracket has sufficient spread to enable suitable shades to be hung on either side. The lamp is placed between the two twin beds and sheds a light on each one. It makes a handsome addition to the bedroom.

The combination refrigerator and kitchen cabinet and the combination serving table and tea wagon, called Mandy, were described in recent issues of the 'Canadian Woodworker" so will not be touched on here.

The Chair Industry in a Healthy Condition

The monthly experience chart issued by the National Association of Chair Manufacturers tends to show existing conditions with regard to orders received, shipments made and the value of the unfilled orders of the members. It is based on reports made by thirty-two representative chair manufacturers. The comparative figures given show that in April, 1920, the total number of pieces shipped amounted to 272,165 with a value of $2,400,000. During the same period the orders received totalled $2,750,000 and the unfilled orders amounted to $10,600,000. The figures for the corresponding month in 1919 were: pieces shipped, valued at $1,400,000; orders received, $1,600,000; while the unfilled orders amounted $1,800,000. This indicates a very strong market with the demand exceeding the supply. Production for April, 1920, shows an increase over April, 1919.

And Why Not Use Canadian Woods?

Value and Worth of Native Woods Not Appreciated—Not Given Careful Treatment in Plants—Question of Grade Gives Trouble—Compare Favorably With Any Wood

The slogan of the furniture industry in Canada might well be "More furniture from Canadian woods." The demand today is largely for furniture of walnut, mahogany and oak. This is partly due to the stress that has been laid, by the manufacturer and retailer alike, upon solid walnut, solid mahogany and to the fact that here-to-fore none but the cheaper lines of furniture have been manufactured from local woods.

Mahogany, walnut, oak and gum are fine cabinet woods, there are none better, and they have been given prominence and have gained a reputation through long use. Among our native woods we have some that compare very favorably with any imported species of cabinet wood and which should command a good volume of trade if sold on their merits.

Augurs Well For Furniture Industry

It is said that straws indicate the way the wind is blowing and in the same manner the furniture exhibition recently held at Jamestown, N. Y., may indicate the possible demand for the coming months. A large number of retailers were in attendance and it was quite evident from the orders placed that the American furniture dealers are satisfied that they can rely upon a continuation of the strong demand which exists for furniture.

The show was scheduled to be of two weeks' duration but the available stocks were disposed of during the first four days. After that the manufacturers booked orders for future deliveries at prices prevailing. Many furniture makers accepted sufficient orders to keep their plants going for the next twelve months and it is reported that several booked so many orders that it will be eighteen if not twenty-four months before they are all cleaned up.

The prices ruling did not indicate any weakness in the furniture lines as good figures were quoted on all offerings. As an instance a veneered walnut bedroom suite, of fair quality, was on display. The dresser, a 50 in. one, with a 30 x 40 bevel mirror was quoted at $135.00, the chiffonier $110.00 and the bed $97.00.

The exhibition would seem to indicate that the furniture industry and furniture trade as a whole is in a strong and prosperous condition.

Take birch for instance. Is it really necessary to camouflage this beautiful wood and sell it as imitation mahogany or imitation walnut, relying entirely upon the term walnut or mahogany to make the sale? It is true that the same article would not likely sell as readily if the prospective customer were told that it was made of birch. There is something radically wrong as long as this state of affairs holds true.

Turning to Native Woods

The high values of all lumber, the difficulty of securing adequate stocks and the unprecedented increases that have taken place on certain lines has done much to focus the attention of Canadian wood users on the products of our own forests. This is only a preliminary. The woodworkers must be sold to the value of native timber. Many of these manufacturers have been using local woods for certain lines and in certain places ever since they first engaged in the woodworking business, yet it is doubtful if many of these same gentlemen realize the true value and worth of certain local woods for high class furniture and other fine cabinet work.

There are many reasons that might account for this lack of appreciation on the part of wood users, of the real value of our lumber. One is that all along Canadian woods have been comparatively low priced and in most instances have been considered and treated as so much cheap lumber. While such woods as mahogany, oak and walnut were, on account of their reputation and value, handled with care, dried thoroughly and properly and every effort made in manufacturing and finishing to bring out and enhance the beautiful grain, the home grown product was given scant attention in the yard, in the kiln and when proceeding through the factory. In addition it was usually finished with some muddy stain, which completely hid the fine figure and the beauty of the grain, in an imitation of walnut, or mahogany. Is it any wonder then that Canadian woods are looked upon with scant favor by the manufacturer and with still less by the buying public?

The Question of Grade

Another feature that has mitigated against the use of Canadian woods is the difficulty which has often been experienced in securing suitable grades of stock or stock that is up to grade. This is particularly the case when dealing with the small operator. These men have little or no sales organization and if they attempt to dispose of the different grades separately often find considerable difficulty in finding a market for the lower grades after the best stock has been placed. Thus they are forced for self protection to mix grades to a certain extent and aim at disposing of run of log stock. In addition in many instances their ideas of grading and their knowledge of grading rules are very hazy, so that while they honestly endeavor to ship graded material they fall down in their grading because they do not know what they are doing. The ideas of the lumber checker or inspector, at the factory, are often just as hazy and many a manufacturer who has purchased a certain grade of stock, only to find that it did not work up satisfactorily in the plant, blamed the Canadian product when the real trouble was that he did not reveive the grade he bought, and did not know it. It is estimated that about 75 per cent. of the hardwoods cut in Canada is shipped to the United States markets and that a large proportion of this lumber is used by the American furniture manufacturers. If the American furniture firms can secure suitable graded stock in Canada, it stands to reason that the Canadian manufacturer should be able to secure an adequate supply of first-class material.

The remedy is obvious. First the employment of a thoroughly experienced man as checker or inspector, one who is familiar with all stocks and grades. Second, dealing with reputable firms who have an ex-

tensive sales organization that enables them to find a ready market for all classes of material and are thus in a position to guarantee the grade of all the material shipped. Some of the large operators will accept a contract for a year's supply at a fixed price and guarantee the quality of every piece shipped. The buying of lumber at fixed prices should help stabilize prices in the furniture industry.

Automobile Industry Factor in Market

Another factor that must be reckoned with is the automobile industry. The manufacturers of automobiles have turned their attention to such woods as birch, maple and elm and are buying good grades and paying good prices. They can well afford to do this as formerly they paid fancy prices for the oak and other stock they used. This has helped to force values up and will help to maintain them at present levels. Thus the furniture maker who contemplates using local woods must be prepared to pay the market prices. When one buys below market values the stock is usually just what is paid for and that is cheap stock. It is questionable if the initial saving of a few dollars on the price of lumber will offset the disadvantage and extra cost of working poor material.

There are on the market many transparent stains in all shades, both oil and water, that will bring out the inherent beauty of the grain of local wood. While there is no doubt that popular fancy is at present calling for the darker finishes, such as walnut and mahogany, it is the dark shades that please not the terms walnut and mahogany so why use these names when referring to such a finish on birch or maple. Some attractive names could be used which would convey the shade of the finish without suggesting any other wood.

After the furniture manufacturers have been convinced of the advisability of featuring Canadian woods, the next step would be that of creating the market for it and bringing the discriminative home furnishers into line. As one large manufacturer has aptly put it: "The buying public in Canada may have been in the past prejudiced against birch because it was a cheap wood and used chiefly on low priced lines. We feel that it is absolutely necessary from a standpoint of economy and a sound business policy that we feature this wood in our furniture and we are doing so." This is especially true in view of the high adverse rate of exchange that the Canadian importer is forced to pay. The use of native woods would tend to ameliorate this intolerable state of affairs.

Here is where the Furniture Manufacturers' Association might lend a hand and in this they would assuredly have the support and co-operation of the larger lumber operators. If the newly formed publicity section of this organization did not do anything more than popularize furniture manufactured from Canadian woods it would have justified its existence.

How to Reduce your Lumber Account

Present Conditions Demand Up-to-Date Methods and Equipment—Suggestions That May Help Cut Costs—Room for Improvement in Many Plants

By Furniture Manufacturer

Perhaps never in the history of the woodworking industry in Canada was it so necessary to be up-to-date in equipment and methods of manufacture as at the present time. The abnormally high cost of material, the high cost of labor, coupled with the difficulty of getting the pre-war standard of efficiency from it, make it more than ever necessary to guard against wastage of material or ineffective methods of manufacture

Somewhere I wrote an article on "The Proper Use of the Imagination in Making Furniture," and would now suggest Mr. Manufacturer that you and I use our imagination for a few minutes in considering a few manufacturing questions. With your permission I will take a walk through your factory and yards (in imagination only, of course) and make a few suggestions for improvements. In any case you won't need to follow these suggestions unless you like and the cost will be no more than the trouble of reading this page.

Eliminate Excessive Handling

In the first place then I see that a railway switch comes into your yard and you can unload from the cars onto the piles. Very good. Have you ever considered building one or two spurs of light tracks for your dry-kiln trucks, so that you can unload some of your lumber right off the cars onto the kiln trucks and thus save one handling of part of your lumber?

Now about your kilns. Are you getting satisfaction from that hot blast system of drying lumber? Really that is supposed to be a little out-of-date, and no doubt you are aware that there are many firms—I must not mention names in an article like this—that makes a business of putting in dry kilns of the moist air type, that certainly dry lumber with a minimum of loss, that keep it straighter and more free from case-hardening than can be done with dry air. In addition to this the moist air system dries quicker, and is just as economical, if not more so, to install. But we cannot go into this question fully. Volumes have been written on drying lumber, and we must get on. I must just say, however, that it will pay to be up-to-date in your drying department.

So this is where your lumber comes into the factory and goes to the swing saw. I notice that your men are throwing it off the kiln truck and then have to carry it to the swing-saw pile. Could you not have a turn-table made or a little track on your floor to enable this lumber to be unloaded right at the swing saws? This would save one handling and you can easily figure how much that costs in a year if you know what your output is, as of course you do. A few minutes figuring will tell you whether the outlay for a turntable or track would pay for the initial expense.

Multiple Stops Aid Production

Your swing saw seems a good one and that arrangement of stops for the different lengths of lumber you want to cut is first rate. I notice if you want to cut a piece, say 5 ft. 2 in., the stop is there all ready and the stops for shorter lengths move automatically out of the way, coming back into position immediately the longer board is removed. That is good. Do you

know I saw a factory recently which did not have one of these appliances and the swing-saw man spent about 15 per cent. of his time setting stops? What do you think of that?

I am a little surprised to see that you are still using a couple of hand feed rip-saws. Yes, you may have some work that cannot very well be done on the self-feed, but surely that cannot be enough to warrant using two hand feed saws. Have you ever timed the possible output of the two different machines with a first-class man on each?

Working Lumber to Advantage

By the way, before we leave this department have you ever tried cutting your lumber into standard lengths, according to what the lumber is best adapted for, instead of cutting each board into a piece for some particular article of furniture? For instance, you have a good car which will nearly all cut into long lengths and you take all the tops and long pieces out of it you can, even if it makes more than you need at the moment. Similarly when you have a car of low grade lumber and you cut out all the drawer fronts or short pieces that it will make irrespective of what you need at the time. This complicates matters sometimes, but on the other hand enables you to use a lower grade of stock than you otherwise could, and has been known to reduce a lumber account quite appreciably, which is worth considering now-a-days. You say that this suggestion could not be followed with the line you are making? Well perhaps not, but think it over anyway before you decide, because while it is more bother, of course, and sometimes means more handling, it is a great thing to save 5 per cent. of your lumber account.

Let us walk on to your buzz planers. Why there is a man taking the wind out of some short stock on a handfeed machine. I feel certain that if you will put in a self-feed buzz planer that you will pay for it in 18 months, in a factory of this size in the saving of pay alone, let alone having this man producing a good part of the time on some other machine.

Using the Latest Equipment

Your planers seem to be good. I saw a double surface planer working the other day in a large plant where they had ample power, and lots of the right kind of work for it. They told me it was only suitable for part of the work and would not replace the single surfacer for everything.

That continuous feed glue jointer is a good one and, of course, every one with much glue jointing to do has one now, they could not afford to be without one. As a matter of fact I think I imported the first one brought into this country a good many years ago, and it paid for itself many times over.

That is a useful machine you have over there, a double end tenoner and double cut-off saw, combined. That machine in combination with a hollow chisel mortiser works wonders when it comes to making goods into posts and case rails. It does the work faster, and makes it stronger and better than is possible in any other way. If in the course of my travel I come across any one making case goods in the old fashioned way I am afraid I shall say something rude, and get fired out.

Rotating Clamp Saves Money

Now let us walk over to that man clamping up your joints. I see that he is piling the clamped stock on the floor. Is not this a lot of extra work in the way of walking? Have you never considered using one of those rotating machines for holding clamped up stock while the joints are drying. They certainly save time and time is money. I don't know what the prices are now but would advise you to inquire and figure for yourself what saving you can make.

Next month, if you will permit, I will continue my walk and look at your power plant, cabinet shop, veneer room, finishing room, packing department and shipping room.

Invading Canadian Furniture Field

The Canadian branch of the Langslow-Fowler Co. of Rochester, N.Y., which is being established at Cobourg, Ont., will be known as "Langslow Limited." This firm is incorporating under a Dominion charter with a capital of $300,000., $200,000 of which will be paid up at the time the company begins operation, probably October, 1920.

They plan on erecting a modern, up-to-date plant and the contract has been let for the first unit, which will comprise some 26,000 square feet of floor space, in addition to dry kilns and power plant. The most modern labor-saving woodworking equipment will be installed. The lines to be manufactured include household, school and office furniture and special products of wood and steel. The intention is to cater to both domestic and export trade.

The officials of the company are as follows: S. C. Langslow, president; H. R. Langslow, vice-president and managing director; Paul Knox. treasurer; R. G. Van Doorn, secretary. About one hundred hands will be employed at the start and it is anticipated that this number will be rapidly increased.

The present organization at Rochester is devoted to the manufacture of household and school furniture, and employs about six hundred hands. It is estimated that the Rochester plant will work up 5,000,000 ft. of lumber during 1920 into a product, with an approximate value of $2,000,000.

Good Floor for Woodworking Plants

A writer in an English publication in describing a visit to a large woodworking plant says in part: As I walked down through the centre of that shop my attention was drawn to the floor. Its soft springiness, its cleanliness, its comfortable feel, the sense of surefootedness, the absence of jolt or jar—all were characteristics too pronounced to be lightly disregarded And on inquiring I learned that the floor was laid with rock asphalte . . . . In a moment I realized that I had found my ideal floor for the woodworking industries.

For the benefit of those to whom rock asphalte is an unknown factor in floor-making, it may briefly be stated that it is in substance a mineral, limestone bulking largely in its composition, the remainder consisting practically of a high-grade mineral pitch or bitumen. It may be broken up, melted or cooked, then if spread on any rigid foundation it sets as firm as a rock, but as resilient as rubber. It is applied in a hot, plastic condition, spread on concrete, brickwork or flagged floors with wood trowels. It is absolutely watertight, and it also makes a resilient, wear-resisting, dustless, jointless and noiseless floor surface.

For a floor subjected to hard wear it is applied in a layer about 1 in. in thickness, it will adhere equally as well to wood floors as to concrete or brickwork. Its cost compares most favorably with any floor.

Do Not Object to Long Hours or Overtime

Automatic Humidity Controlling Instruments on the Job 24 Hours Daily—Maintain Drying Conditions within Narrow Limits—Increase Efficiency and Effect Saving in Operation

By A. E. Krick*

The tendency in all lines of practical endeavor is toward automatic machines, automatic control—where men direct and adjust and machines perform and govern. With dry kiln operations being conducted on an ever increasing scale, and with the science of artificial drying of lumber being developed to a fine point, where conditions must be controlled within very narrow limits for the best results, the evolution of automatic temperature and humidity controlling instruments is not only a natural, but a very successful result.

There are many reasons for the greatly increased popularity of dry kilns and for the fact that they are being employed in greater numbers and for a greater variety of operations than ever before. A few might be mentioned, such as the high values of lumber (it costs considerably more nowadays to carry a large stock for air-drying); the scarcity of lumber, which makes it practically impossible to secure seasoned timber, making it necessary to hasten the drying of the material that comes in; a better realization of the real value and economy of this method of seasoning lumber. Many others might be cited, but the fact remains that more material is being artificially dried than ever before.

Kilns Placed On Most Efficient Basis

The effects on lumber of heat, humidity, ventilation and circulation have been studied. Successful drying schedules have been worked out to suit various requirements and different woods. Kiln design and construction have come in for their share of attention, so that today there are many types of kilns being installed which are capable of producing practically perfect results, if properly handled. The weak link in the whole chain of kiln drying development has been (and is) the human factor, i.e., the operator responsible for maintaining ideal drying conditions in the kiln.

The drying schedules which have been formulated should, for uniform, successful results, be followed within very narrow limits of variation. This demands the maximum of attention on the part of the operator in charge. If one operator has a large number of kilns in his care, it is practically impossible for him to watch conditions, make adjustments, make the tests necessary to ascertain the moisture content of the stock, keep the kiln records and attend to the hundred and one things that need looking after. Even where the number of kilns is limited, there are many things which will affect and change the drying conditions in the kiln, making it extremely difficult, if not impossible, for a man to make all the necessary adjustments or make them fine and accurate enough to secure the very best results.

Automatic Control the Solution

This all leads to automatic controlling devices—devices that will maintain a given temperature and a given humidity under varying conditions, both outside and in the kiln. Thus we have automatic heat regulators that will, by controlling the amount of steam admitted to the kiln, maintain any desired temperature, and automatic humidity controlling instruments that regulate and control the humidity of the air in the kiln.

This latter is a very interesting device. It consists of tested and proven self-contained thermostatic control elements, which work in opposition on a steam valve of the double seated type. The accompanying illustration shows a device of this kind. One of the

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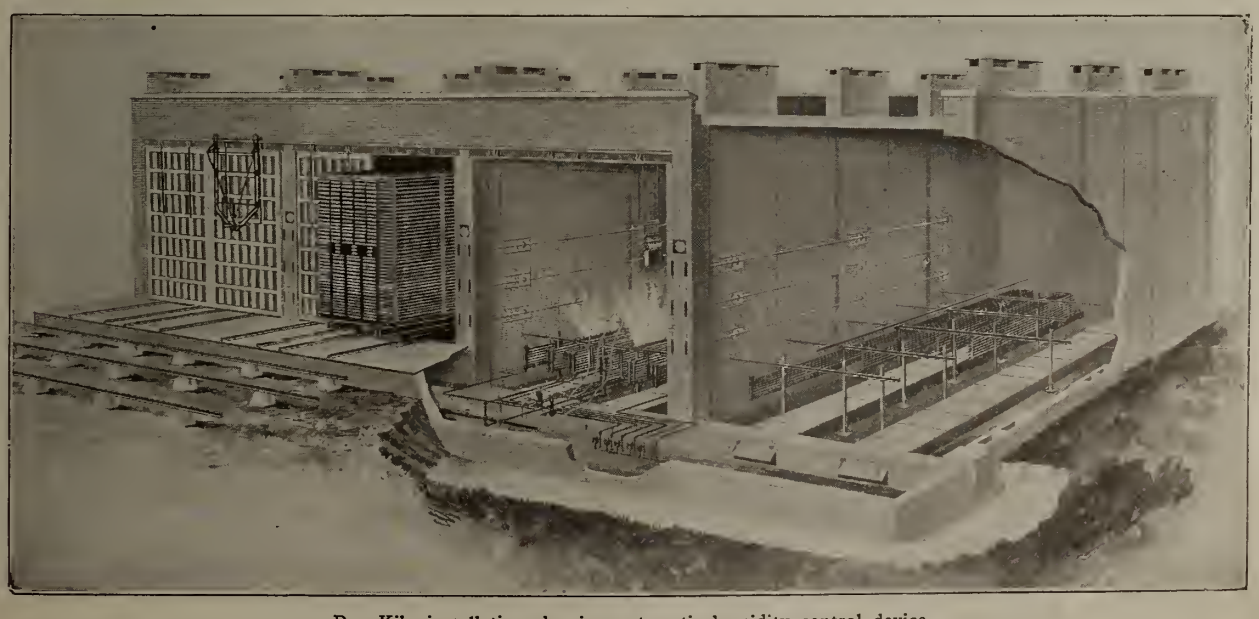
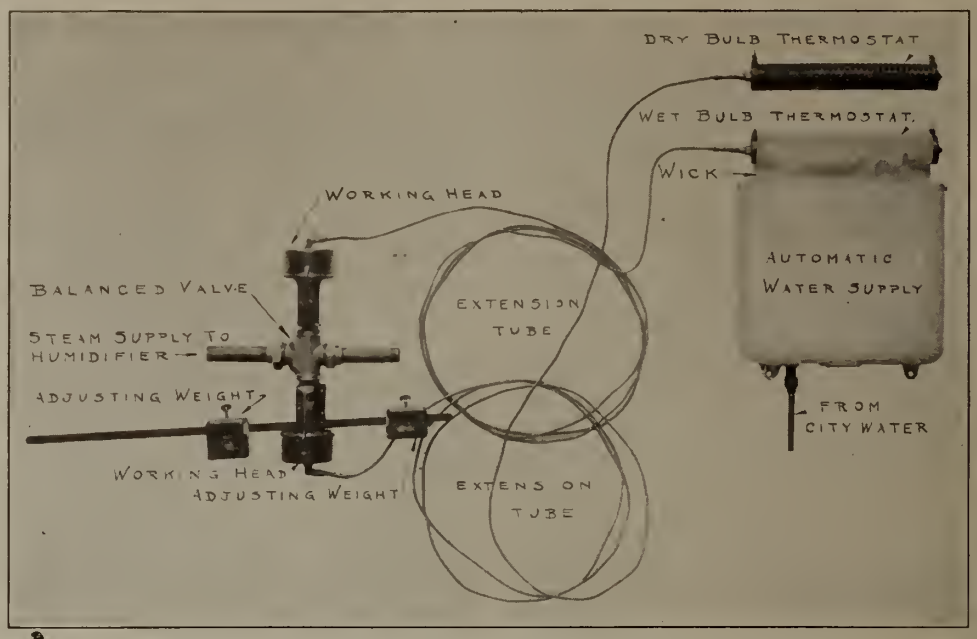


Dry Kiln installation showing automatic humidity control device



Device for automatically controlling humidity in dry kiln

thermostatic control elements, known as the dry bulb thermostat, is affected by the dry bulb temperature of the compartment; the other, the wet bulb thermostat, responds to the wet bulb temperature. By adjusting the weights on the arms, a supply of steam is admitted to the humidifier, proportionate to the relative humidity to be carried. The two thermostats working on the valve will, by working in combination, make any adjustments to the steam valve necessitated by changed conditions, so that the amount of steam admitted to the humidifier is just enough to maintain the desired degree of humidity.

Principle of Control Unit

The principle on which this works may be grasped quite readily, if one were to imagine that the weights and levers were removed. With that done, when heat is turned on, the steam valve will remain wide open, because the pressure on the dry bulb would be greater than that on the wet bulb side. The temperature of the wet bulb is lower, due to the evaporation of the moisture from the silk wick, giving a lower pressure. This condition would hold until the humidity of the kiln reached 100 per cent. or saturation point. When this is reached, the evaporation on the wet bulb ceases and the temperature of the liquid in both thermostats is the same, thus the pressure on the steam valve from both bulbs would be equal and the valve would close, shutting off the source of the humidity.

The weights and levers enable adjustments to be made that will balance the difference in pressure between the two bulbs at any given state of relative humidity before saturation point is reached and thus cause the valve to close and a constant humidity to be maintained.

Proved By Satisfactory Service

The thermostatic elements and the volatile liquid used have been in practical use for the past fifteen years, though their adaptation to the humidity control of dry kilns is a comparatively recent practice. They have, however, been employed in this work for a little over a year. The results achieved and the increased number of installations would seem to indicate that they do the work well and fill a long-felt want. In actual practice some three hundred humidity control values have been in operation over a considerable period, and no trouble has been experienced with any installation.

Automatic humidity control might well be called lumber insurance, as it supplements the work of the operator and guards against costly mistakes being made. Suppose, for instance, in adjusting the ventilation, the operator should open the dampers too wide. Under ordinary conditions, this would lower the relative humidity in the kiln, with a deteriorating effect on the stock. With a humidity controlling instrument installed, the steam valve would automatically be opened and the humidity maintained and controlled under changed conditions. This would also apply should there be any changes in atmospheric conditions.

Perhaps it is not generally known that the ventilation and circulation in any kiln varies and is to a certain extent governed by outside condtions. There is a marked difference in the amount of ventilation which can be secured with given damper openings on a warm summer day and on a cold winter one; likewise between a humid and a dry day. The automatic regulator will compensate for changes of this kind, resulting in even pre-determined drying conditions being maintained, thus contributing to fast and better drying.

Amount of Evaporation Varies

Free moisture makes up a considerable portion of the moisture content of green lumber. This free moisture leaves the stock readily when heat is applied, adding its volume to the relative humidity of the air. Thus, when the heat is first applied to green stock, the same amount of steam is not required to supply the humidifier as would be needed later on. Thus, though the operator may desire the humidity to reach the dew point, a certain proportion of this moisture will come from the stock itself.

This free moisture is soon exhausted, and, unless

automatic control is provided, it falls upon the operator to guard against the consequent drop in humidity and to adjust his humidity controlling valves so as to maintain the humidity as required by the predetermined drying schedule under which he is working. This change may occur at night or when the operator is engaged elsewhere. In any case, it would be extremely difficult for a man to watch each kiln every hour of the day. Should a few hours elapse when wrong conditions obtain, a certain amount of harm would be done and drying operations retarded.

Automatic control, by compensating for all changes at any hour of the night or day, will maintain a kiln at its maximum drying efficiency under varying conditions, according to the predetermined standards, and should result in a decreased percentage of depreciation due to seasoning, and also in a better dried product.

Capable of Giving Good Service

In the past, many automatic devices have been delicate in design and more or less unsuited to the strenuous service encountered in dry kiln practice. The latest models, however, are not at all delicate. In fact, they are of most substantial construction. The thermostats are about seventeen inches long. They are made of heavy bronze metal, with iron protecting casings. The tubes are of copper and are armored with spiral brass flexible protectors. The valves are of brass, equipped with working heads of iron, in which are contained bronze bellows, transmitting the power generated in the thermostats to the valve stem. With this arrangement of parts, the valves can never be partly inefficient. They will either be one hundred per cent. perfect in operation or zero. The presence of a broken or damaged part will be immediately evidenced by the fact that the valve will cease to function.

Acetic and tannic acids do not affect these instruments. The silk wicks remain clean for extraordinarily long periods. On special test, one outfit was checked with calibrated instruments, after one hundred twenty days service, and found accurate.

The cost of these devices is very moderate, considering the great amount of actual service which they render. It has been calculated that the entire cost, allowing a very liberal charge to reserve for replacement, will be less than twenty-five cents per day per kiln. A comparatively small saving in steam, lumber or operator's time will earn a handsome profit on the amount invested.

Many Manufacturers Adopt Electric Drive

Advantages Becoming Widely Recognized—Increases Efficiency of Steam Plant —Individual Motor Drive—Integral Part of Many New Machines

By P. E. Poole

If a prophesy were permissable one would be fairly safe in saying that electricity, in some form or other, would be the motive power of the very near future, and that the individual motor drive will be the type universally adopted. That the economies and conveniences of electric power are being widely recognized is evidenced by the growing number of woodworkers who are making motor installations. Manufacturers of woodworking equipment are also realizing its value and are producing machines specially designed for direct motor connection or in which the motor, or motors, is built in as a integral part of the machine.

Electric power may be utilized in one of three ways; the individual drive where one of a number of motors operate one machine, the group drive in which two or three machines are linked up to one motor or a motor may be used to replace the steam engine distributing the power through the ordinary line and jack shafts. These drives rank in economy and efficiency in the order named. The individual drive being the most desirable for the majority of installations, the group drive next and main line shaft drive taking last place.

Operating Expenses Reduced

The high initial cost of installation has probably deterred firms from adopting the electric drive. When a new plant, or an addition, is being planned the many advantages of electricity should be given careful consideration before a decision is made in favor of any other motive power. Even where current cannot be purchased or where the rates charged are excessice, instances may be cited which prove that a considerable saving may be effected by connecting the steam engine to a generator and distributing the power to motors placed throughout the plant.

A case to point is that of a sash and door factory deriving power from a 100 h.p. engine. The addition of a number of new machines put too heavy a load on the old engine. Plans were made for scrapping the engine and installing a more powerful one. An investigation into the merits of the electric drive showed the folly of this plan. The line shaftings were done away with and a 120 h.p. generator connected to the steam engine. This same engine that had been delegated to the scrap heap generated sufficient current, without being overloaded, to drive motors, the aggregate horsepower of which exceeded 130 h.p.

Independent motor drive on Preston saw

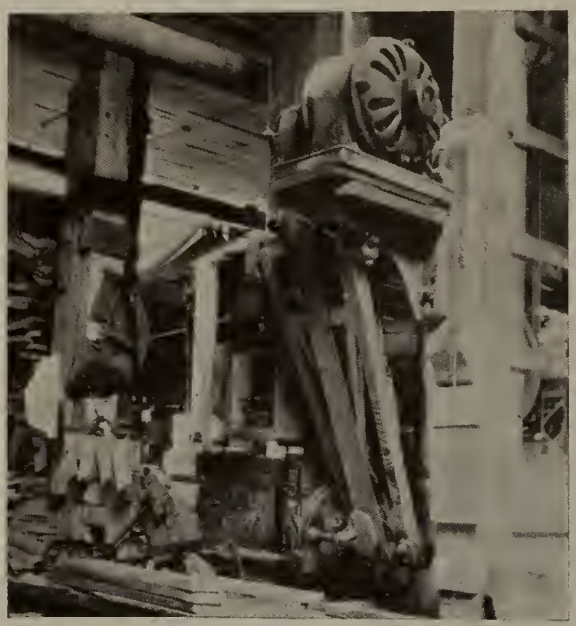
Whether the current is generated or purchased the advantages, economies and convenience of a motor installation are such as to make its adoption highly desirable and a profitable investment. In many in-

stances the outlay is returned in a few years through savings and increased production.

Maintains Production at Maximum

As intimated the individual drive is the most common form of electric installation and is the most economcal and efficient to operate. When one, or a number of motors, are connected to any machine the correct cutting speed of the machine can be maintained irrespective of the total load of the plant. The running of any piece of equipment at its most efficient speed tends for maximum production and a well finished product. The motor may be part of the machine as were the rotar and saw or shaper spindle are one or may be direct connected through a coupling to arbor or shaft, or a belt, chain or gear drive may be employed.

The placing of the equipment irrespective of line shafts is a very desirable feature of the individual drive. Fullest advantage may be taken of the most suitable light. The machine may be placed at any angle for efficient operation or good lighting. In other words the machine may be installed exactly where



Motor installation on E. B. Holmes swing saw in an Orillia plant

required, and where it will fit in to the very best advantage. Thus proper routing of stock may be secured and the work put through with a minimum of transferring and lost motion. Each machine may be run independently and is consuming power only when in operation. In the case of overtime the whole plant need not be operated but just the machine required. The elimination of main drives and line shafts effects a saving in power as well as ensuring that power is not being consumed for idle machinery. Except in the case of a failure of the current or generator, breakdowns are to a large extent localized and do not effect the whole organization.

Applied to Exhaust System

A new application of the individual drive, that is being used in some plants, is in connection with individual shavings exhaust fans for each machine. As most companies selling current base the rate on the maximum demand, if the fifteen or twenty horse power required to drive the fan can be reduced it will have a beneficial effect on the rate charged. Each machine is provided with individual exhaust fan, with individual motor drive, which is piped separately to the roof where it discharges into a cyclone. One is provided for sawdust and another for shavings. Thus the refuse can be sold separately and a much better price realized for the sawdust than if it had been mixed with the shavings. Each fan runs only when required so a considerable saving in power is effected.

In the group drive a number of machines that are seldom operated are driven by one motor. If in a group of five machines which require five h.p. each, only one machine is likely to be operated at a time, a five h.p. motor may be used for the group. If there is a possibility that at times all the group may be in operation at once instead of using a 25 h.p. motor a 15 h.p. installation should give satisfactory service. A good reliable make of motor will carry an overload of 50 per cent. for short periods without injury. It is extremely unlikely that even with the five machines in operation the peak of the load or maximum power requirement will come at one time, or be continuous, thus a lighter motor will do the work, effecting an economy in installation.

Three Phase Suitable Type

This brings up the question of the most suitable type of motor. Many manufacturers have become prejudiced against the electric drive through installing a wrong type of motor, or one that was too large or too small. Alternating or the multi-phase type motors, usually 3 phase, are probably the most suitable for woodworking service. They are simple, having no brush or moving contacts, light in weight, have a constant speed and will carry an overload for short periods without damage. It is a good policy to purchase only motors manufactured by firms of well known reputation and standing.

Many other advantages might be cited and no doubt a number of these have occurred to the reader. One worthy of mention is the saving affected through a reduction in insurance rates. This is more pronounced when the individual drive is employed.

Referring to equipment with built-in motors there are now on the market, moulders with a separate motor connected to each head and one for the feed works, shapers and saws where the spindles and motor rotors are one. One of the newer machines of this type, is a swing cut off saw with the motor mounted on the lower end of the arm, the saw being attached to the end of the motor shaft. A special compact motor, having a small diameter, is used. The May "Canadian Woodworker" contained descriptions of a motor driven double end tenoner and a motor driven saw tenoner.

Advantages of Combination Doors

R. Laidlaw Lumber Co., of Sarnia, are featuring at the present time their combination door which may be changed from a storm door to a screen door in five minutes and vice versa. Certain standard sizes are carried in stock.

In addition to featuring this combination door and combination storm and screen window and pointing out that these conveniences save fuel, the R. Laidlaw Company have issued a neat illustrated leaflet, stating that houses with storm windows and storm doors require from one-third to one-half less coal than the ordinary kind, and in these days the saving of fuel is a big consideration.

Production System for Woodworking Plant

Efficient System Essential for High Production—Has Marked Effect on Overhead —Distribution of Authority—Importance of Equipment Suitably Arranged

By L. F. Simpson*

Manufacturers in all spheres of industrial endeavor are striving to increase their output and produce more and more of their products. This is partly an effort for greater efficiency and reduced manufacturing costs and partly an effort to satisfy the world-wide demand which exists for all commodities in everyday use. One reason for this shortage is the fact that during the war a large number of firms devoted their entire organization to the production of munitions of all kinds and in this work many manufacturers gained invaluable experience, learned new wrinkles and new methods that are of untold assistance in turning out more and better work in the manufacture of peacetime requirements.

Among the various industries of Canada the metal-working, the wood-working, the textile industry and numerous others we find that the wood-working plants and mills are keeping well to the fore in their production. Lumber of all kinds is used so extensively in so many lines that large engineering staffs are being employed by the manufacturers of wood-working machinery in an endeavor to produce new devices and new machines that will enable the woodworker to eliminate operations here and there and to cut down the time required in the production of certain articles; in other words, their efforts are devoted to producing equipment that will enable the manufacturers to increase production, thus saving time, expense and tending to prevent manufacturing costs from reaching higher levels.

While all manufacturers are endeavoring to operate their plants as efficiently as possible and to increase production, so as to keep down their overhead expenditures and maintain deliveries, this article may be of interest in that there may be a point or two that will assist in working out some detail that is causing overhead expenditures to be abnormally high. We all know that there are many factors that cause the fluctuations in overhead charges but there is one item that causes the overhead to vary probably more than any other and that is production.

Has Direct Bearing On Overhead

Two facts are well known by all engaged in manufacturing. One is that increased production means a lowering of overhead expenditures and the other that decreased production means a higher fixed overhead expense. It is hardly necessary to emphasize the importance of that word "production" because we are all so familiar with the advantages of producing two or more of any article, chairs, tables or any piece of work on which time is expended, in the same space of time that was formerly required in turning out one article.

A detailed description of a production system that would be applicable to any woodworking plant is too great an undertaking to attempt in an article of this length. The different lines and different styles of the various manufacturers are so entirely diverse, the equipment and conditions so varied that a system worked out for one factory would prove unsatisfactory in another. Having this in view, the following description of a production system and production methods is written with the idea of giving suggestions that may be of value to those engaged in woodworking.

*General Machinery Company, Toronto.

Divisions of Production System

Let us state briefly the different items, in the order of their importance, that would have a direct bearing on any production system in a wood-working plant making, say, cabinets for phonographs; supervision, labor, equipment, arrangement of equipment, materials, method of operation, records of work in process, trucking and inspection, taking the different items in order, a few words by way of enlargement may prove of value.

Supervision may be graphically and more forcibly

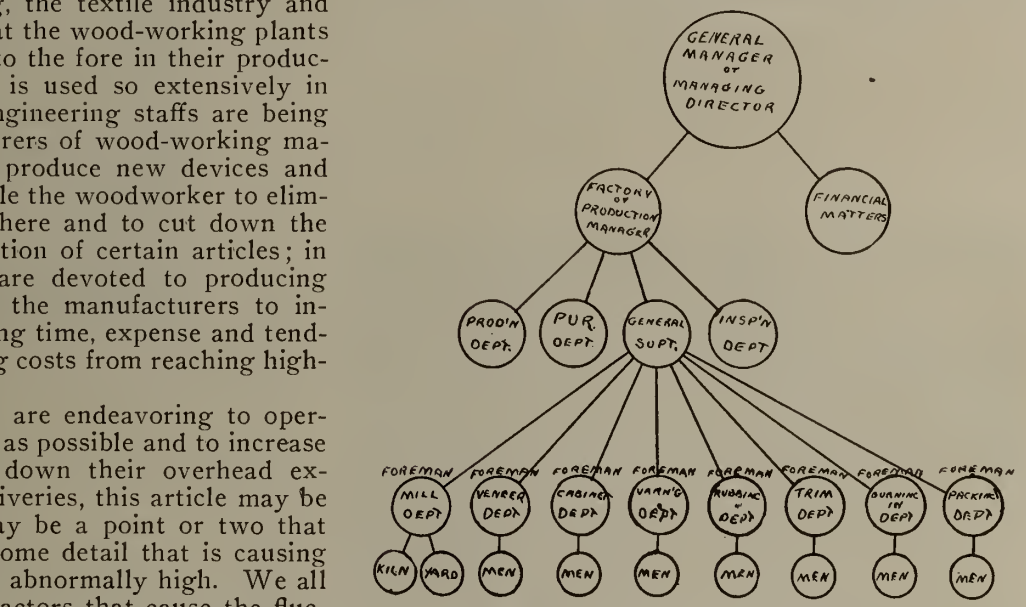


Chart defining division of supervision and authority

shown by the accompanying chart. It will be noted from this chart that the supervision is clearly defined and outlined where information or authority is required. Any disputes or uncertainty that may arise on any phase of supervision can be cleared up by referring to a chart of this kind. Each department foreman is responsible to one head, viz., the superintendent. The superintendent is in turn responsible to the factory manager, and so on as the lines of the chart connect one authority to the other, so it can be worked out in actual practice.

Labor is given second place because of its importance. For instance, in the event of a strike a lot of time is lost, the plant may have to be closed down, therefore, production has ceased. Many machines have been invented to augment the supply of labor but it is impossible to run machines without men to guide and control them. Labor is required in the assembling of the cabinets, the finishing of the product; in fact it is one item essential to production in any manufacturing plant and satisfied employees aid immensely in maintaining production at this maximum.

Equipment is the next item to be considered. A plant may have almost any quantity of machinery and

equipment but if this is composed of machines that are antiquated, out of date or worn out, it is far better, as we all know, to scrap this equipment and let their scrap value go into the cost of probably half the number of modern, up-to-date, labor-saving machines, than to struggle on, trying to get good results without adequate facilities. In purchasing new machinery, great care should be exercised so that one may be certain that the equipment in question will actually do the work for which it is secured. Cases are occurring every day where plants are buying machinery that is not suited and in some cases not intended to do the operations expected of it.

All equipment should be substantial in every respect and purchased in a common-sense way, always keeping in mind the practical point of view, as delays or break-downs or experimenting cause a drop in production in any plant. Another point to bear in mind is that the addition of some particular machine may result in reducing labor one half on some one operation; for instance, let us take a plant that is turning out panels for cabinets. In trimming the four sides of these panels on an ordinary trim saw, four individual operaters are required. If a double trim saw were installed, the operations would be cut down to two. Thus the work would be done in half the time, making it easier for the men on that operation and securing just twice the production. This is only one of the many instances where a saving may be effected through the installation of new equipment.

There are many small spare parts required in connection with the equipment of a plant that should be kept in the stock room at all times. Some individual should be made responsible for these parts and it would fall on him to see that these items are in stock at all times so that when a machine breaks down it is not necessary for a number of men to be idle while a message is sent to the supply house for some particular part of while relying on the delivery service of the supply man. Equipment properly cared for will give many years of extra service.

The equipment in any plant can be arranged in two ways. In the first it may be installed without due regard for the work going through and a proper sequence of operations. Thus the machines would be placed anywhere where they would be handy to the shafting. If the other method were followed, due consideration would be given to the various machines on which certain operations are to be performed and these machines arranged so that they will be convenient for the next operation or concentrated in batteries, in as small a space as possible, for completing the operations on certain individual parts. Care must be taken not to go to the other extreme and crowd the machines in groups.

An efficient arrangement of equipment will save labor in handling or trucking and will tend to enable each machine to be operated at maximum capacity. In some plants one will find a piece of equipment installed at one end of the factory and the next operation will have to be performed on a machine that is placed away off at the other end of the building. The workmen consequently spend a large part of their time trucking the material to and from the different machines and at the same time, in nine cases out of ten, they disturb other laborers and time is lost on other operations and the efficiency of part of the plant reduced. The arrangement of equipment can save considerable in operating costs and can be a big aid in boosting production.

(Continued in July issue)

Chair Manufacturers Seek to Stabilize Prices

The Second Quarterly meeting of the National Association of Chair Manufacturers in Chicago on May 19th was attended by representatives of fifty chair factories.

The reports of existing conditions and the opinions as to the immediate future showed that all factories are considerably behind in filling their orders. The factories have felt the transportation difficulties of the past sixty days.

A canvass as to policies now in force showed that with few exceptions the factories are selling at price prevailing at time of shipment and have no alternative until their experience shows that the market for supplies required and labor conditions have reached a point of stabilization which will permit the factories to guarantee their prices for a period of time. There is no desire to inflate selling prices anticipating possible increases in cost in order to give a guaranteed price. The chair manufacturers are today operating with a knowledge of costs due to improved accounting methods which enables them to analyze their own conditions in a manner far different than was the case a few years ago.

This meeting, like all similar gatherings of manufacturers these days, spent considerable time in an earnest endeavor to analyze conditions in order that the industry can operate with as little apprehension regarding the future as possible.

It is the desire of every chair manufacturer to so operate his business that he can give the maximum amount of service to his trade. He feels that the moment production conditions enable the factories to discontinue the practice of selling at price prevailing at time of shipment, the sooner general satisfaction will be established for both manufacturer and retailer.

Not content with merely accepting a situation which exists and "passing the buck" to the other fellow, the meeting passed a resolution asking the National Council of Furniture Associations to immediately get in touch with industries supplying materials to the furniture manufacturers seeking to secure a basis of stabilization which will junction with the retail dealers. This is a phase of activity in which the producer and distributor of chairs can meet on common ground and further their respective interests to their everlasting benefit.

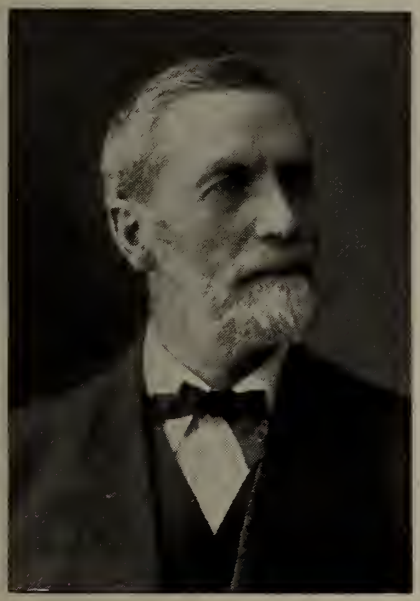
Rhodes Curry Co., Limited, Reorganize

A business reorganization that is of importance in Nova Scotia, and not without interest in other parts of Canada, is that of the Rhodes, Curry Company, Limited, which now becomes simply Rhodes, Curry, Limited, divorced entirely from the Canada Car & Foundry Company, of which for some years it has been a subsidiary. It is understood that the latter company was not unwilling to cut away from everything except the making of cars and therefore it was convenient to allow the works at Amherst to be disassociated from the enterprise which has its headquarters at Montreal. The operations of Rhodes, Curry Company will be completely centralized in Amherst and branches which have been established at other points, it is understood, will be closed. This means the perpetuation of what has become one of the oldest of the industries of Nova Scotia.

Specializing in High Grade Wood Products

Large, Well Equipped Plant at Orillia Turns Out Variety of Lines—Steam and Electric Drive Used—Manufacturing All Done on One Floor

There are not many engaged in wood-working who have not heard of J. R. Eaton & Sons, Limited, of Orillia, Ont. This old, well established business was founded in 1885 by J. R. Eaton. Later on one of his sons was admitted to partnership and the name changed to J. R. Eaton & Son. In 1910 a second son was taken into the firm and a joint stock company formed under the name of J. R. Eaton & Sons, Limited.



J. R. Eaton, founder of J. R. Eaton & Sons, Limited, Orillia, Ont.

A serious setback was suffered in 1910, when the plant was completely destroyed by fire. Nothing daunted, a new and larger establishment was planned, took shape and, in 1914, the present plant was completed. This consists of three buildings—a main factory, 304 by 151, a substantial warehouse and a dry kiln and dry storage shed. The construction is practically fire proof, being of red tile, with concrete floors and slow burning roof. The main factory is one story with the exception of a narrow second floor across the front. The greater part of the second story is used for finishing, the remainder being fitted up as a draughting room. An elevator was installed lately to aid in moving the stock to be finished.

Was Engaged in Munition Work

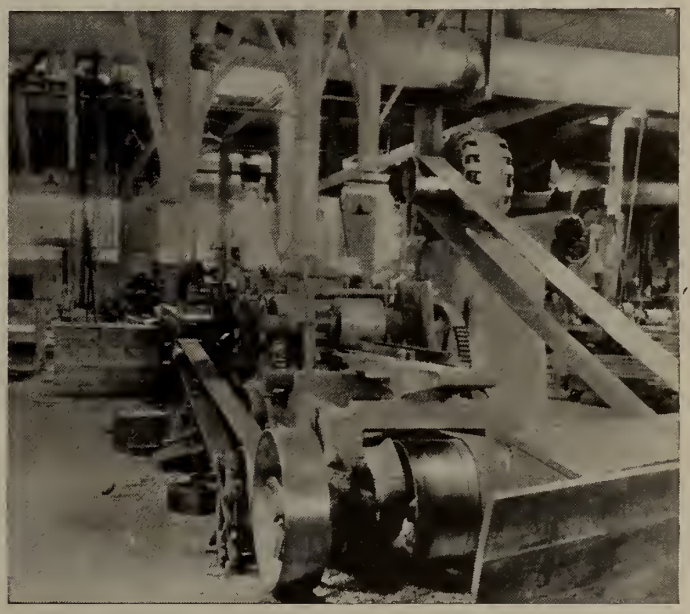
During the recent struggle this firm aided in augmenting the supply of munitions by turning out a large quantity of shells and shell boxes. One side of the factory was equipped with lathes, drills and other machinery necessary for the quantity production of heavy shells. At the same time the woodworking end of the plant was devoted largely to making shell boxes. This iron working equipment has all been removed and the output of the plant is now centered on woodworking lines.

Both electric and steam power is used. The main lines of shafting are equipped with S. K. F. ball bearing hangers. While this installation enables the fullest advantage to be taken of all the power developed, it was found that the 225 H. P. delivered by the steam engine was not sufficient to drive the whole plant. Instead of increasing the steam plant resort was made to the electric drive. In addition to supplementing the steam power, the use of motors has been found extremely advantageous in enabling equipment to be placed in positions where it works to the very best advantage and where it would be difficult to connect up with the line shafting.

An efficient shavings exhaust system carries the shavings and sawdust to a large tile bin situated above the boilers. This refuse is fed to the fires by chain conveyors. Usually sufficient waste is made to keep the fires going steadily and part of the time there is a surplus to be sold or otherwise disposed of.

Well Provided with Trackage

The plant is well situated, there being plenty of room for all future expansion. Excellent trackage facilities are provided by two sidings which run along each side of the factory, giving connections with the C.P.R., G.T.R., and C.N.R. Naturally with such facilities for handling material a large amount of milling in transit is done.



American hardwood flooring machine. Note motor installation

When munition making ceased and the plant was re-organized it was decided to manufacture a line of furniture. This line consists of oak extension tables with square, octagon and round pedestals, five-leg extension tables, oak library tables, kitchen tables and kitchen cabinets. The furniture met with a good demand form the start, some of the tables going overseas. This department has a capacity of two cars of tables a week. A strong effort will be made in the near future to secure a large volume of business from Great Britain and other importing countries.

The other products of this firm include general

mill work, building material, special order work, such as oak paneling, oak cases and all forms of odd work, wood turnings, table legs. dowels, hardwood flooring, sash, solid pine and veneer doors.

Grand Rapids Kiln Installed

The dry kiln is modern and up-to-date and consists of an eight-compartment Grand Rapids vapor kiln. The kiln and dry lumber storage are in the same building, which is of tile construction. Two tracks facilitate the moving of the stock from this building into the factory.

The material for the hardwood flooring is taken in at entrance No. 3. The stock is ripped on a gang edge, 3, which cuts two or three lengths at a time. A Yates power feed band rip saw, No. 281, has been purchased and will be installed in the place of this gang edger. The narrow kerf of the band re-saw will mean quite a saving in the stock being ripped.

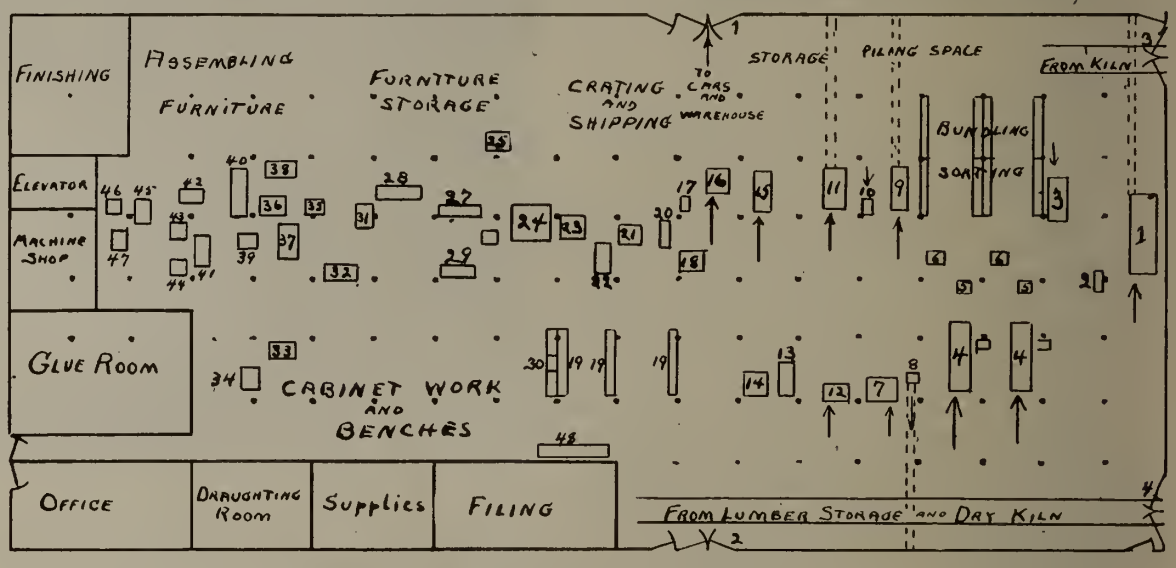
The sticking is done on two American hardwood flooring machines. These are driven by individual electric motors. The accompanying illustration shows a motor installation and one machine. The trim saws and C. M. C. and matchers are placed directly behind the flooring machines. If thin flooring is being run the stock is trucked from the gang rip to a Yates re-saw and from there to the moulders. The concrete floor which is kept scrupulously clean, enables the loaded trucks to be moved easily from one part of the floor to another.

Live Rolls Aid Transit Work

The moulders marked 1, 9 and 11 are used for detail and transit work. When the latter is going through, long troughs or chutes are used to carry the material to the car being loaded. Owing to the re-saw working in toward the centre of the factory this method could not be followed. To overcome this a pair of live rolls, 8, were installed to push the stock along a chute, out to the waiting car.

A few Yates machines installed in the J. R. Eaton factory

The stock for the furniture and special order work comes in through entrance No. 4. This brings it in line with the swing cut off saws. These saws are motor driven. In the case of the two E. B. Holmes saws, the motors are mounted on the upper part of the iron frame. The lighter equipment in the front



Layout of equipment in Eaton plant

1. Yates No. 91 matcher
2. Trim saw
3. Gang edger
4. American hardwood flooring machines
5. Trim saws
6. C. M. C. end matchers
7. Yates 6 in. band resaw
8. Live rolls
9. Yates No. 108 moulder
10. Dowel machine
11. Yates sticker No. 111
12. Yates band rip saw No. 281
13. Buzz planer
14. 30 in. surface planer
15. Sticker
16. Power feed rip saw
17. Boring machine
18. Variety saw
19. Swing saws
20. Buzz planer
21. Variety saw
22. Yates glue jointer
23. Yates 30 in. planer
24. 3 drum sander
25. Band saw
26. Boring machine
27. Dado machine
28. Jackson-Cochrane double cut-off saw
29. Double cut-off saw
30. Trim saw
31. Boring machine
32. Cowan saw table
33. Variety saw
34. Yates band saw
35. Boring machine
36. Disc sander
37. Belt sander
38. Two-spindle sander
39. C. M. C. horizontal boring machine
40. Belt sander
41. Sash sticker
42. Two-spindle shaper
44. Door rail relisher
43. Hollow chisel mortiser
45. Tenoner
46. Chain mortiser
47. Mortiser
48. Turning lathe

half of the building is used for furniture, door and sash-making and detail work of all kinds.

The veneering and gluing-up is all done in the glue room. Here none but animal glue is used. A glue spreader has been installed to take care of the veneer work. Plenty of room has been alotted to this department, so that a large amount of work can be put through without any serious congestion.

The machine shop is well equipped to take care of all the repairs required throughout the plant. In addition special machines or attachments may be worked out to aid in increasing production or for special forms of work. With a suitable iron working shop in the building repairs are effected with a minimum of lost time.

Another feature that might be mentioned is the lighting of the building. One would think that the equipment installed in the centre of such a large floor space might not receive sufficient light. Such is not the case. The side and front walls are nearly all glass and, in addition, four or five rows of large sky-lights distribute a bountiful supply of light to all parts of the floor. These skylights are provided with large ventilations which help to make the factory a pleasant place to work in.

The personnel of the company is as follows: J. R. Eaton, president; E. R. Eaton, 1st vice-president and managing director; J. H. Eaton, 2nd vice president; W. M. Tupling, secretary-treasurer, and W. A. Gray, superintendent.

Working Stock to the Best Advantage

Cutting Material for Thin Edge Mouldings on Bevel Effects Worth-while Saving—Set Edge of Rolls to Bear Near Centre of Bevel Face

By H. H. Ralphe

The present high values of lumber make it imperative that every effort be made to utilize every inch of stock that enters a plant. Recent issues of the "Canadian Woodworker" have contained articles on "The Running of Mouldings in Multiple." This is one method of economizing on stock as well as increasing the output of the sticker, but it has only a limited application and does not enable the fullest advantage to be taken of the lumber going through.

Another suggestion along this line is that mouldings that are thinner on one edge than on the other be made from bevelled stock. This applies to such forms of moulding as picture moulding, drip caps, certain forms of aprons and moulded sills and other lines of a like nature. Suppose we are about to run a large thin edge mould that will require a piece of stock 3 in. x 5 in. if worked from the square. Making the same design from bevelled stock, we can get two lengths from 3 x 8 material. One length from 3 x 5 or 15 square inches and two lengths from 3 x 8 or 24 square inches, shows a gain of 3 square inches in favor of the bevel cut stock.

Judging Value of Different Sized Stock

Before deciding which course to follow, there is another point to consider. Perhaps by bevelling the 3 x 5 material, the piece cut off will have an area greater than 3 square inches and will make a moulding that would find a ready sale. If that is so, it is clearly the better scheme to use 3 x 5 stock. If the piece saved is so small as to be practically useless, the 3 x 8 stock will give better results. Then again, it might be possible to rip to width the bevelled pieces made from the 3 x 8 and secure a narrow bevelled piece from the thin edge that would run some small moulding.

This leads to the suggestion of getting the bevelled pieces from, say, 4 x 5 material and eliminating the narrow piece that may be wasted when 3 x 8 stock is bevelled. Unless this small piece will work into some moulding that will return the cost of material plus the cost of ripping, plus the cost of running, the working up of 4 x 5 stock offers the best method of running the moulding in question, using the smallest possible quantity of lumber.

It will be seen that each individual thin edge moulding must be studied as a separate problem and worked out to the best possible advantage. Like many other ideas. this suggestion has its limitations, where the advantages gained are offset by high labor or manufacturing costs or where the stock saved cannot be utilized or disposed of to advantage.

In running bevelled material through a sticker, it is advisable to grind the sharp corners off the inside of the top feed rolls so that this sharp edge will not cut deep enough to mar the face of the finished moulding. The rolls are then set out as far as thought desirable or as far as the adjusting screw will permit. The idea is to have the inside edge of the top rolls as near the centre of the bevelled piece as possible. When adjusting these rolls, the edge should be set to bear where the cut is heaviest. If this is not done, it is possible that the marks of the rolls will show on some of the finished faces.

Who Put the Cost of Living Into 'High?'

1. 100 men live on an island; 25 fish; 25 clean fish; 25 cook fish; 25 hunt fruit.
2. Everybody working; plenty; everybody happy.
3. 10 fishers stop work.
   10 more try and hide part of their catch and quit.
   5 continuing fishing on shorter hours.
   Fewer fish in the kitchen.
4. 100 men yell for fish.
   50 cleaners and cooks yell for work.
   25 hunters demand bigger share of the few fish.
5. 100 men insist upon "the right to eat."
   25 hunters insist upon "the right to strike," and
   20 strike.
6. Food supply shrinks daily; the man with 2 fish demands 3 bananas for each fish.
7. Man with 2 bananas demands 3 fish for each banana.
   The 10 men at work quit in disgust.
8. Everybody keeps on eating; the hidden fish are discovered and consumed.
9. No food: everybody blaming everybody else.
   What are you going to do about it?
10. Why not try work? You can't eat, buy, sell, steal, give away, hoard, wear or gamble with what isn't!

Do You Guess at Your Cost Figures?

Divisions of Overhead and Where Chargeable—Methods of Applying Various Burdens—Accurate Costs Mean Intelligent Competition and Elimination of Price Slashing

By S. J. Sutherland

(Last instalment of series)

The following paragraphs will be perhaps uninteresting to those who are familiar with the methods of the Millwork Cost Information Bureau, as the writer is using their standard division of expense, and then suggesting the further refinements which are desirable and in some cases necessary to meet the varied conditions encountered in larger factories. They recommend only the standard division of expense. You, yourself, will have to determine the desirability of still further divisions. The small shop, who merely adopts the standard division, will be on a fair basis of comparison with the large factory which uses different burdens for the various classes of product.

There are two classes of material: direct material that can be charged direct to the individual order, such as lumber, glass, etc. Indirect material is all other material, such as nails, glue, screws, sandpaper, etc. There are two classes of labor: direct labor, that which can be charged direct to each individual job, and which should be separated as to machine and bench. Indirect labor, such as oilers, foreman, office staff and other unproductive labor.

Divisions of Overhead

Material burden (overhead) is all indirect labor, indirect material and expense that the material uses up to the time it is sold or is in process of manufacture. Machine burden (overhead) is all indirect labor—indirect material and expense that the machinery operator uses. Bench burden (overhead) is all indirect labor, material and expense that the bench operator uses. Commercial burden (overhead) is all expense of every nature not already charged to the above three burdens, and should include delivery or shipping charges.

Direct material, plus material burden, direct machine labor and direct bench labor, and any other labor charged directly to the individual job, makes prime cost. Prime cost, plus machine burden and bench burden makes factory cost, factory cost plus commercial burden makes total cost.

Note:—Material burden (lumber) includes the following. All labor in yard and kiln ,and liability insurance for same, interest, taxes, and insurance on value of average stock carried, interest and taxes on ground occupied by yard, sheds and kiln. Interest, taxes, insurance and depreciation on shed, kiln and equipment. Maintenance and repairs on shed, kiln and equipment, such parts of power plant properly chargeable to kiln. Such parts of barn expense and motors used in hauling lumber. Such part of office expense used in purchasing lumber. Lumber burden divided by the number of feet of lumber handled equals the average amount per thousand to add to lumber.

Machine (burden) includes such part of power plant expense properly chargeable to machinery, carrying charges on machine investment, indirect machine labor, maintenance and repairs on machine and depreciation. This is the cost per hour of running each machine (not including wages paid machine man) depreciation of machinery is included at 10 per cent.

Many cost systems direct material and direct labor to the individual job and distribute all the balance of cost (burden or overhead) equally to all classes of product. There are four methods commonly used.

The First Method

Burden equals 200 per cent. of direct labor.

Sample 1. 1000 feet run moulding.

Direct material Y Pine	$15.00
Direct labor	3.00
Burden at 200 per cent. of labor	6.00
Cost	$24.00

Sample 2. 1 book case pedestal.

Direct material	$ 1.00
Direct labor	4.00
Burden at 200 per cent. labor	8.00
Cost	$13.00

The above shows that the burden on an article with $1.00 worth material is more than 1000 ft. moulding used $15.00 of material. In case mahogany was used at over five times the cost, the burden would still be only $6.00.

The Second Method

Burden equals 50 per cent. of material used.

Example 1. 1000 feet run moulding.

Direct material Y Pine	$15.00
Direct labor	3.00
Burden at 50 per cent. of material	7.50
Cost	$25.50

Example 2. I Book case pedestal.

Direct material	$ 1.00
Direct labor	4.00
Burden at 50 per cent. material	.50
Cost	$ 5.50

By this method, if the moulding had been mahogany, the material worth $75.00 ,the burden would be $37.50 as against $7.50. The pedestal is ridiculously low, which is not an extreme case in cabinet work.

The Third and Fourth Methods

Burden equals $50.00 per M of material used. By this method moulding and all machine work would be high and all cabinet work low.

Burden equals 40 per cent. of direct material and direct labor.

Example 1. 1000 feet run moulding.

Direct material Y Pine	$15.00
Direct labor	3.00
Total	18.00
Burden at 40 per cent. of total	7.20
Cost	$25.20

Example 2. 1 book case pedestal.

Direct material	$ 1.00
Direct labor	4.00
Total	5.00
Burden at 40 per cent. of material and labor	2.00
Cost	$ 7.00

Again, if the moulding were mahogany, at a value

of $75.00 and the burden 40 per cent. of $78.00 equal $31.20 or $24.00 more than yellow pine This method also leaves cabinet work too cheap. Applying the method of adding the burden as worked out as chart shown in previous article. (Rates used will ,of course, vary).

The Fifth and Best Way

Example 1. 1000 feet run moulding.

Direct material Y Pine	$15.00
Lumber burden at $4.50 per M feet	1.50
Direct machine labor	3.00
Machine burden at 35c per hour	3.30
Factory cost	22.80
Commercial burden at 20 per cent. of factory cost	4.56
Total cost	$27.36

Example 2 1 book case pedestal.

Direct material (oak)	$ 1.00
Lumber burden at $6.00 per M	.10
Direct labor (machine)	1.00
Machine burden at 35c per hour	1.10
Direct bench labor	3.00
Bench burden at 20c per hour	2.00
Factory cost	8.20
Commercial burden at 20 per cent of factory cost	1.64
Total cost	$ 9.84

By comparing the first four methods with the fifth you will see that they are placing the burdens or overhead exactly where it should be and in this way cabinet work will carry its proper share (and practically all cabinet work is always figured low).

Advantage of Accurate Costs

It is the aim of every merchant and manufacturer to dispose of his goods at a price which will return to him first the cost of the article, including his expense of doing business, and, secondly, such a profit over and above the cost as will return to him a fair return on the capital invested. Therefore, in fixing prices he starts, as a rule, with what he considers cost. The difficulty arises when his information regarding costs is inaccurate or misleading. In his effort to develop his business he undersells his competitors, and when these prices are met, he shades them again, not knowing exactly when the point of danger is reached or passed. And so, as competition increases and prices are reduced, the weaker operators perforce drop out. The demand presently exceeds the supply, the prices rise, thus rewarding with generous profts, those who survive. This new condition attracts new enterprises. The supply increases and the prices fall again. The result is that in many industries extraordinarily prosperous periods alternate with exceptionally lean periods. These alternate periods of prosperity and depression are due partly, no doubt, to causes beyond the control of that particular industry, but it must be admitted that they are caused largely by faults and mistakes within the industry itself.

It is a remarkable fact that only relatively few enterprises become financially successful, and still fewer remain prosperous over long periods. Only occasionally is a business house encountered which has a history extending back over a generation, although there is no inherent reason why a business once established should not go on indefinitely.

A business may show a profit as a whole and yet it may not necessarily follow that profits have been earned on each item of merchandise, for losses on one class of goods may be than offset by profits on other classes. The result of such a condition can only mean, in the long run, the loss of the profitable business to competitors, and the retention of the unprofitable business which no one else wants

No manufacturer knowingly sells an article below its actual cost, unless very exceptional circumstances. It follows, therefore, that cutting of prices, resulting in keen competition, is generally the direct result of erroneous cost figures.

Although business men may be in sharp competition with each other, they have in fact a very well-defined community of interest. The unsound and uneconomic practices of an operation affects directly or indirectly every other operator in the same line. An enlightened self-interest, therefore, demands every effort on the part of all to prevent each individual from creating disturbed business conditions. No other one thing will so help to stabilize trade as full knowledge on the part of all as to the real cost of production and distribution.

Clean competition should centre around quality and service rather than price. It needs no salesman to secure orders at cut prices. The variation in the market prices of articles of the same kind will tend to become of decreasing importance with the spread of more accurate cost accounts. When a materially lower price does appear it will be the direct consequence of more efficient operation, and it would be only fair that the efficient operator should reap the benefit of his enterprise. Efficient operation and the elimination of waste are themselves among the most important objects to be achieved with the aid of accurate cost accounts.

Keeping Moulding Knives in Shape

By M. N. W.

The heavy wear on different parts of a moulding knife, such as the outside cutting edge of a knife making a side cut, necessitates an excessive amount of grinding to keep the cutter in its original shape and to maintain the size and contour of the moulding being run. This is more noticeable, perhaps, when running stock like half rounds where both the inside edges of the curved knife wear much more rapidly than the centre. Thus, the distance between the two cutting edges at the end of the knife increases rapidly and the moulding becomes broader and more squatty. To overcome this it is necessary to grind the centre back sufficiently far to maintain the original shape of the cutter. This requires a considerable amount of time and at best offers only a temporary relief, for it does not take long for the edges making the side cuts to wear away again.

When running half round, the writer overcame this feature by using four knives on the top head, using the top head saves the bother of holding the work accurately over the cutters on the bottom head. When first set up, the four knives are ground the exact shape required by the pieces being run and are set so that all four are cutting. When the sides wear back and grinding is required, two of the knives are ground on the right-hand side and the other two on the left-hand edge. When setting them back on the head, they are staggered slightly so that two of the knives cut in one side and two on the other. while the whole four cut on the top. In this way the shape of a half round can be maintained with a minimum of grinding. In addition, the life of the cutter is extended considerably as the material is not ground away so rapidly. With steel commanding such a high figure, this latter feature is of considerable importance.

Utilize Everything But the Buzz

Stream of Dollars Maintains Refuse Heap—Market for Small Blocks—New Lines to Help Eliminate Waste—Shavings and Sawdust Difficult Problem

By Harold Sutton

If any manufacturer who works up large quantities of small pieces of wood will write the "Canadian Woodworker" giving particulars and sizes of the material used, it is just possible that a source, or sources, of supply may be found that will result in this material being secured, cut to size, at a figure that will result in reduced manufacturing costs. At the same time one of the most important resources of the Dominion—lumber—will be conserved.

A problem that is engaging the attention of many woodworkers is the economical utilization of factory waste—the edgings, blocks and shavings that accumulate around the plant. Some day some person will devise a simple, inexpensive method of producing wood alcohol, charcoal or similar product from this material and thus enable it to be worked to advantage. Until that time comes, and let us hope it will be soon, the question of realizing a profit, or even a return, from material that is now going to waste, is largely a matter of individual initiative. It is a case of seeking and working up a market rather than expecting the market to come to the plant.

In a description of a large ready-cut house concern, which appeared in an American publication, reference was made to the way this firm disposed of the immense quantity of short ends and block that would accumulate each day. These people did not confine their attention to the locality surrounding their plant, but made a careful survey of the available market for small blocks which might exist in the surrounding states. The result was that one firm was found that could use two cars of 8 x 8 x 1 clear blocks per month, another was found that used large quantities of 3 x 6 x 1 and a third was found that would purchase smaller blocks in carload lots. With this market within reach it was a simple matter to have the edgings and block drop on conveyors, which carried them to sorting tables. Here the material that could be utilized was picked out and sent to gang equalizers that soon brought the blocks to the required sizes. The prices realized turned what would have been a loss into a small profit and helped swell the earnings of the whole plant.

Every Bit of Waste Utilized

In another large plant nothing is burned except for generating heat and power for the plant. Not even stove wood for the employees is available. Pieces as small as ⅜ in. by 1¼ in. by 8 in. are worked up. These are made into small trays and disposed of to smelters and founders who use them when sorting small pieces of metal. The metal is piled on the trays and the whole placed in the furnace. The trays are consumed after contributing to high efficiency in handling. Chemical companies use similar trays and in the same manner.

Two other instances might be cited. A large stove manufacturer was found cutting very small pieces from long lengths. These were eventually supplied, cut to size, from factory waste. The other is that of a large box factory which cut large quantities of cleats 1 in. by 1 in. by 7 in. from good lumber. They gladly secured these small pieces from nearby plants when they found that a dependable supply was to be had.

Some one may say that the same conditions do not hold in Canada and that it is extremely difficult, if not impossible, to find a market here that can take small blocks in large quantities. The "Canadian Woodworker" knows of one firm who manufacture their product from small pieces and are prepared to buy hardwood blocks full ⅞ thick, 4½ wide, and of random widths from 2 in. up, in carload lots. The name of this concern may be secured on application. This is only one instance. No doubt there are many others who would be glad to secure their raw material in small sizes.

Small Articles Might be Manufactured

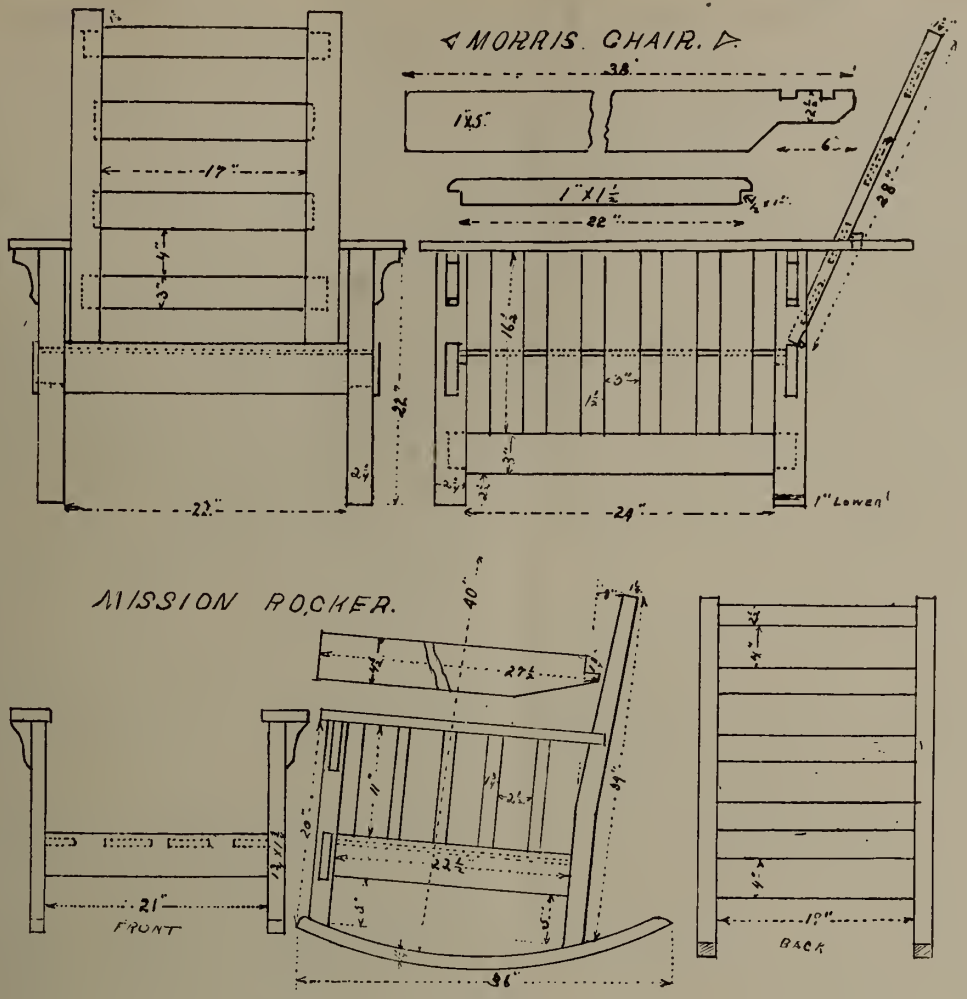
Other uses that might be suggested for a considerable part of this wood waste are the manufacture of such articles as staves, broom handles, small handles, dowels, clothes pins, boxes, laths, backs for scrubbing brushes, etc. If it was not deemed advisable to instal the equipment required to make some of these articles, it is just possible that some nearby broom or handle factory might welcome the opportunity to buy suitable blanks for their products. The same might apply to the other lines mentioned.

The manufacturers of wooden toys are finding a ready sale for their products and at prices that yield a fair profit. The demand for articles of this kind is well in excess of the supply. Perhaps the small pieces of wood that you are throwing out or burning could be made to return a certain amount of revenue and profit if some line of wooden toys were taken up.

Requires Considerable Initiative

Securing a return for sawdust and shavings is another and perhaps more difficult problem. Unless this waste is accumulating in such quantities as to be a nuisance and a fire menace, it might be well to make a practice of making a small charge for all shavings and sawdust that is taken away from the plant. Often some nearby industry is glad to secure such material for fuel and will haul it themselves and pay some nominal price, such as fifty cents a load. In addition a limited market usually exists in any town for these materials. The butcher uses sawdust on his floors, for smoking meats and fish and packing ice in storage. Others can be found who would probably use shavings for bedding, packing purposes, deadening walls in buildings or perhaps in the manufacture of some product.

It is advisable, if an attempt be made to dispose of the sawdust and shavings, to keep these two items separate, as it has been found that they can be disposed of more readily when not mixed. This requires separate cyclones and exhaust system, but such has often been found a profitable investment. Baled shavings may be shipped long distances, so any efforts made to secure a market for shavings should not be centered on the local field, to the total exclusion of a more distant openings.



Sketch showing details of Morris chair and rocker

Two Comfortable Easy Chairs

By R. J.

The two chairs shown in the accompanying illustration were recently designed and made up in walnut by the writer. While not claiming any special merit for them any more than that they are two substantial, well-constructed chairs, I am submitting them in the hope that they may prove of interest and, perhaps, assistance to some of the readers of this good publication.

In design, they are very plain, practically none but straight lines being employed. These chairs were made for service so that the details of construction are not skimpt. Numerous mortise and tenon joints insure that they will stand up under ordinary wear and tear. Wherever possible, glue blocks were placed as added reinforcements.

The finish consisted of a coat of light walnut filler, one of light shellac and several coats of good varnish. When thoroughly dry, the last coat was rubbed to an egg-shell gloss. The cushions were made of a material that harmonized with the other furnishings of the room and were filled with a good grade of curled hair. In the writer's opinion curled hair is the most satisfactory filling for upholstery that is on the market to-day.

The following stock list gives details of the pieces required for each chair:

Piece Bill for Morris Chair

4	posts	2¼" x 2¼"	22½" long
2	front and back rails	1 " x 4 "	28 " "
2	side rails	1 " x 3 "	27 " "
10	side slats	½" x 3 "	17½" "
2	arms	1 " x 5 "	38½" "
4	brackets	1⅛" x 2¼"	5 " "
2	cleats	1 " x 1 "	22 " "
5	seat slats	⅜" x 3 "	26 " "
2	back stile	1⅛" x 2 "	28½" "
4	rails	⅝" x 2½"	19½" "
1	back rest	¾" x 1½"	24½" "

Piece Bill for Mission Rocker

2	posts	1¾" x 1¾"	21 " "
1	pr. back posts	1¾" x 6 "	35 " "
1	front rail	⅞" x 4 "	23 " "
1	back rail	⅞" x 4 "	21 " "
4	back rails	⅝" x 2½"	22 " "
2	side rail	⅞" x 4 "	25½" "
10	side slats	½" x 2½"	12 " "
2	brackets	1⅛" x 2¼"	5 " "
2	arms	1 " x 4½"	27½" "
5	slats	⅜" x 6½"	25 " "
1	pr. rockers	1¾" x 6½"	36½" "

Some large plants in country districts might utilize all waste to advantage by converting it to electric current and lighting the surrounding district.

How One Per Cent. Tax Applies to Planing Mills

Considerable changes have taken place in the Government tax situation, so far as it relates to the retail lumber yards and planing mills, and sash and door factories. It was stated recently that all retail transactions were exempt, and it looked as if the retail lumbermen would not be called upon to collect the charge. This has all been changed and a late ruling received by the secretary of the Ontario Retail Lumber Dealers' Association from G. W. Taylor, Assistant Deputy Minister of Inland Revenue, Ottawa, says:

"In reply to yours of the 26th ult., I have to inform you that a firm operating a planing mill is classed as a manufacturer, and all sales are subject to the tax of 1 per cent. The tax of 1 per cent. on lumber is payable to the price f.o.b. shipment. without reduction or alterations on account of freight.

"If a retailer sells material to a contractor, such sale is subject to the tax of 1 per cent."

In a letter to the "Canadian Woodworker" Mr. Taylor says.

"All sales by manufacturers to wholesalers are subject to a tax of 1 per cent., and all sales by wholesalers to retail dealers or to other wholesalers, are also subject to the tax of 1 per cent. All persons owning a planing mill or sash and door factory are classed as manufacturers, and all sales by them are subject to the tax of 1 per cent. If a lumber merchant is a mill owner and takes a contract to supply material, all material supplied by him shall be subjected to 1 per cent."

It appears as if retail lumbermen will be subjected to the tax of 1 p. c. on nearly all transactions, as practically the bulk of their sales is to contractors or sub-contractors, who are regarded as retailers selling the consumer, as pointed out in Class 6 of the subjoined letter from Mr. Taylor, Assistant Deputy Minister of Inland Revenue.

Copies of the following have been sent out by the Canadian Lumbermen's Association, Ottawa, to its members, and also by the Ontario Retailer Lumber Dealers' Association to those belonging to that body.

(1) The tax is primarily one upon materials, and is not intended to be a tax upon labor. Labor used in the installation of materials is not taxed, but does apply to labor used in the manufacturing of materials.

(2) Art. 7 of the Resolution provides for a tax on one per cent (1%) to be collected on sales by manufacturers and wholesalers, this tax to be paid by the purchaser to the wholesaler or manufacturer at the time of sale.

(3) Contractors and sub-contractors will have to pay one per cent. (1%) tax on materials used by them.

(4) Products of the soil, such as sand, gravel, and unprocessed stone, are not taxed. Lime, cement and stone which is quarried, crushed or which passes through any process, come under the tax.

(5) Tax on materials on everything shipped or delivered on or after May 19th, 1920, unless it can be proven that the complete price was paid in advance of that date. Partial payment is not sufficient.

(6) Building contractors and sub-contractors, though technically manufacturers, are regarded for the purpose of the tax as retailers, selling the consumer. Tax is not chargeable on the amount of contract, either between sub-contractors and contractor or between contractor and owner.

(7) If a contractor or sub-contractor manufactures materials for his work, such as metal cornices, sash and door frames, iron failings, etc., he is required to pay tax on cost of manufacture, including labor. He is not required to pay tax on installation.

(8) Provincial and Dominion Government are both subject to the tax.

(9) Lumber jobbers are regarded as wholesalers and their sales are therefore subject to a one per cent. (1%) tax.

(10) Dealers who make sash, doors, etc., are manufacturers and the sales tax applies.

(11) Planing mills are manufacturers. Sales to wholesalers are subject to the tax, also to a further one per cent. tax when sold by wholesaler to contractor or consumer.

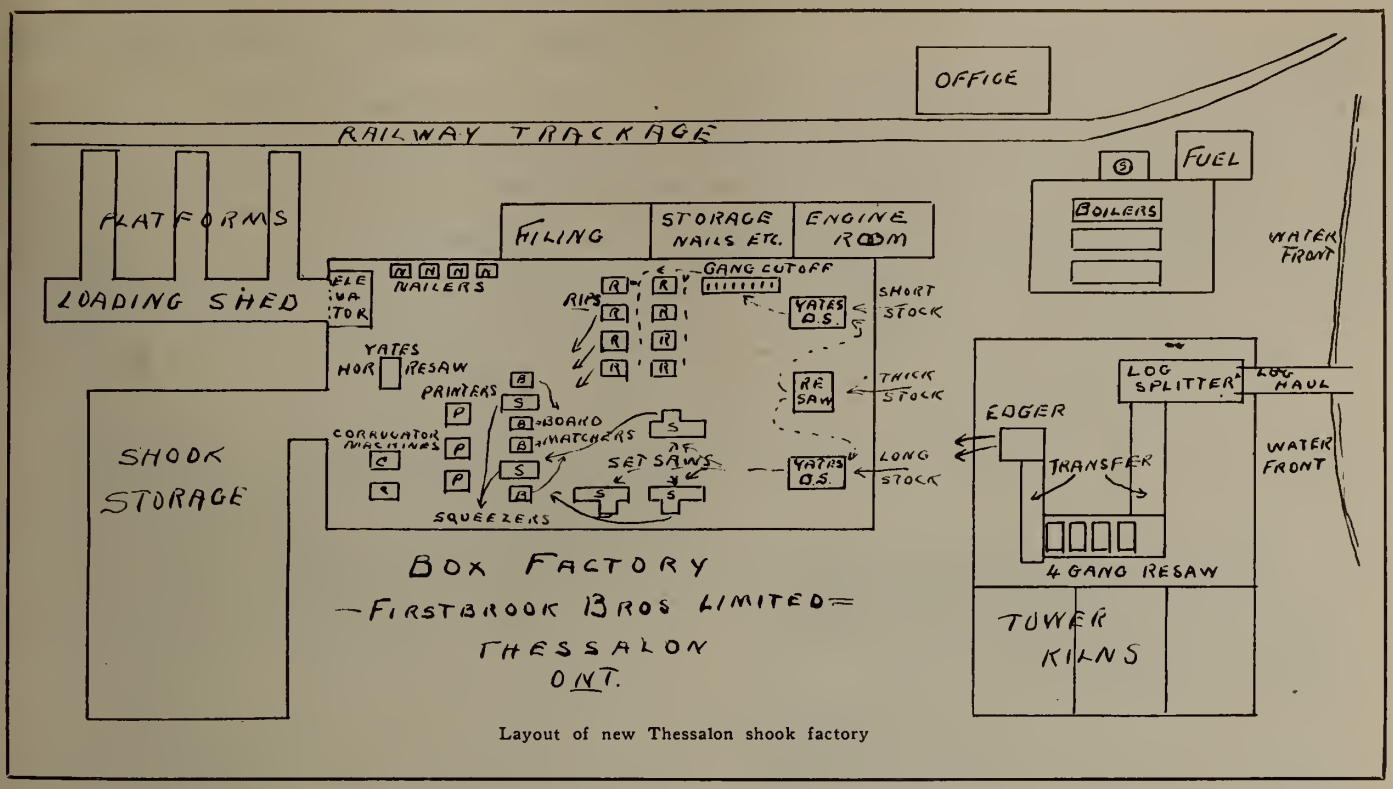
(12) In the opinion of the Inland Revenue Department, contractors ought to be able to recover tax from owners on contracts made previous to May 19th, 1920, for goods purchased or delivered after that date. This is, however, a question of law. On further contracts the tax should be provided for.

(13) Copies of all rulings made by the Department of Inland Revenue have been sent to all local collectors, and consultation with these officers will probably save much time and expense in securing information required.

Newcomer in Equipment Field

One of the newer firms in the machinery and equipment field is the General Machinery Co., 67-69 Frederick St., Toronto. The principals of this new concern are L. F. Simpson and A. L. S. McCurdy. Mr. Simpson and Mr. McCurdy have had considerable experience in the woodworking field and are familiar with all lines of woodworking equipment. Both these genlemen were in the production department of the Curtiss Aeroplanes & Motors, Limited, when that firm was manufacturing aeroplanes, and later when they turned their attention to the production of phonographs. Mr. Simpson held the position of production manager.

While not confining their efforts entirely to woodworking equipment, the greater number of machines they have in stock at present are woodworking tools. They have made arrangements to act as representatives for the Preston Woodworking Machinery Co., of Preston, Ont., and the S. A. Woods Machine Co., Boston, Mass., and are negotiating with several other American manufacturers of woodworking machines. In the iron-working line they represent the Perfect Machine Co., of Galt, Ont., Brown & Boggs and the Ford-Smith Machine Co., of Hamilton, Ont.



Layout of new Thessalon shook factory

New Box Shook Plant at Thessalon

Equipped to Handle Large Output—Number of Special Machines Installed—Adequate Supply Labor and Raw Material

A description of the Penetang plant of Firstbrook Bros. & Co. Limited, Toronto, together with a sketch showing layout of buildings and equipment, appeared in the April "Canadian Woodworker." This article pertains to the new box shook plant which the same progressive company is erecting at Thessalon, Ont.

This plant, which will be in operation shortly, will provide employment for one hundred hands and will have a capacity of about a car of finished shooks each day. While practically all the stock shipped is in k.d. form, a certain amount of nailing is done, such as cleats on ends, covers and similar work.

A quantity of trimmer block stock and mill cull lumber will be worked up, but the greater proportion of the shooks will be cut from short logs. These will be carried from the water to the log-splitting saw on a log haul-up and, after being cut, will drop on a conveyor, which will carry them to a Clark-Demil four-gang resaw. The gang resaw is a special machine and consists of four resaws up together in such a manner that the cant will pass from one to the other and four pieces will be sliced off every time that the gang re-saw will cut it into 1 in. pieces. Another transfer carries these boards to the edger where, after being sized, they are taken to the yard and piled for air-drying.

The section marked "tower kilns" was formerly part of a smelter that occupied this site. This section consists of three deep concrete storage bins and will eventually be equipped as tower kilns. The plan is to eliminate air-drying and provide sufficient heat and ventilation to dry the stock in twenty-four hours. It is not essential that the material be perfectly dry, a moisture content of 10 per cent. or 15 per cent. being permissible.

The trimmer block stock and the mill cull lumber is worked up much the same as in the Penetang plant. The short pieces are planed on a Yates double surfacer and from there go to the endless bed gang trim-saw. This latter machine has eight or ten adjustable cut-off saws, which are set to cut sides and ends. The stock is placed on the bed so that it will be worked up with a minimum of waste. The short pieces are now ripped to width, matched and trimmed and the other operations proceeded with.

The longer or mill cull lumber is double surfaced on another Yates machine and cut to length and ripped on combination sets of saws. The succeeding operations depend entirely on the type and size of box being made.

The gang cut-off saw, the combination cut-off and rip saw sets and the gang resaw are all special machines; in fact the gang cut-off and the combination saws were designed and constructed under the supervision of the superintendent, Mr. Benson. The gang re-saw was made to their order. In this connection it might be interesting to mention that while a gang resaw is being manufactured and distributed at the present time, this machine was first made to their order and it is understood that they had the first one in operation on this continent.

The balance of the equipment includes such machines as two Yates double surfacers, Yates resaw, Yates horizontal resaw, four Morgan nailers, three Morgan boxboard printers, two Morgan corrugator driving machines, four boxboard matchers, two box-

board squeezers numerous rip saws and a full complement of small machines.

Thessalon should be a good location for a plant of this kind. The labor situation is very good, there being a plentiful supply of skilled and semi-skilled workmen. Being situated in the heart of a lumbering district, the raw material situation should not give any worry for many years to come. Considering the raw material and labor situation and the adequate trackage and waterfront facilities, which exist there, the location might well be called an ideal one.

Demand for Ply Wood Boxes

Trade Commissioner J. W. Ross

A very large demand exists in China, the Straits Settlements, Java, Ceylon and India for boxes in which to ship away the various export products of those countries, principally tea and rubber.

These boxes, of which the accompanying photograph is an accurate illustration, are made of lominated or ply wood (3 ply), the size is 19-inch by 19-inch by 24-inch, and thus measure 5 cubic feet, and are made to contain 200 pounds of sheet rubber, or 160 pounds of crepe rubber.

Such boxes are now being made locally in Java, and are furnished complete with sheet iron corners, as seen loosely placed upon the corners of the box in the photograph. Their cost in guilders $3.25 each, or about $1.25 United States currency. I have received an inquiry from one firm for 50,000 of these boxes, but the demand from the Straits Settlements, the Malay States, Java and Sumatra will greatly exceed this number; it is estimated that 4,000,000 of these cases will be required in 1920 in which to ship the season's output. This is an industry in which Canada should be in a position to compete; the above figures show the great volume to which this business has attained at the present time, but this has been reached within a comparatively short time; the future possibilities of this trade are really very great. The name of the firm enquiring for the 50,000 boxes may be secured by writing the publishers of this paper.

Conveyor belts or chains will remove the mill waste with a minimum of labor.

Wood Refuse Pays the Bill

An Extremely Economical Electric Installation In Large Box Plant

When walking through a woodworking plant you have, no doubt, noticed the 10, 15 or 20 h.p. blower that carries the sawdust and shavings to the collecting bins. Did you ever stop and consider the amount of power that blower consumes? Each plant is a particular case demanding individual attention to meet its power requirements satisfactorily. But the single large blower in the wood-shop is a feature that has often been overlooked.

One of the strongest influences that has worked against the installation of large machines, where it is possible to use several smaller ones, has been the maximum-demand rate basis of charging for electric power. Today this is the common rate used in one form or another, by the central station companies. Ordinarily, the wood-working plant is a difficult customer for the electric companies to secure because of the fact that the refuse from the wood dressing is burned in the boilers to furnish power to run and heat the plant.

One instance where the use of central-station power has been worked out to the distinct advantage of the plant is the H. R. Gibbons Box Factory, Chicago, Ill., where all of the 38 machines are driven by individual motors. None of these motors is over five horsepower, and it is due to this and one other feature that the factory is able to pay its power bill by the sale of the wood refuse.

Although the total connected horse-power of the installation is 110 horse-power, the maximum demand never runs over 45 kilowatts. There are two explanations for this. The work done is all very light. The wood is not heavy and the cuts made are short. And there is a great diversity in the use of the machines. The second explanation is to be found in the layout of the blower system for the refuse removal.

Each of the motors is hung on a wooden frame in the basement, directly under the machine that it operates. In this way no belt in the plant is over five feet long. The motor switches are mounted in steel cab-

Type of three-ply box required for shipping tea and rubber

inets on the machine, in a position that is convenient for the operator.

Electrically, the installation is exceptionally economical. And its convenience makes it possible for the operator to shut off his machine the instant he is through with a job. No current is wasted, and the machines are none of them over-motored. All of the saw cuts are short, so that the momentum of the two-horsepower motors on the crosscut saws and the three-horsepower motors on the rip saws is sufficient to carry the saw through a cut that might appear to demand larger motors. The actual cutting times are: eight seconds for the ripsaw and one second for the crosscut.

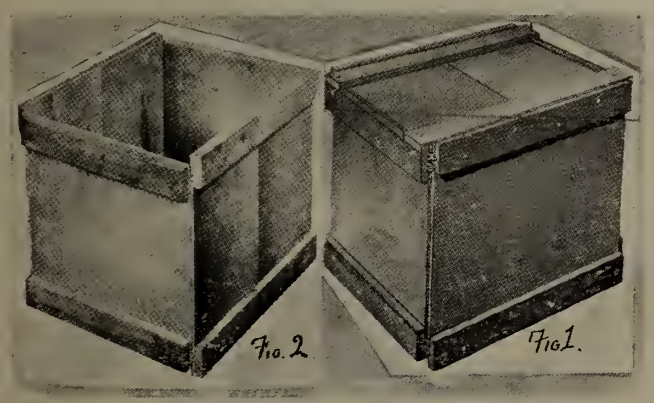
And since the crosscut and the rip-saws are always run in pairs, it is possible to use one blower for the two machines and retain the advantages of the individual-blower feature. Ths blower is belted to the twin pulley on the two-horsepower motor on the crosscut saw. The blowers, all individual, on the planer, groove saws and the hand hole cutters, are each driven by one-horsepower motors.

By using the individual blowers two purposes are served. The power consumption is cut to a minimum and the sawdust is kept separate from the shavings. It is this last fact that makes it possible to find a ready market for the refuse. It is rare that a market is found for a mixture of sawdust and shavings. The pipe from each machine carries its refuse directly to the roof. Here there is a cyclone for the sawdust and one for the shavings.

From the cyclones the refuse falls down into the hoppers that are built over the driveway. The truck can drive up under the hoppers and take on a load of clean waste of either kind. This explains how the power, used at approximately 3 cents a kilowatt-hour, is paid for by the sale of the refuse. At the same time, during the winter, enough of the waste material is burned to heat the plant.

New Hinge Corner Box

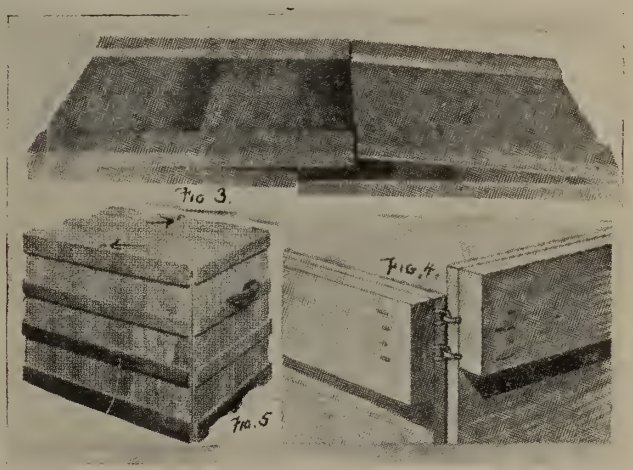
An innovation in wooden box construction is the hinge corner box which has been designed by the Chicago Mill & Lumber Co., Chicago, Ill. The unusual feature is the hinges which hold the corners together. These are made of steel wire and driven through the cleats and clinched. Naturally as these wires are hooked together when attached the cleats must be assembled as the hinges are driven and clinched.



Hinge corner box assembled

The boxes are shipped out knocked down, as shown in figure 3, the tops and bottoms being bundled separately. The sides and ends while fastened together do not take up any more space than were shooks sent out in the ordinary K. D. form. These boxes can be returned as readily as they are shipped out, and make a very desirable form of returnable box or crate—the same construction is used for crates. If instead of attaching the tops and bottoms with nails a hooked closure is used, as illustrated in figure 5, this box is particularly adapted where a returnable service is operated. The fact that it can be returned in K. D. form means a saving in freight.

When assembling the box, forms of any kind are unnecessary. The sides and ends are simply squared up as indicated in figure 3 and the tops and bottoms are nailed in place. Nails are driven through the sides into the top and through the top into the ends, giving a two way construction. It does not take as long to assemble this box and only half the number of nails are required.



Details of corner construction and box folded for shipping

Figure 1 shows the assembled box, while figure 4 is an enlarged view which gives a good idea of the details of the hinge corner. The fifth illustration is a hinge corner returnable crate. Solid or open side and end construction may be used.

In addition to the returnable feature the box is light in weight and does not take long to assemble, has a wide range of application and, due to its resiliency, will withstand a severe handling in transit. Under test it has been shown that china can be shipped in these boxes to better advantage than when packed in barrels or solid boxes.

It has proved exceptionally adaptable for packing and shipping phonographs, and many phonograph houses have placed orders for large quantities of this type of box. It is also used for shipping automobile accessories and many forms of hardware. One large Wisconsin chair manufacturer has adopted the hinge corner crate for packing and shipping his product.

Crack Filler Saves Stock

The use of some recognized make of crack filler will often enable pieces of stock with defects, defects that a few years ago would cause the pieces to be thrown out, to be worked up with a consequent saving in material. These crack fillers usually come in powder form and may be had in colors to match the different standard stains, such as mahogany, walnut, oak, etc. The powders are mixed with water to about the consistency of putty.

Machinery & Equipment

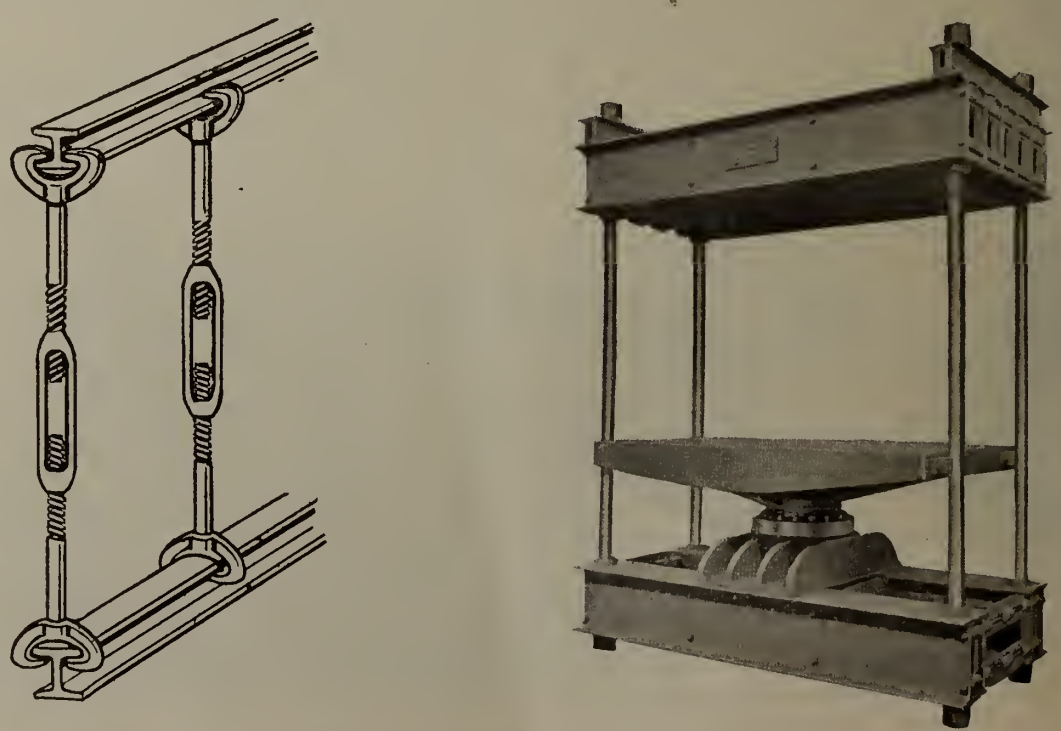
New Dominion Disc Grinder

A new addition has been made to the Dominion line of woodworking machines, manufactured by the Dominion Machinery Co., Toronto, in the shape of a disc grinder. It is designed particularly for use in pattern-making shops. Disc grinders are recognized as being almost indispensable in the modern shop. They save their cost many times over and enable the work to be done quickly and accurately. The dominion disc grinder can be furnished either with ball bearings or with the ordinary babbitt bearing. The table will tilt to an angle of 45 degrees either way and is fitted with stop for setting square with discs. The discs are turned and grooved both sides, giving four usable surfaces. A special countershaft with a pull to start and pull to stop arrangement is included. This machine can be readily adapted to metal work by using emery cloth on the disc, instead of garnet paper, and will often take the place of a high-price machine. Full particulars can be obtained by writing the Dominion Machinery Co., Toronto.

Dominion Disc Grinder

Perrin Hydraulic Veneer Presses

The accompanying illustrations show the type of hydraulic veneer press and retaining clamps manufactured by William R. Perrin, Limited, Toronto. The presses are usually made to order in size, stroke and pressure to suit the requirements of the purchaser. Thus anyone installing one of these presses is sure to secure a machine adapted to his work. They may be had in any size, including large presses for veneering doors. The construction is I beam, with steel stay rods. The stroke depends on the requirements of the purchaser, but averages about 18 inches. The ram and cylinder are cast steel, carefully machined. The platform is a one-piece iron casting. The pump may be had attached to the press or as a separate unit. The pressure may vary from a few pounds to several hundred tons. The retaining clamps are strong and



Hydraulic veneer press and retaining clamps manufactured by William R. Perrin, Limited, Toronto

C. M. C. hand block belt sander

designed for quick action. Using clamps the press may be kept working steadily, without let-up. Perrin veneer room equipment is found in many Canadian plants. Some of the most recent installations are the Globe-Wernicke Co., Limited, Stratford, Ont., Preston Furniture Co., Limited, Preston, Ont., and the Anthes Furniture Co., Limited, Kitchener, Ont. Further information may be secured by writing the William R. Perrin, Limited. Toronto.

C. M. C. Hand Block Belt Sander

The accompanying illustration shows the hand block belt sander which the Canadian Machinery Corporation of Galt, Ont., are offering to the trade. Like other C. M. C. products this sander is well designed and well finished. It can be adjusted to accommodate a very wide range of work. While the columns should be set about 20 feet apart for best results, they can be placed further apart if the work calls for a greater distance. The table, which is 32 in. wide and 77 in. long, has sufficient vertical adjustment to permit stock as thick as 12 in. to be worked on the table. The columns are made rigid to eliminate all vibration. The vertical adjustment of the table is made by means of rack and pinions operated by worm and hand wheel. A countershaft is not needed as the machine is driven by fast and loose pulleys on the drive shaft. If required, it may be had fitted for the installation of an individual motor drive. The sand belt pulleys are 14 in. diameter and 8 in. face, taking belt up to 8 in. in width. The drive pulley is covered with rubber so that a positive drive to the sand belt is ensured. Idler pulleys, one counterbalanced, are provided to maintain the belt at the proper tension and keep it out of the way of the operator. Adequate lubrication is provided for by numerous compression grease cup. Using grease eliminates the danger of the work being spattered with oil. It is an efficient up-to-date machine in every respect. Further particulars may be secured from the above mentioned firm.

Box Manufacturers Organize

The box manufacturers of British Columbia recently organized as a section of the British Columbia Division of the Canadian Manufacturers' Association, as it was the feeling among the individuals that some such forms of association was necessary to enable them to co-operate in handling of not only domestic business but also the large amount of export trade offering. Many substantial orders have already been taken on and apportioned between the manufacturers according to the capacity of plant or the condition of their order books.

The chairman of the new organization is Mr. R. B. Sharpe, of the Pacific Box Company, Vancouver. The other officers are W. B. Mitchell, Cameron Lumber Company, vice-chairman for Victoria, D. Lloyd-Jones, Kelowna Saw Mills Co., Ltd., vice-chairman for Okanagan, H. C. Airth, Brunette Saw Mills Co., New Westminster, chairman Export Committee; P. J. Murphy, B. C. Manufacturing Co., treasurer; Hugh Dalton, secretary. The association has offices with the Canadian Manufacturers' Association in the Board of Trade Building, Vancouver.

Where Difference Comes In

Manufacturers of fibre are somewhat worried over the carelessness of shippers in not properly tapeing and sealing the outer joints and seams. They are also attempting to discourage the re-use of such containers. They believe that the fibre container is just good enough to be used once, but no more. No one has discovered, however, that the wood box is any worse for re-use because of having once passed through the rough handling incident to modern transportation; for if it has been racked a few additional nails will repair it.—American Lumberman.

The automatic lathe is a production machine that increases the profits of its owner.

Upholstering and Trimming

Better Human Relations in Industry

By D. D. Fennell*

Industrial unrest has become increasingly general of late. Four men of somewhat unstable character, possessing however, a knowledge of practical psychology, suddenly develop the conclusion that the switchmen of Chicago should receive an increase in wages at once, regardless of laws or of wage boards or of the community, and succeed within three days, without any apparent leadership, in persuading thousands of switchmen to leave their jobs and strike without the authorization or the approval of union officials, and in direct opposition to the union officials. All switching in Chicago, Philadelphia, New York and various other centres ceases.

A few men of the same agitational tendencies soon reach the firemen and engineers with propaganda, and they leave their locomotives in great numbers. As a result, unmanned trains are strung along the tracks at the approaches to every city in the country. The principal source of meat supply, the U. S. Yards, becomes inoperative. Hundreds of thousands of workmen are deprived of employment, and industry suffers over the entire country. The strike is not yet settled and the country stands to lose hundreds of millions of dollars. In this phenomenon is seen a fundamental human passion in itself natural and benign become destructive through misdirection.

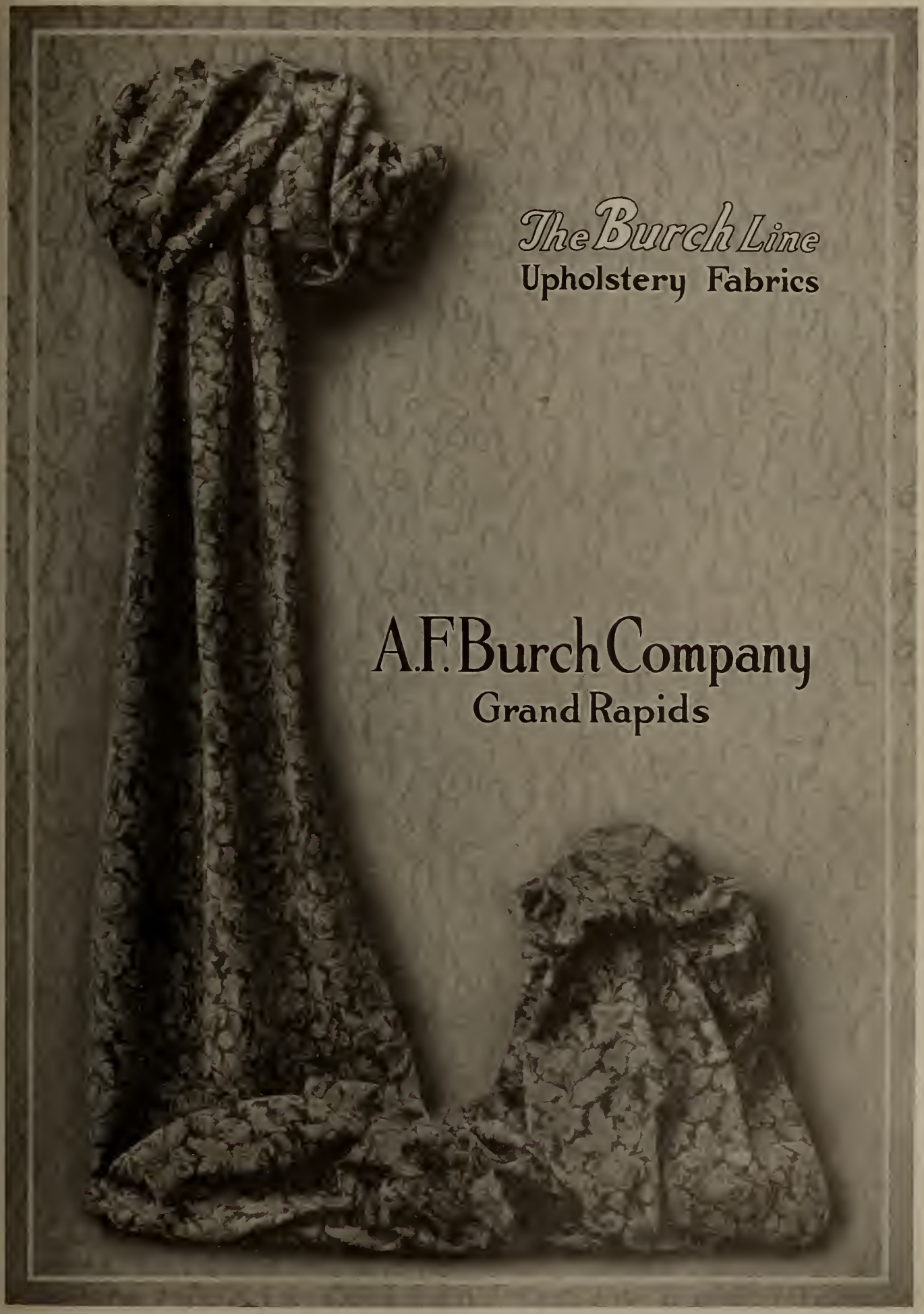
It has been the custom of statisticians and economists to compare manifestations of the character we are witnessing with similar disturbances following some direct or indirect causes in history. Comparisons are now inadequate. Following the Civil War we had our labor problems in America, but for seven years after that war the country had an unprecedented period of industrial and commercial activity. The problem was purely national, the elements usual, the workmen largely Ameircan. To-day there is woven into the structure of our industrial life strange rovings of multi-color with red plentifully represented. That is, elements foreign to American life and customs are being brought here by emissaries of misguided guilds of other lands.

The foundations of civilization are being tried and tested as never before. Powerful monarchies, for years thought to be invincible, have been reduced to chaotic ungoverned states in which every governmental plan known to political and social science is being tried out. We at a great distance from the scene of the late war are of course, suffering much from these causes, but the countries that were our allies are experiencing a measure of unrest to which ours is hardly comparable.

Is industrial unrest in itself to be deplored? Emphatically No! Without unrest, progress ceases automatically. When men no longer reach out and desire better things for themselves and their families the production chart will show a descending arc that will spell the disintegration of industry. There would have been no inventions, no discoveries in any of the various fields; there would be no progress in civilization if the human entity ever became satisfied with his accomplishments. Earlier in this address, I said, "In this phenomenon of unrest is seen a fundamental human passion in itself natural and benign become destructive through misdirection." Darwin's "Descent of Man" should have been called the "Ascent of Life." Starting with the first manifestations of life back in the geological ages is seen the struggle of the inert for expression. In embryonic organic life the lowest form of protoplasm struggled to attain vertebrae and brain. With the dawn of mind man reached out into the unknown striving for knowledge; exploring all existence at the behest of the spirit within him, which ever craves self-expression, and so all through the ages of the struggle for life and expression has made progress possible. The peculiar passion for self-expression is the father of our present day unrest.

There is another passion in men upon which the very perpetuity of the race depends, and that is the sex instinct, Nature's determination in the direction of reproduction. We have been wont to consider the phenomenon of love as a purely spiritual thing detached entirely from the physical. A woman becomes attracted to a man by the intuitive desire nature has put in her to have that man as the father of her child. Nature's demand for the preservation of the species develops sex desire and sex relation. With the advance of civilization the love element in sex relation has become spiritualized until this reproductive determination has become the holiest of human purposes. And yet, when sex desire is misused and misdirected it is the cause of much of the world's troubles. The same is true with regard to the urge in man that drives him in the direction of progress. I once saw a tree, the top of which someone had tied when a sapling to a small stump. That tree, large of trunk and otherwise normally healthful became a misanthrope, sending its limbs down into the ground instead of up toward the sky as was its normal bent. This illimitable desire in man for progress properly directed is the hope of the world; improperly directed, it becomes a destructive element in society with a power to greatly retard the progress of mankind. Give to men in the mass a grievance fancied or real and immediately the urge that is in them badly directed leads to fantastic manifestations. Some men will claim glibly and immediately that much of the cause of the present industrial unrest is the high cost of living. This is only measurably true. Before discussing the proposition we must inquire into the cause of the high cost of living. Fundamentally the wastage of war, the turning of millions of men from productive to destructive activity, the call for the expenditure of vast sums of money, increasing thereby the volume of money and decreasing its value, are among the chief causes of high prices to be sure. Various estimates of the shortage of food stuffs, clothing and

*Director Industrial Relations, National Association Upholstered Furniture Manufacturers.


The Burch Line
Upholstery Fabrics
A.F. Burch Company
Grand Rapids

other necessities of life have been made. A favorite figure seems to be 30 per cent. That is, we are 30 per cent. behind our normal needs. While we have multiplied our factory units since 1914 our rate of production per man has decreased hazardously. Now the wealth of a nation consists in what a nation possesses, in excess of its absolute normal needs. Only when we are producing more than we need and placing it in reserve, or exporting it, do we accumlate national wealth. If we are 30 per cent. behind our needs and production on the other hand is from 35 to 55 per cent. below normal, depending upon the particular craft, then we are becoming a poorer nation every day, because we are going into debt faster all the while. Naturally the law of supply and demand determines that the present cost of all commodities must needs be high, inasmuch as there is not a sufficient supply for all. Obviously spendthrifty on the part of workmen suddenly become affluent creates excessive demand.

The first remedy to be used in the reduction of the high cost of living and in the checking of industrial unrest is the simple cureall—work. To the men of France, the distinguished Mayor of the City of Lyons, in a recent book the "Creer," started his discussion of the needs of France with the clarion note "Produce or Perish." There is nothing fantastic in that slogan. He knows and France knows her only hope lies here.

One of the best editorials that has been written on this subject of late is by Hugh Wiley in the Saturday Evening Post of April 10th. It is entitled "Sweat or Die." He urges throughout this editorial the acceptance of the truism that something cannot come from nothing. Says he: "The one appropriate currency with which to pay for life is sweat. Man is capable of transforming the fuel of food into energy and work. We can buy the right to live with a proper daily expenditure of useful work. The individual who does not pay the price of life has no right to it. Society is made up of men, women and children. Men and women must work. When every man and every women works the high cost of living, political discord, strikes and all the phenomena of social unrest will be at an end. Work is the cure. It is the only cure."

Unfortunately appeals of this character generally fail to develop reactions in the workman. Leadership in industrial relations lies with management largely. Production under right conditions to-day is our country's salvation.

As a plain statement of principles I will read to you a platform which expresses the open shop ideals of this Association:—

Industrial unrest can be directed or corrected, the high cost of living reduced and a general spirit of interest in his work be developed in the employee when men are once more taught to recognize the glory of work and the satisfaction of doing it well.

The interests of employer and employee must needs be made identical, the process involving education and guidance.

But education is effective only when the minds and bodies of men are free to respond to it. Preliminary to the accomplishment of anything like right conditions in our plants it is necessary that every shop be made an open shop under what has now come to be called the "American Plan."

(Continued in July issue)

Personnel Canadian Fabrikoid Staff

Through the absorption of many new companies Canadian Explosives, Ltd., who control Canadian Fabrikoid, Ltd., and other concerns, have been required to make extensive readjustments of sales forces and make announcement of the following changes at head office and at other points:

Winthrop Brainerd, vice-president, and in charge of all sales; E. W. Monk, general director of sales; W. A. Cotton, director of sales, Canadian Fabrikoid, Ltd.; J. J. Riley, director of sales, Flint Varnish & Color Works of Canada, Ltd.; J. B. Moriarty, sales manager for all companies, Montreal district; J. W. Holmes, general sales manager, Toronto district; H. M. Wylde, general sales manager, Halifax district; R. T. Stewart, general sales manager, Sudbury district; A. C. Wilson, general sales manager, Toronto district; P. H. Auston, general sales manager, Vancouver district.

A. W. Purtle has been appointed district sales manager at Toronto for Canadian Fabrikoid, Ltd., with C. W. Campbell, district sales manager, Montreal; and W. J. Corbett, district sales manager, Winnipeg.

Using Business Cards to Advantage

Too many business cards are cast into a drawer or get buried under papers. The result is that when the name of a firm or its representative, specializing in a certain particular line, is desired, the little bit of pasteboard cannot be located. A London, Ont., retail lumber merchant has adopted the idea of putting all cards of forest products firms and their representatives in a neat wire frame, suspended from the wall, close to his desk. The references are then readily available and, in case he wants a certain line of stock on short notice, by glancing over the cards, he recalls quickly to mind what each man deals in, what stock he has in hand, and the occasion of his last visit. There is no looking around for addresses, initials or other matters that may entail delay. The plan of keeping the cards in a prominent place is one that is working out very satisfactorily.

Market for Butter Boxes

A South African agricultural society is in the market for 100,000 butter boxes of standard specification and would like to get in touch with Canadian manufacturers who can handle this business. Quotations are C.I.F., Durban, S.A., and for prompt shipment. Boxes to be made from whitewood, planed on one side, thoroughly seasoned and free from odor and to the following specifications: No. 1. Tops and bottoms— 16 in. x 11½ in. x ½ in. in two pieces, tongued, grooved and glued. Sides—16 in. x 11½ in. x ½ in. in two pieces, tongued, grooved and glued. Ends—10½ in. x 11½ in. x ⅝ in. in two pieces, tongued, grooved and glued. Or No. 3. Tops and bottoms—13¼ in. x 13 in. x ½ in. in two pieces, tongued, grooved and glued. Sides—13¼ in. x 12 in. x ½ in. in two pieces, tongued, grooved and glued. Ends—12 in. x 12 in. x ⅝ in. in two pieces, tongued, grooved and glued.

Write the Canadian Woodworker for the name of the firm inquiring.

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Cause and Prevention of Pinholes

Trouble Invited Unless Filling is Given Attention—Consistency of Filler Varied for Different Woods

By Dixy Wells

Much misunderstanding and some confusion prevails regarding the cause of pinholes in finished work. The matter must be thoroughly understood if prevention is to be brought about, in fact, like many other things if they are once understood their recurrence can be controlled. Take a powerful microscope and you will find that a pinhole is generally the center of a pore, that is, a pore that has not been filled in the fillling process.

In talking with an old finisher, who seemed to be having more than his share of trouble with pinholes, he contended that on certain work he had found it impossible to apply a finish that would not eventually show pinholes unless he used a great many coats of varnish. Especially where veneer was used, he found that the fillers in many cases failed to fill, and to seemingly prove his argument he filled some pieces while I was there and predicted that when they had received many coats of varnish the pinholes would still be present, but the panels were filled and varnished in the ordinary way and there were no pinholes.

Importance of Proper Filling

Now, what was the answer? The filler used had done its work satisfactorily. Done what it was bought to do, filled up the pores. No matter what kind of a filler one is using, if it does not fill with satisfaction, if it does not fill up the pores of the wood when applied correctly, it is not a proper wood filler. It is not performing the functions for which it was purchased.

When one examines a pinhole carefully under a microscope it appears like a tiny bottomless well, and differs from a slight depression. One seldom finds pinholes in shallow pores because the finishing material reaches to the bottom of a pore of this character, and each coat of material which falls, resting on the bottom, gradually fills it up until at last nothing but a slight depression is left. The finishing material never seems to get to the bottom of pinholes. The succeeding coats of varnish apparently fill it, but it is not really filled from the bottom up, but merely closed in at the top by the many coats increasing the thickness of the coatings on the wall. From this it will be seen that a pinhole is a deep pore, down the inner sides of which the finishing materials have run without really getting to the bottom, thus, a pinhole is really the center of a pore, which examination by a magnifying glass will show. So you will see the logical way of preventing pinholes is to start with the application of a filler and make sure that you apply it in such a way that it reaches the bottom and thoroughly fills the pores.

Spraying machines do not always give satisfaction, as some of you know who have tried to use them for the application of filler. One reason is that it merely makes a surface application, that is, there isn't enough force to work it into the pores, which should be done if fillers are to perform their functions properly. Of course they must be made right and applied right.

Some people believe that all that is necessary with a filler is to rub it well into the wood and then clean off the surplus, but we disagree with this. The only way one can be sure of reaching the bottom of the pores is to work the filler well into the wood while it is yet in the liquid state, and you should then proceed to brush it both across and with the grain. This works all the air out of the pores and forces the filler in. If this is not done the filler simply stays on top and covers over the entrance of the pores leaving the air hole beneath, and this air of course is not disposed of during the cleaning off process.

Consistency of Material Important

Some finishers also believe that the filler should be applied in a very thick state, so that there is considerable surplus left to clean off, and this surplus is later thrown away. Fillers of course should be used thick enough to fill up the pores no matter how much filler you use or may be left to clean off. You can't half fill the pores of wood with liquid and then complete the filling process by rubbing off the surplus. We believe you are wasting both time and material in doing this. It takes a lot of time to clean off filler, and you should be sure that the filling process has all been accomplished otherwise results will certainly be unsatisfactory, especially, on such porous wood as oak or in many cases on rotary cut mahogany and walnut veneers.

The thing to do in this case is to apply an even coat of filler to a piece of very porous veneer, and then after the filler is dry enough to clean off examine it carefully. If a good filler has been used and care in application exercised, it will be found that the filler has been forced into the pores very well. If you applied it thinly you will find the pores quite open and the filler in the pores sunk below the level of the wood surrounding it. Evaporation of the volatile oils which the filler contains partly causes this shrinkage, and partly through the absorption of the oils by the wood. These two processes of evaporation and absorption leave the pigment in the first oil in the pore to do the work for which proper filling is intended.

If a very heavy filler is used, that is one which contains a quantity of volatile oils and a large proportion of pigment you will find there is less shrinkage, due to decreased evaporation and also to a decreased absorption of the oil. If you bear this in mind you will easily discover the wisdom of regulating the consistency of the filler to meet the individual requirements of the porosity of the wood to be filled.

What Experiments Have Demonstrated

Some finishers have come forward with the argument that filler of uniform consistency could be satisfactorily used on all woods, accomplishing this by merely increasing the amount put on the more porous

woods, but very careful and practical experiments have shown recently that this is not always the case. One finisher even went so far in his experimenting as to use a thin filler twice when filling oak instead of applying a heavy filler once, but the experiment only proved that two applications almost doubled the cost of time and material, and the results were less satisfactory than when one adequate coat was used, and the time consumed also held up the moving of the stock through the shop for twenty-four hours at least.

Other experiments have shown that filler which is made suitable for oak, for instance, or for any one of the other porous woods will not properly function in the matter of best results on porous woods like birch by merely using the customary volatile oils for thinning.

The binder of the usual filler is linseed oil and japan, and these lose their binding qualities if reduced beyond a certain point when other thinners are added such as benzine or turpentine. For this reason a small quantity of oil and japan should be added to a filler before you start to thin it, especially for such woods as birch unless the filler has been properly made for use on the less porous woods.

The Vogue of White Finished Woodwork

Light Interiors and Light Furniture Growing in Popularity—Makes For Bright Cheerful Home—Birch Very Suitable Wood For White Work—Fits in With Almost Any Decorative Scheme

By W. H. Shaw

Someone has called this the period of white enamels. An appreciation of our great building period, due to an increasing knowledge of the beauties of the fine old colonial houses, has indeed largely influenced the builder of modern homes. The influence of colonial building, strong though it may be, is only in part responsible for the vogue of the white interior, so popular at the present time.

In part it may be the last stages of the reaction from the excessively dark finish given to woodwork some years ago—as part of the so-called mission shades for bungalow finish and furniture. In part it may be the effect of an effort to use less expensive woods for the interior woodwork while preserving the beauty of the home. Be that as it may the white or light painted interior is to be found in practically every type of house, and in every variety of condition.

Light Colors for Cheerfulness

Perhaps more than anything else the use of light paint and enamel for the interior woodwork and the greater freedom with which color is being used in the home, shows the need people are feeling for brightness and cheer in the home.

It is a well-known fact that the color and amount of light in the houses we inhabit produce in us physical effects, and effect to a considerable extent our health and, consequently, our happiness. Why this should be true is obvious when we consider the immense effect that light and color have on all forms of organic life. A cool, dark room is a delightful place in which to pass a few hours on a sultry day. but who would care to spend all their days in such a room.

So popular favor is again turning towards painted woodwork for the interior finish, as well as for furniture. Many charming effects are obtained by the use of color. White or old ivory interiors give a happy solution for many kinds of problems, and one may expect quite satisfactory results from its use. The white interior will harmonize with almost any form of wall decoration and style of furniture, and the readiness with which it may be cleaned and renewed adds to its desirability. It may be counted upon to give the bright and cheerful effect which we wish to incorporate in our homes.

Are Dark Finishes Losing Favor

The living room of the small house of but a few years ago was often finished in some comparatively dark style, very commonly in oak or in some stained-pine imitation of it. To-day, however, the popular leaning is towards quite the opposite. The vogue at present is, in fact, that the room be finished in white enamel or in ivory, or a very light tint. And, indeed, it seems to represent a most commendable notion. It means, for one thing, that instead of sometimes appearing very dark and, perhaps gloomy, especially in cloudy days, the room is always bright and. hence, endowed with an atmosphere of cheerfulness. Yet if the matter of its decorating, furnishing and so forth be properly handled, it will, at the same time, be cosy and in every way comfortable and inviting. Then, too, this style of finish invariably suggests simplicity, and this has also come to be regarded a desirable attribute.

The light-finished living room of to-day is probably largely the result of the recently re-awakened interest in Colonial style of home architecture, at least not only in woodwork but in general treatment, it very often affects the Colonial, although not always. Anyway this style, without entirely losing its identity, is meeting with rather broad interpretation at the hands of the modern builder, and usually with desirable results. It is therefore but natural that this tendency towards the rendering of varied modifications of the style be found extended to the living room. Hence rather wide latitude for the introduction of individuality in the room is allowed, which, naturally helps to create a preference over the strictly Colonial.

Mahogany to Relieve the White

Many charming old Colonial rooms were done entirely in white, with high wainscoting or panelled walls, all painted white, bringing out the subtle curves of the delicate mouldings. This treatment was used more often for the hall and dining room. and mahogany was often used to relieve the white, in the woodwork itself, or in the furniture or in both. This treatment has been adapted to modern conditions with particular success. A charming hall in a modern home can be arranged where birch treads, and birch nevell posts and handrail (mahogany finished) have been used in a white panelled hall, and stairway with white strings, risers and ballusters also finished in white.

When the walls and woodwork of the dining room are finished white, it is advisable that the furniture and usually the doors be of mahogany color or some

other rich colored wood, otherwise the effect of an all white room may otherwise be cold.

When it has been decided that the woodwork in the new home is to be painted or enameled, that fact should be taken into account when the kind of wood to be used is specified. Such wood should be selected as will give the most satisfactory results when painted. This is a vital point. Failure to take into account the individuality of the wood has many times brought trouble and disappointment, and aften unexpected expense during the progress of the work or in the results.

Selection of Wood Important

When the interior woodwork is to be enamelled, woods should be selected which are neutral in grain and color. Among the woods which are most suitable for finishing an enamel are birch, gumwood, basswood, whitewood, maple and the soft non-resinous pines. Especially for the better class of house many good architects, through long and intimate acquaintance with certain hardwoods, tend to specify such woods as the only base for all white treatment.

Many of the fine pieces of beautiful enameled and painted furniture are made of the most costly woods. The first cost of wood, in such cases. is so small a part of the total cost, with its exquisite workmanship, that there is not sufficient economic reason for using less expensive woods. The same thing may be true in an expensive house, but in much of our home building the small savings are of importance.

Aids in Lowering Construction

The woodwork in this class of work may be of pine or any of the other comparatively soft woods. This means that it need not be nearly so expensive in either material or workmanship in finishing as using either oak or mahogany and hence, even though it may cost a little more to finsh, the Colonial or light finished interior may also at the same time represent economy.

In the first reaction from the darker finishes people sometimes talked of the white and enameled finishes as "showing the dirt." It was soon realized, however, that if dirt were present it is much better to see it. It was also asked if it was a costly process and a lasting one. It is true there are many cheap, unsatisfactory paints and enamels in the market which are costly, at any price. If high-grade materials, put up by a reliable manufacturer, are properly applied, there is no element of frailty in the finish. The enamel surface is washable and is easily cared for and kept in fine condition. It need cost no more than any other good job of wood finishing, and indeed may cost less. It costs so much for the labor of applying any kind of finish, especially in a big job of work that the difference in the price per gallon between a cheap and a fine enamel is comparatively insignificant as compared with the possibility of the work having to be renewed if unsatisfactory. "Cheap finishes by the gallon are expensive by the job."

The white finished living room, dining room and hall are, of course, not restricted as a possibility to the builder of a new home only. The old style, dark finished room of the house built some years ago may be easily transformed into the new style, by a thorough overhauling in respect to wood finish, decorations, and so forth. In fact this is done quite extensively and if done rightly the result is no less satisfying than if it had been so handled in the beginning.

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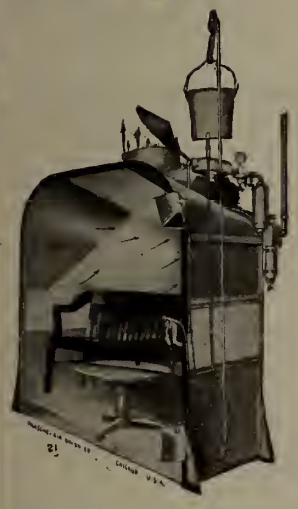

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CHICAGO

Increasing Efficiency of the Finishing Room

Many Items that Go to Make Up Ideal Finishing Department—Ventilation, Including Floor Exhaust, Very Important—Northern Exposure Gives Best Results Generally

Greatest efficiency dictates that the finishing room be located in the top story of the building. The advantages of this location outweigh the disadvantages. Top story location keeps the finishing department away from the dust of the woodworking departments. While the accumulation of gases of the various departments will rise and ultimately reach the finishing room, provision can be made for carrying them away by means of ventilators in the roof. These ventilators will also take away the fumes of the finishing room proper.

A floor exhaust should also be provided because some materials used in the finishing room produce gaseous compounds that are heavier than air. Such materials are naptha, benzole and similar hydrocarbon compounds. Where naptha is used in large quantities, unless a proper floor exhaust is provided, the fumes may follow the floor, down the elevator shaft to the boiler room in the basement with dangerous results. Proper ventilation will reduce insurance rates—improper ventilation will increase them.

Drying Kiln a Necessity

The modern finishing room should by all means have a modern varnish drying kiln in conjunction with it. Although varnish drying rooms are a comparatively recent development, their worth has been conclusively demonstrated. Where days were formerly required to dry varnish, this can now be accomplished in almost so many hours.

The finishing room should be so planned that the furniture will follow from one process to another with no lost motion. In a factory with one elevator, the finishing room layout should, if possible, provide for the stock being unloaded into the staining department, and moved from there in order to the shellacing, sanding, varnishing and rubbing and polishing rooms. The varnishing and rubbing rooms should adjoin each other if possible, and be near to the elevator, if this can be arranged. Where the goods are dipped in stain or filler it is best to have the places where these operations are done, partitioned off, and a good ventilating system installed to carry away the gases, in order to keep the nauseating gases from the other workers.

The lift truck which carries furniture to be finished on platforms from one process to another is recommended for any factory that is interested in saving time and labor.

Heating Very Important

The heating of the finishing room has an important bearing on results. The temperature should be kept as uniform as possible day and night. Especially is heat and proper ventilation important in the varnishing room. Steam heating is best adapted for the varnishing room. Air systems are all right for other departments, but are apt to convey dust to the finishing room. This dust will eventually settle on the flat surfaces of the work and mar the finish.

Radiators will give more satisfactory results than steam pipes. They should be placed at regular distances along the wall. Radiators used in connection with a thermostat allow for an automatic control of heat and the maintenance of an even temperature, which is impossible when steam pipes are used.

The best location for steam pipes is along the walls, near the floor. This insures more even temperature. Where it is absolutely necessary, the pipes can, of course, be placed overhead. In this case they should be placed along the walls above the windows and not directly over the men's heads.

The up-to-date finishing room should have some system for regulating the circulation of air and the conditioning of the air so that it will carry the same percentage of moisture all the time.

Good Light Aids Production

Too much attention cannot be paid to the lighting of the finishing room. Good light enables the workmen to maintain uniformity in stain shades and makes for greater skill and more satisfactory results in spreading varnish and other finishing coats. The best light is that coming from the north because it will remain practically uniform all day. When the light comes from any of the other three sides it will vary with the passing of the sun. Direct sunlight, too, should be avoided for another reason. Sunlight shining directly on finished or unfinished woodwork has a tendency to bleach out and deaden the colors. To keep finished work fresh, or even prepared woodwork, before the finish is applied, it should be stored in a dark place and especially protected from sunlight.

Daylight is, of course, preferable to artificial light, although the electric manufacturers are making rapid strides towards producing something "almost as good" as daylight. Finishing the walls and ceiling in white helps to make the most of the natural daylights, cuts down the artificial lighting bill and gets the greatest efficiency from artificial light when it is used. Do not, however, whitewash the finishing room. Whitewash is not like paint, the liquid of which acts as a binder.

Whitewash Falls Off On Work

Whitewash, on the other hand, contains water as the liquid which allows it to be spread out. Water, as everyone knows, has no binding qualities, while the other materials in whitewash—lime and other ingredients, are too heavy to penetrate far enough to get a firm hold. As a result, with changing temperatures and the contraction and expansion which this causes, the whitewash being brittle, cracks and falls off. Any finisher knows what this means to freshly varnished stock and even to stock when it is dry. The ideal finish, not only for the finishing room, but for all over the furniture factory is a good make of mill white made by some reliable manufacturer. Its cost is not nearly so great as the ultimate cost of whitewash.

A constant supply of hot water is essential to the finishing room. The best method of heating is a vat with steam coils in bottom. Where chemical compounds are used the only safe method to employ is the coil with the return pipe. Where chemical compounds are not used or the water is to be used for cleaning, heating, etc., the steam may be turned directly into the water.—"Finishing Facts."

BIG 4

Write for sample panel showing four great Marietta Specialties, as follows:

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The new principle non-fading Mahogany stain.
Has the non-fading quality of a water stain.
The non-grain-raising quality of an oil stain.
Can be filled directly over the stain like a spirit stain.

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"The last word in spirit Varnishes."
Has heavier gum body than shellac and holds up varnish coatings better. Can be either brushed or sprayed. Will not turn white nor fog when sprayed.
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A non-shrinking cement for filling cracks, holes, wind checks and other defects in wood. Saves good lumber that might otherwise be wasted. Made in shades to match the stain. Dries in half an hour.

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To cap the climax, the panel we send you will be finished with Marietta Varnish. A high grade article strictly up to the Marietta standard of working and wearing qualities.

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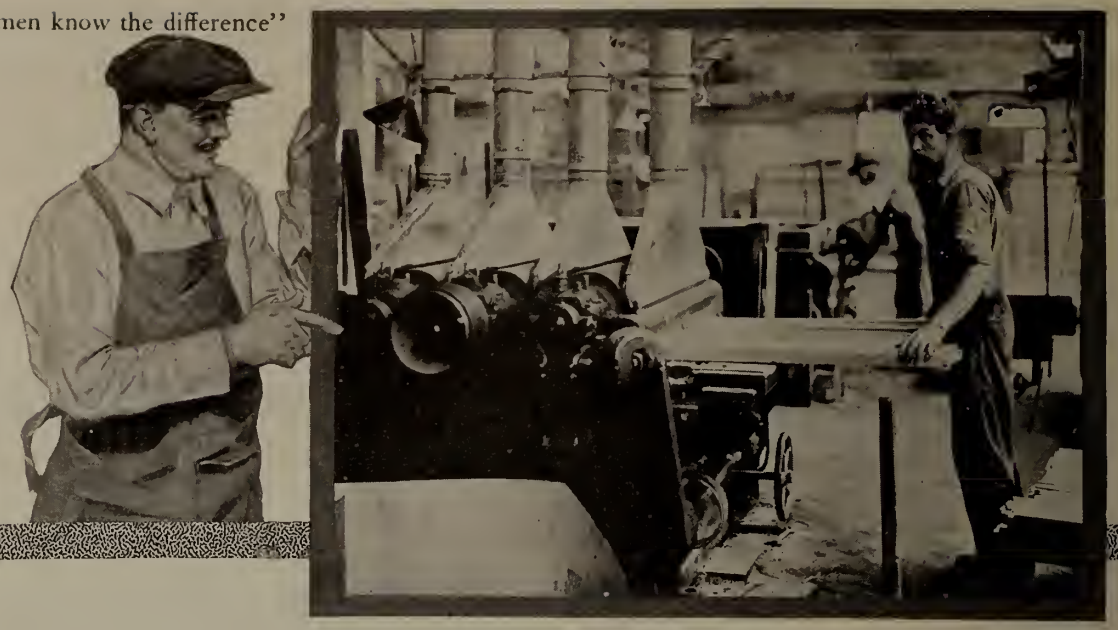

Manning Speed-grits

Look for this trade mark on the back of every belt, sheet or disc.

A Straight Line is—etc. Q. E. D.

"You'll wish you had a Ford," said the gatekeeper. And I did.

Long before I finished my trip through the Showers Brothers Company's great furniture plant at Bloomington, Indiana, I was fagged and footsore. But interesting? The Showers' factory has it on any circus for interest.

The plant stretches straight away from North to South. A straight line is the shortest distance between two points. And that's how this company makes furniture—in a straight line—from North to South. Logs at the North end, chiffonniers or something at the South. No waste motion—straight line production.

"We'll take the same route a log does," said the Human Arithmetic who was acting as guide, "and we won't back-track a single step."

Then he threw in his clutch. "Factory grounds, 69 acres; yearly consumption of lumber, 24,000,000 feet; our own forest; our own mirror plant; our own veneer plant; 25,000,000 feet of veneers a year; a finished piece of furniture every 40 seconds!" His record of statistics turned all through the trip.

We stopped in the sanding room. Here a crew of bix Six-Drum Sanders whirred busily as their fast cutting abrasive belts finished and smoothed the constant stream of wooden parts.

"Some speed here," I ventured. "Got to be to keep up," replied one of the Drum Sander operators —Ezra Hamilton, his name turned out to be.

"How do we do it? Straight line stuff right through. If it's a question of tools the boss gets after the fellow using 'em. 'What's the best abrasive belt made?' he asked me about two years ago. 'Well, I dunno', I began, 'but I guess-' 'Don't guess. Find out. Try 'em all', he came back. Well, I made tests and-" He pointed to the fast cutting Manning Speed-grits belts which help Showers' sanding department to keep up to one finished piece of furniture every 40 seconds.

"There's the answer."

* * * * * * * * * * *

If you want to know what tools are right, ask the man who uses them. Whether it saws or sandpapers—

Good workmen know the difference.

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Durite Combination
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Reg. U.S. Pat. Off.

Don't say Sandpaper —say Speed-grits

The above photograph shows the Nichols Equipment installed in the works of the Votey Organ Company, Garwood, N.J. These dryers may be used to turn out automobile bodies, furniture, pianos, talking machines, etc., in as many days as it formerly took weeks, and the finish is better, for it is dried scientifically, from the inside out.

If not already Nichols equipped, you owe it to yourself at least to investigate, because:—

1—It will easily triple the output of your finishing rooms.

2—It will decrease congestion in your factory.

3—It will decrease the investment in goods necessarily in process.

4—It will enable you to make more prompt deliveries.

We will analyze your particular conditions and then make you a proposition on an equipment that we know, from our extended experience, will save you time and money, as well as improve your product.

We guarantee fully the efficiency of the equipment as well as its mechanical construction. Every installation has been successful. There are hundreds of concerns to whom we can refer you.

A. S. NICHOLS COMPANY, 33 W. 42nd St. NEW YORK CITY

Manufacturers of Dryers for Lumber, Veneers, Glued Stock, Varnish, Paint and Enamels, for both high and low temperature work. Also sole agents for "Zenitherm" insulating material for the making of rooms for both high and low temperature drying.

Aeron Finishing System (Surpasses Brushing) **Certainty of Utmost Finishing Room Results**

The years of result-getting, satisfactory service that the Aeron spray-finishing system has been rendering the wood and metal-working industries, gives to each new installation of this equipment an assurance of the utmost in quality, speed and economy.

No matter what type, size or grade of product you manufacture, nor with what kind of finishing material you coat it—the Aeron System undoubtedly is now being used on work of the same or a similar character, and will be most certain to make it possible for you to do the highest grade of work at a big reduction in costs.

Operation Facts One Aeron operator easily does the work of 2 to 5 or more hand brushers--this is governed by nature of work.

A cleaner and more uniform coating of every material is applied—there are no brush marks, thin spots or fatty edges.

Work is made absolutely healthful and safe—all fumes are completely removed.

Equipment is kept in the best working condition at practically no cost.

The Aeron System is sold on a strictly guaranteed basis, and every installation followed up by a competent service organization.

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Painting your buildings with Aeron System PORTABLE PAINTING EQUIPMENT means a big saving in time, labor and confusion.

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In our Stains you will find the highest possible color values—they are positive—they are permanent. Manufactured in quantities from the best quality raw materials.

Wood Fillers also that have been tested under the most difficult of varying circumstances and found satisfactory.

Eliminate trouble in your finishing department by using these tested materials.

WRITE FOR PRICES

The Edward J. Shannon Company

CINCINNATI, OHIO

Veneers and Panels

What Are We Facing?

By S. B. Anderson*

Following the signing of the armistice, and continuing for some months, there was great uncertainty in business. The users of our goods conceived the idea that the country was entering on a season of low prices, and that the manufacturers of unfinished wood products had been getting too much for his product, and that a general withholding of buying orders would force prices down to a level consistant with his idea of our costs, and to what he thought should satisfy us. To our mind—prices were low, too low to pay us a fair profit or to stimulate us to very great productive efforts. In fact, production lagged; at the same time materials in the hands of the consumer was limited; demand for his goods active and his prices good. In due course of time he was compelled to go on the market to buy. He found small stocks in the hands of producers and no disposition on the part of the holders to sell at unprofitable prices. He found his competitor also on the market. He must have material and he was up against the old law of supply and demand, with supply small and demand large and growing. His own output was in eager demand and at remunerative prices. He found not only depleted stocks, but discouraging conditions for larger production—labor scarce, hard to get and not always efficient, high cost of operation, feed and general mill and logging supplies very dear; and following this a season of unprecedented rainfall through the logging sections of the south; from this on soft alluvial soil, but one thing could result, impossible logging conditions. He then did the only thing possible to do, stimulated production by recognizing the necessity for higher prices, and paying them. Many mills were utterly unable to secure logs. Others were more fortunately situated, and by extraordinary efforts, large expenditure for operations and buying of new devises for logging, were able soon to get out some a part, and others a full supply. How great this fight was no one knows who was not in the game. Logs that never had commanded above $12.00 to $20.00 readily sold for $50.00, $80.00 and even $100.00 and very scarce at even these prices. Now the mills that have been able to operate have made some money, and, in fact, this should be so. Hard, discouraging expensive labor, experimental investments and the energy put out should be rewarded. Unfortunately the opinion appears to have been formed, sometimes in high places, that the excessive prices now charged for our product simply means profiteering, but if we figure that the present actual costs of veneer, in many cases, is three and a half times the selling price of the same goods in what we are pleased to call normal times, it must be conceded that some, at least, of the advanced price is legitimate, and still the law of demand and supply rules. Possibly, in some cases, prices have run away with the market, but I believe, taking the circumstances fully into account, the millman has not been unreasonable. He, certainly, is entitled to a reward for hard work under very adverse conditions.

But I am not so much interested in the past, as I am in what is to come. I think you are all with me there. What are we facing? Is the present era of high prices and strong demand to continue, or are we coming into a time of ordinary demand with corresponding lowering of prices, or is the bottom about to fall out of everything and we all go down in a heap together? I am an optimist. I cannot see the likelihood of business disaster, in the near future. As long as the demand for goods exceeds the supply there should be no chance for a collapse in prices. Everybody, to a greater extent than ever before, has money and is earning more, and, as I said last year, money, in the hands of the people in general, farmers, mechanics, laborers and business men, speaks for good business. Money in the hands of the average American is for one purpose—for that purpose alone—to spend, and its spending means good business.

I can see that the sky is not entirely cloudless, there are some disquieting indications, some pressing problems—finance, labor, food. We were promised, with the establishing of the Reserve Bank system, a stable, sure system that would carry us through any and all storms. We were to be provided with an "elastic" currency, which would expand enough for any big business period and that would contract automatically and accomodate itself to periods of dullness. The system was to adjust itself to business conditions, and business was not, as heretofore, to be forced to adjust itself to a system—but something has gone wrong—the machinery is not working smoothly, the carburetor appears to need adjusting. The Reserve Bank claims to be working in the interest of lower cost of living. I see but two ways to lower prices—either to increase production, thus bringing supply gradually up to demand; or lessening demand by reducing the buying powers of the consumer, increasing interest rate, reducing credits. Taking away the tools of industry cannot help production. What it may do the other way remains to be seen. It is estimated that we have one third of the money in the world. Our mines are the richest and most extensive. The wealth of our forests is unequalled. We have the richest farming land in the world and the most of it—with many thousand of acres waiting the plow, an active, energetic and ambitious people—and we hesitate—our boasted system (or its managers) fail us in this moment of our greatest opportunity. The gap between our workers and our material can be bridged only with credit, and credit is denied. Men with courage and vision are needed in this crisis.

Then the labor problem to be settled. In my judgment, this does not mean the adjustment o f the price paid for a day's work, but means a day's work furnished when it is paid for regardless of price. It means some arrangement by which every citizen, laborer,

*President, Anderson-Tully Co., Memphis, Tenn.

mechanic, merchant, or what not, is to co-operate for the general good and not for the advance of any specific group. It means the establishment of a system through which every man, who is willing to co-operate and do his part, whether a large part or small, shall receive due reward, not a bare living, but a fair share of the results of his labor. It means that the time must come, and that soon, when the general public will be the first to be considered, and the interests of the employer and employee will not be considered paramount if running contrary to the general good. It means that the time is near when no combination of men, wage earners, or wage payers, will be allowed to tie up the business of the country as did the "unauthorized" switchmen's strike and the draymen with their sympathetic strike in New York. By the first, the commerce of the entire country was tied hand and foot, entailing a loss to the public of many millions of dollars; and by the latter the distribution of merchandise in New York was practically stopped for many days with an estimated loss of $2,000,000 per day. The employer and employee constitute but a small part of the public, and, under our government the majority must be considered. When our legislature realizes that the whole is greater than a part, and learn to fear the vote of the general public, as they now fear the power of a small organized part of it, we can hope for proper laws and their enforcement.

The third problem is closely allied with the labor problem. I will not indulge at any length in statistics, but there are some facts worth considering. The American wheat crop of 1919 was 248,000,000 bushels less than the crop of 1918 while there were 12,000,000 acres less winter wheat sowed in the fall of 1919, than sowed the previous fall. The 1919 crop was not up to the average of the preceeding five years. The agricultural papers are complaining of the impossibility of keeping up normal production on account of inability to secure farm labor. The prosperity of the manufacturer has enabled him to offer better wages than the farmer can pay, even at the present high prices of farm produce. In fact, the farmer is not today receiving a price for his product that will cover cost, if he figures his time at the wages of a common laborer in the city, and has a hired man at the same price. It is imperative that conditions be remedied. The growing population of the cities will require more and still more food, and the farms are the only source of supply. Possibly the introduction of improved methods, both operative and business, may result in an increase of production, and increase of profit to the farmer without any advance in prices to the consumer; cheaper distribution, so that the spread of price between that received by the farmer and that paid by the consumer may be lessened; larger farms with full equipment of machinery, run by business men, like the large wheat fields of the northwest; co-operative operation between small farms so that each may have the benefits from modern machinery; community tractors, by which cheap and good plowing can be assured; community reaper and thresher and haying machinery, all this will help. One man, in the future, must do the work of three men in the past. How far this remedy may correct the evil is hard to estimate. This, however, is for the future and not immediately available—but the evil is near at hand and growing. Every notice we seen of new mills built, old factories enlarged, new enterprises installed, is a notice that another draft is to be made against the farmers' working forces. Every additional machine installed makes the competition for labor more keen. Exodus of our foreign population exceeding immigration, retiring from active work by the newly prosperous, all tends to render the case more serious. Present price of food is high, but with the scarcity immediately impending how high it will soon be no one can prohpesy. With uncertain business following reduced credits, and resulting lowered incomes, the picture is not pleasant. A hungry populace is a dangerous populace. I am optimistic, but I see real danger ahead unless more farm labor can be procured from somewhere. Where can it be found? Europe appears to have no surplus laborers for us, but we must have common labor both for the farms and for the industries, and the native, white American will not supply it. He can do better. Shall we go hungry, suffer the terrors of bread riots and anarchy, or shall we avail ourselves of the only surplus labor in the world?

We are weak in transportation facilities. For the past ten years while the country has been growing and expanding, our lines of transportation have not only not grown to keep pace with the country's actual growth, but on the contrary have deteriorated. This is the natural result of the short-sighted policy adopted towards the railroads by the business public. He who dances must pay the fiddler. We had some years of fun heckling the railroads—now our merchandise, our manufactured goods, our grain and hay are tied up waiting for cars which are not yet built, or if they are, they are stranded in some terminal of 1900 capacity trying to pass through itself the traffic of 1920. We had our dance and we are paying the fiddler. Our hope of relief in this case rests on the new enlightened sentiment toward the railroads and the rapid development of our great inland water transportation possibilities.

Now to get back to our own future as a special industry. Whateven may happen to the general business of the country, with its resultant influence, we will never see the low prices that prevailed a few years ago. A strong advance in stumpage has taken place—but while much higher than a couple of years ago, it is a good purchase at present prices. It will continue to advance. This, with the advanced price of labor cost—which will stay—assures us that the era of low prices is permanently past, and my observation is that there is more money to be made in handling a high cost product than a cheap one. With the growing scarcity of good timber will come a hesitancy to cut any great amount without a legitimate return for investment and labor. There is every reason to expect an active demand for our product for some years ahead. The furniture supply of the country is far behind requirements and the manufacturers are crowded with orders, and as long as money is circulating freely this will continue. In short, I believe, while there is any business doing our industry will continue along profitable lines. I congratulate you on the results of the past six months and I look confidently forward to continuing prosperous operations.

A double belt may not transmit twice as much power as a single ply one, but it may give sufficient extra power to justify its installation.

Blow the shavings and sawdust in the firebox and save labor and at the same time increase the efficiency of the furnace.

The solid milled cutter should be ground only on the face of the cutting edge. If the top is ground the profile is altered.

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Panels and Rotary Cut Veneers

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We are in position to take orders for future delivery. Order now for holiday trade.
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"Peerless" products are standard everywhere and you are always exercising Safety First in using them. Try us next time.
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We specialize in large size poplar veneers as we have extra fine poplar logs. We can cut veneer up to 10 feet square.

Our walnut veneer cannot be beat, both in plain and figured wood.

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QUARTERED RED GUM
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Quartered White Oak
Sawed Veneer
12″ and wider

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50	“	18 x 72″	— ½″—5-ply ¼ SWD W. Oak 1/5
40	“	36 x 72″	— ½″—5-ply ¼ SWD W. Oak 1/5
25	“	18 x 72″	— ½″—5-ply ¼ SWD W. Oak 2/3
25	“	24 x 72″	— ½″—5-ply Mahogany 2/3

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Checks—Their Cause and Prevention

Moisture in Veneers Sole Cause of Checking—Have Veneers Dry Then Work So That Little, If Any, Moisture Be Absorbed—Humidifying Cabinet Room Hot-Box

By John Wilmers

Many troubles are encountered by the furniture manufacturer in the daily round of work and not the least of these is the checking of fancy veneers such as burls, crotches, butts and other similar stock. Some manufacturers are comparatively free from this trouble for long periods, while with others it occurs spasmodically.

The wheels of industry run smoothly for awhile, then suddenly there comes the complaint from the finishing or shipping department, or possibly from some buyer, that the veneers on certain pieces have checked. Then the fun commences. Nobody will accept the blame. Each department claims to have done their work the same as they have always done and so cannot understand why the work should have gone wrong. The veneer man maintains that that special grade of veneer seldom gives satisfaction, the finishers will probably say that the grade of glue is at fault, while the cabinet makers will more than likely try to blame the humidity controlled varnish dryer and so it goes.

Knowledge is Needed

Refusing to face the facts and trying to lay the blame elsewhere is but shirking responsibility, possibly through ignorance of the real cause of the trouble. If the physical properties of wood were studied and the adhesive strength of glues known, there should be no cause for checking if proper veneering methods were followed.

One reason why some plants are more successful than others is that due, largely, to the fault that a constant study is made of veneering methods and veneering conditions. When the factors that enter in are all known and provided for and a set of standards followed it stands to reason that uniform success should follow. Spasmodic success, where good results are achieved for a day or two, then troubles crop out unaccountably and abate, is due simply to luck. There may be times when one batch of glue is better than another or when the humidity of the veneer room happens to be ideal or the good results may be due to other things. One careless step in the process of veneering is responsible for a percentage of loss in the finished or semi-finished product, the same as one rotten apple often spoils a number of surrounding ones; likewise the longer the carelessness is allowed to persist the further its degrading influence reaches.

Shrinkage Sole Reason for Checks

The reason veneers check, as stated in a previous article, is due to shrinkage. The veneer shrinks when the moisture content is reduced, or in other words when the piece dries out. If it is glued solid and held from shrinking it does the next best thing—the fibres separate or check. It follows then that as long as we recognize that veneer is wood and that wood shrinks as it loses its moisture, we must observe the following principles: In order to prevent veneer checking its moisture content must not be above 5 per cent. or 6 per cent. when it is laid or when the pressure is applied. This is easy to say but harder to accomplish yet the success achieved in laying fine veneers depends solely upon this point under all circumstances.

There are different methods of preparing veneers for gluing such as glue sizing, doping with special mixtures and binding with glue size and cheese cloth. The idea in coating veneers is to keep out the moisture from the glue or at least to retard its absorption by the veneer. These practices may be beneficial to a very limited extent but the only coating that will keep all moisture out is aluminium leaf. It cannot be used in veneering.

Handling Glue to Advantage

If we cannot prevent the wood absorbing some moisture perhaps we can use the glue in such a manner that it will not give up much moisture, if any at all. Using animal glue this can be accomplished by either applying pressure as soon as the glue is applied or by letting the glue get tacky before the veneer is laid. When the warm cane is applied to the veneer it will warm the glue sufficiently to melt it slightly and cause a slight penetration into the veneer. The pressure should be applied as soon as possible as it will tend to prevent the veneer swelling.

Vegetable and casein glues do not penetrate as rapidly as animal glue, for they are not so viscid. Casein glue does not seem to give up its moisture as rapidly as vegetable glue but owing to certain mineral substances it contains, when thoroughly hard it is more severe on knives and saws.

Varnish Dryer Not to Blame

Much undeserved blame is placed at the door of varnish dryers. If they are humidity controlled, as they should be, there is little danger that they will harm the veneers. Humidity controlled varnish dryers are usually operated at a temperature of 120 deg. and a relative humidity of 30 per cent. or 35 per cent. Under these conditions wood will come to a moisture content of 5 per cent. or 6 per cent. If the veneers were glued up at 6 per cent. moisture content or less, it does not seem that the veneer could shrink or check in the varnish dryer.

If the moisture content of the material is higher than 6 per cent., and tests show that it often is, it is only natural that there should be a certain amount of shrinkage with its consequent checking. The varnish kilns cannot be blamed for this trouble, all they are doing is giving the management an opportunity of confining the troubles within the factory walls.

Humidifying the Hot-box

There are times when it is found necessary to warm up a veneered top or end when assembling a case. This heating is naturally done in a hot-box in the cabinet room. These boxes are hot and usually very dry, for no provision is made for maintaining humidity and in consequence some veneers which have been laid at 6 per cent. or even less will check. This checking is scarcely noticeable and when the stock has cooled will disappear gradually. It would have been better if this material had not checked, even so slightly. The simple expedient of installing a steam jet, or two, in the hot box or even using a pan filled

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with water, provided the surface is large enough to induce a fair amount of evaporation, will guard against any checking in the box. A humidified hot box would not only benefit any veneered work placed in it but might eliminate some other troubles common to the cabinet room.

This discussion refers more particularly to the so-called open veneers; veneers through the pores of which light can be seen when held up to a window. It is because of this cross grained wood that it checks so readily. The straight grained veneer, unless very damp, seldom gives any trouble, for the fibres and cells are slightly elastic and give slightly when the veneer shrinks.

Billing System as Aid to Glue Room

Systematic Method of Keeping Tab on Stock Essential—Aids Production and Avoids Confusion—Efficient Method That Simplifies Work

By W. H. Rohr

In furniture factories where veneered goods are manufactured it is very important to have a systematic method of billing and routing face veneer, crossbanding and the rotary-cut core for ply panels. Without some such system neither quality nor quantity production can go forward with any degree of effectiveness or economy. It is by no means possible, even desirable, for every plant to use the same sort of billing and routing plan in getting out veneer, but the object in view in every system should be simplicity, thoroughness and accuracy.

Every veneer-billing system should at least possess these three characteristics, but as a matter of fact there is too often a lack of method and efficiency in such systems, if there are any systems in use at all. While the system herewith described is perhaps not ideal in every respect, it is nevertheless giving satisfactory results at the big plant of the American Furniture Co., manufacturer of fine bedroom and dining-room suites, Batesville, Ind. The plan has impressed me as being very effective and convenient for not only the foremen, but the various veneer workers as well.

The veneering end of the factory includes a large

Quantity		Cutter's Check	Date	Veneerer's Check	Date
	Shop Order #1523				
	20 Wal #473 Dr Base				
Pcs					
20	52 1/2 x 23 1/4 Top 5 ply Wal G	✓		OK	
20	52 1/2 x 23 1/4 " " Gum 1/20	✓		OK	
40	23 1/4 x 52 1/2 " " Poplar 1/20	✓		OK	
40	21 x 25 3/8 Ends 3 ply Gum 1/4	✓		OK	
40	25 3/8 x 21 " " Gum 1/20	✓		OK	
40	25 3/8 x 21 " " Wal C	✓		OK	
	49 1/4 x 17 5/8 Base, 2 to 1 Doz., 3 ply Wal G	✓		OK	
	49 1/4 x 17 5/8 " " " " Wal Sap	✓		OK	
20	49 1/4 x 4 1/2 Fronts A 5 ply Wal G	✓		OK	

Fig. 1—Stock bill for veneer foreman

veneer storage and dimension room in a semi-basement, where veneers are selected, cut, matched and taped, and a veneer glue room on the second floor, where ply panels, drawer bottoms, backs, tops and various flat and irregular- faced work are put up. The latter department contains a complete line of vegetable glue equipment, including mixers, spreaders, hydraulic press, flat and irregular cauls, retaining clamps and a dry room.

For every piece of veneered furniture in the line manufactured, the veneer foreman has on a file a written bill of veneer similar in many respects to a master cutting bill of solid material. When one or more jobs are started, or about to be started, the veneer foreman receives typewritten orders from the office. Suppose, for example, one item reads: "70 No. 473 Dresser Base; 50 Mhg., 20 Wal., No. 1538." This requires two cutting bills, one for the mahogany and one for walnut. The veneer foreman copies the order in his order book in duplicate, then tears out one copy, pins it to the original itemized bill of veneer for that particular dresser

20 #473 Wal. Dr. Base	#1523
20 Pcs 52 1/2 x 23 1/4 Top 5 ply Wal G	
20 #473 Wal. Dr. Base	#1523
20 Pcs 52 1/2 x 23 1/4 Top 5 ply Gum 1/20	

Fig. 2—Gummed slip attached to each lot of veneers

base, and sends it to a stenographer in the office, who types two working bills for each kind of wood—see Fig. 1. The stenographer also types a set of gummed paper slips—see Fig. 2—which serve the same purpose in the veneer department as ordinary shop tickets serve in the solid-wood manufacturing end of the plant.

One copy of each veneer working bill, along with a set of gummed slips (one for each item on the bill), is sent to the veneer dimension room, while the other copy, with the original bill of veneer and the veneer foreman's written order, is returned to the veneer foreman.

As the various items of veneer are gotten out—that is, selected, matched, cut and taped—in the dimension room, the bill is checked as shown and a gummed slip like Fig. 2 is pasted on the top piece of each pile that makes up an item on the bill. This has proved to be a more effective method of marking sets of veneer, than loose tags or chalk marks. When all the items on a bill are out, the veneer is loaded onto trucks and sent to the veneer-glueing department. As the veneer is being loaded the items are again checked with an O. K. sign, as shown in Fig. 1.

In the veneer-gluing department the men work with the other copy of the working bill, which is, of course, clean and new to start with. The various items on the bill are checked off as the material leaves the press and again when it enters the drying room.—Veneers, Indianapolis.

Judging from the demand and prices of wooden toys, they should make a profitable sideline for anyone who has a considerable amount of wood waste.

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VENEERS
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Tests are continually being made to ascertain the moisture content. Properly dried veneer, turned out flat and straight, works with little waste and much convenience in your factory.

It is such details that in the aggregate constitute the value that is summed up in the words N. B. Quality.

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MEMPHIS, TENNESSEE

The Lumber Market

Domestic Wood

The local hardwood lumber situation appears to be in a very healthy condition. Stocks, while green, appear to be ample, with a fair demand and prices holding firm. The weakest item on the list is probably maple, for which the demand is light. This is due largely to the uncertainty which exists with regard to the removal of the 10 per cent. import tax which the American custom authorities have been levying on maple when imported for cabinet making uses. There is a report to the effect that this duty will be removed in the near future. Until this is done or some definite announcement made, many American buyers are holding back and not placing orders for this particular item. When it is considered that probably 75 per cent. of all hardwoods cut in Canada find their way to the American market it will be realized just what effect the easing of the American demand has. Elm, ash and birch are particularly strong. Birch is probably in greater demand than any other wood. Prices on this line are very firm with a slight tendency to advance. This applies in a lesser degree to other hardwoods and is in marked contract to the situation surrounding American hardwoods. There the demand is light, with prices easing up on certain lines. The automobile industry is the biggest factor in the local hardwood situation and is one that must be recognized and reckoned with at all times. Auto manufacturers are turning more and more to such woods as birch, beech and maple, with the result that prices are climbing on these lines. The auto industry can afford to pay this increased values and are forcing other hardwood users to pay higher prices.

The softwood market is somewhat easier with slightly lower prices and a weaker demand. This is the direct result of the decreased demand from the American market. The Canadian demand continues good but cannot take care of all the material offering. Building conditions in most of the larger centres are good; while some of the smaller communities do not seem to have struck their stride yet. The B. C. market has been demoralized slightly by the easing of the American orders but a firmer tone is anticipated. Many coast mills are reducing operating time to one shift a day. This will tend to prevent an over production and a glutting of the market.

The box manufacturers are enjoying a good business and in consequence considerable box stock is moving. Prices on this item have not shown any marked changes.

Imported Woods

It is a very difficult, if not an impossible, task to attempt to forecast the American hardwood lumber market for any length of time. The situation is a very complex one, with many influencing factors and many side eddies. Those who are most vitally effected and who should be doing the most worrying, namely the lumber manufacturers and dealers, are sitting tight, seemingly calm and contented. There appears to be a slight falling off in the demand for many, if not all, lines of hardwoods and while in certain instances slight price concessions have been made, the general tone of the market is very firm. Even with the decreased demand, production and available stocks are not sufficient to fill the orders offering. This coupled with the probability of an increase in freight rates and the freight embargoes which are in force in several large centres, should apparently tend to maintain a strong market. It is estimated that at least one million houses are needed in the U. S. Many of these will be built in spite of high construction costs. This will help maintain the demand for stock. The American railways are in bad shape and part of the serious freight situation is due to a shortage of rolling stock. These conditions cannot go on indefinitely and sooner or later the railroads will be, literally, forced to purchase large quantities of lumber to repair and replenish their rolling stock. The financial uncertainty which exists, with its consequent liquidation of stocks and stagnation of business may account for part of the present quietness.

Conditions in the Southern producing districts are improving but it is expected that it will be at least another month before the amounts manufactured will approach anything like normal. When manufacturing does hit its stride, barring a shortage of labor, it is likely that the amount produced will be in excess of normal, as there are many small mills springing up and many of the larger operators who have in the past confined there efforts to special material, such as cooperage stock, are turning to the manufacture of general stock. Just what effect this will have on the market is probematical and will depend altogether on the demand. In the northern areas the strike has been a dismal failure and has practically petered out yet it has had its effect on the amount manufactured, with the result that the amount which would have been produced in the northern districts has been reduced five or ten per cent. This in spite of the continued strong demand. A conservative review of the whole situation leads to the conclusion that American hardwood stock will not be plentiful for the next few months, and there is every indication that prices are not likely to be reduced to any marked extent.

Well Known Lumber Representative Makes Change

Loren H. Pope, who for a number of years traveled for the Chas. F. Luehrmann Hardwood Lumber Company of St. Louis, Mo., calling on the furniture and wood working trade in Ontario, severed his connection with that concern on Nov. 1st, 1919, and now occupies the position of secretary and general manager of the L. D. Murrelle Lumber Company, 1524 Exchange Bldg., Memphis, Tenn.

Mr. Pope will not have the opportunity of coming in direct contact with his acquaintances in the Canadian territory, but he wishes to keep his name before his old customers and will be very pleased to serve them from his new connection, as in the past.

The L. D. Murrelle Lumber Company are very large manufacturers of Southern hardwoods, specializing in quartered white oak, poplar and gum.

Market for Small Turned Blocks Wanted

A subscriber has written asking if we could tell him where he can find a market for quantities of ends of turnings. These pieces are about 4 in. long, 1¼ in. square, with one end turned 1 in. long and ¾ in. diameter. Any reader who can use these pieces or can suggest where they might be disposed of to advantage is requested to co-operate and write the "Canadian Woodworker."

New Lumber Commissioner for the East

Lieut. Loren L. Brown, of Vancouver, B. C., who has been appointed B. C. lumber commissioner for Eastern Canada, as announced in the May "Canadian Woodworker", is expected to arrive in Toronto the first week in July and will immediately take up his new duties. Wm. Robertson, who has been filling

Lieut. Loren L. Brown, Vancouver B.C.

the position for the last few months, will, upon the arrival of Mr. Brown, leave for Victoria where he will resume his former connection with the forest department of the B. C. Department of Lands, Forests and Mines. Mr. Brown has both a practical and technical knowledge of the lumbering industry and should be in a position to assist any one who contemplate using B. C. forest products.

Manufacturing Southern Hardwoods

One of the newcomers in the southern hardwood field is the Frank A. Conkling Co., Memphis, Tenn. This firm was incorporated in May, 1920, with a capital of $50,000. Two mills are being operated, one at Percy, Miss., and the other at Issaquena, Miss. The annual prdouction of the two plants will approximate 15,000,000 ft. of southern hardwoods, principally red gum.

This firm controls one of the best tracts of virgin timber in the Mississippi Valley, and with modern logging and band mill equipment and all the departments of the organization under the direct supervision of an experienced management, they are in a position to produce and market high-grade southern hardwoods.

The officials of the company are all experienced lumber operators. G. W. Gary, the president, has had a wide lumbering experience. At one time he operated two mills of his own and, later on, with the Korn Conkling Co. of Cincinnati. Later he, with the Korn Conkling Co., organized the Triangle Lumber Co. and built a band mill at Percy, Miss., with a daily capacity of 40,000 ft. Last February Mr. Gary purchased the interests of the Korn Conkling Co. in the Percy mill, and, having previously acquired the Issaquena Co. at Issaquena, Miss., is now operating at both Percy and Issaquena.

The vice-president and general manager, Frank A. Conkling, first engaged in the lumber business in 1900 with the Farrin Korn Lumber Co., Cincinnati, Ohio. In 1912 he organized the Korn Conkling Co. of Cincinnati, and remained with that firm until 1919, when he disposed of his interests and organized the Frank A. Conkling Co.

The secretary, E. Austin Neely, is well known to the trade, having been connected with Michie Bros. Incorporated, and the E. Sondheimer Co., both of Memphis. Mr. Neely will devote a large part of his time to the sales end.

A. A. Volkert, the treasurer, was with the Farrin Korn Lumber Co. and the Korn Conkling Lumber Co. before being associated with this organization.

Woodturning Firm Expanding

The Woodturning Products, Limited, Fenelon Falls, Ont., have been expanding their activities. The plant of the Dominion Hardwoods Limited, Deseronto, Ont., was recently taken over and is being reorganized for the manufacture of broom handles. The drive is being changed from steam to electric. The squares for both the Fenelon Falls and the Deseronto plants will be cut at a sawmill, which has been purchased at Haliburton, Ont. Adequate timber limits were also acquired. It is the intention to confine the output of the Deseronto plant largely to broom handles and to manufacture all the smaller turnings, chemists' boxes, etc., at the Fenelon Falls factory.

Catalogs, New Publications, Etc.

The Marietta Paint & Color Co., Marietta, Ohio, have recently issued a small pamphlet, drawing the attention of their many friends to the fact that the American railway situation is delaying the receipt of raw materials and retarding the shipment of their finished products. The caption "Be Patient" is very appropriate.

The third edition of Banghman's "Buyer and Seller—Cost and Computation Tables" has just been issued. The book contains numerous tables for computing costs, interest, discounts, estimates, pay roll figures, etc., tons tables, distance charts, etc. In fact the book contains most of the charts and tables that might be required in the ordinary run of business. Full information and particulars may be had from H. R. A. Banghman, Indianapolis, Ind.

The Curtis-Hasey Dryer Co., Philadelphia, Pa., have issued an attractive catalog illustrating their Thermo-Myst system of lumber drying. The illustrations include typical layouts for the different classes of Thermo-Myst kilns. The catalog is in loose leaf form and the intention is to issue bulletins, which may be included in the catalog, covering different kiln drying problems.

The Canadian Machinery Corporation, Limited, Galt, Ont,. have issued an attractive wall calendar, dating from June 1920 to June 1921. Every second sheet is illustrated with some item of woodworking equipment taken from their line of up-to-date machines. Anyone desiring this calendar should communicate with the above mentioned firm.

The 1920 catalog of the Simonds Canada Saw Company, Limited, St. Remi Street, Montreal, Quebec, has just been received from the printers. Any saw mill or planing mill operator who has not received one of these catalogs will receive a copy on application. The complete line of Simonds saws and machine knives are listed.

With lumber commanding such high figures the small kerf of the band saw blade takes on an added importance.

The loose pulley of the machine which does the least work often makes the most noise.

SERVICE

means giving the very best that is in you. No word has been over-played in modern advertising copy more than the word "service." In practical use the word "service" has a relative significance. The advertiser who honestly desires to live up to his advertised service, naturally has as his goal 100% satisfaction in all particulars of his dealings with his customers.

In reality, though, that man who advertises service and then gives the very best in him in his struggle to make it 100%, is giving service in the true sense even though he fall down 33% from his expectations.

Frankly, that is exactly our position to-day. Faced with a tremendous demand for our products and a woefully short supply, on top of which were heaped unheard of weather and labor difficulties, we have not hesitated to invest thousands and thousands of dollars in new mills and new logging equipment, and have spared no effort to get loaded cars out. However, the best we could do was not adequate under the conditions. We are still behind although hopeful of again getting our heads above the mud and mire that all winter has deluged southern timberlands.

At least we can say we have given the best in us and will continue to do so until our service does finally go back to approximately 100% level.

ATCo

— *Manufacturers* —

Southern
Hardwood Lumber
Veneers

Anderson-Tully Co.

Memphis - - Tennessee

Information and Inquiries

You are cordially invited to make use of this department

What Causes Case-hardening?

Bruce Station, Ont., May 31/20.

Editor "Canadian Woodworker."

We are building a small dry kiln 12 ft. wide, by 20 ft. long and 10 ft. high. What is the best way to ventilate this kiln so as to secure a good circulation for the drying of oak, birch and pine? What temperature should be carried for drying these woods and what causes lumber to case-harden?

Yours truly,
Beilhartz Bros.

About the only way to ventilate a small kiln of this type is to construct two ventilators, say 6 in. by 10 in. on each side, about 5 ft. from the ends. A number of openings, say three, should be made and each opening provided with a slide that can be closed, or partially closed, so as to regulate the circulation. Fresh air could be admitted through a long box placed under the heating coil and provided with sufficient small openings to give an even distribution of the incoming air. These openings might be fitted with doors or slides so the amount of air can be controlled. It is hard to give drying temperatures as the condition of the stock and the amount of humidity in the kiln must be considered. Oak might be started at 105 deg. and gradually increased to 140 deg. Birch started at 130 deg. and gradually increased to 160 deg. Pine started at 140 deg. and gradually increased to 185 deg. At the same time the humidity should be regulated and gradually reduced. Case-hardening usually occurs when lumber is dier in a kiln in which the relative humidity of the air is kept too low. In other words the air did not contain enough moisture. The warm dry air dried the outside of the stock before the centre had time to dry with the result that the surface set and dried hard in a strained condition. A wet and dry bulb hygrometer is required for determining the humidity of the air. An accurate set of scales should be provided for calculating the moisture content of the stock. The resaw test will show if there is any tendency to case-harden.

How Do You Handle Log Run?

Uxbridge, Ont., June 3, 1920.

Editor, Canadian Woodworker:

Would you be kind enough to find space in your publication for the following questions, which we hope a large number of your subscribers will answer, and which will be for the general benefit of all the woodworking industry.

In bringing log run lumber into the yard, which is the most economical, or from which plan can the best results be obtained:

1. To pile the lumber the full run of the log all together in one pile, taking for granted it is all one thickness.

2. Is it better, in unloading, to pile the lumber in separate piles, under the separate grades: No. 1 and No. 2 common, and Firsts and Seconds.

3. For a factory manufacturing phonographs and record cabinets, show-wood chairs and stuffover chairs, is it profitable to buy log run lumber.

4. Give experience in piling green oak, and how to be successful in getting it air seasoned without checking.

Yours very truly,
Gold Medal Furniture Mfg. Co.

There is room for a very profitable discussion here as the question asked covers a subject that is of vital interest to all wood users. If a large number of readers will reply outlining their experience and offering suggestions some valuable information should be forthcoming. Will you co-operate by replying today?

How to Prevent Bits Following the Grain

How to prevent the drills following the grain when boring holes through the pail handles is the problem of one large handle manufacturer. This boring is done in end grain and if the grain is crooked or crossed the bits have a tendency to follow the grain, and as a consequence the holes barely meet—the holes are bored from each end—in many instances with the result that it is not easy to put the wire handle through the hole. Numerous methods have been tried in an effort to overcome this trouble but seemingly in spite of all that has been tried the bits continue to lead sideways. Any idea that might lead to a solution of this problem will be welcomed. Send your suggestions in to the editor.

A machine may run as well with its stationary parts covered with oil and dust, but it does not look as well as one that is kept spick and span.

Dominion Disc Grinder

The most essential machine for the pattern shop. High grade, low price.

Made either with Ball Bearings or Babbitt Bearings.
Our Terms: Pays for itself and gives you a profit besides on every hour it is used.

Ask for Circular and Price.

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My organization has behind it the experience of thirty-seven years in the manufacturing and distribution of Hardwood Products.

When you purchase from me you buy guaranteed quality and satisfaction. And the prices are no higher than you would expect to pay anywhere for the same quality of stock and service rendered.

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1 Car 4/4 Fas. Walnut
1 Car 5/4 No. 2 Common Walnut
1 Car 6/4 No. 1 Common Walnut
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3 Cars 8/4 Log Run Maple
1 Car 10/4 Log Run Maple
1 Car 12/4 Log Run Maple
1 Car 5/4 Fas. Plain White Oak
1 Car 6/4 Fas. Plain White Oak
1 Car 6/4 No. 1 Com. Plain White Oak
2 Cars 8/4 Fas. Plain White Oak

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First Quality Material for Fibre and Upholstered Furniture Manufacturers

Good Furniture is Only Made From Good Materials, Well Selected Carefully Handled and Inspected

In selecting your Fibre Cord and stakes for Fibre Furniture you can secure no better material than that which we produce. Our Cord is carefully watched throughout the entire process of manufacture and kept uniform in strength. It is giving perfect satisfaction.

Our Uniflax Seaming Cord for Upholstered furniture is unexcelled. It serves the purpose perfectly and lasts indefinitely. Prices for these materials are commensurate with the quality and are withal very reasonable.

GRAND RAPIDS FIBRE CORD COMPANY

1101-1157 Elizabeth Ave. **Grand Rapids, Michigan**

News of the Trade

J. R. Eaton & Sons, Limited, Orillia, Ont., are installing a Yates No. 281 band resaw.

The cabinet shop of H. Lalonde, Montreal, P. Q., was damaged by fire recently.

A. Plumtree is erecting a small sash and door factory on Fourth St., New Toronto.

The Plant Carriage Factory, Ottawa, Ont., contemplate erecting an addition at a cost of $60,000.

The property known as Steele's Planing Mill, Smith's Falls, Ont., has been converted into a button factory.

The Toronto Wood Finishing Co., 79 Adelaide St. E., have moved to larger premises at 1091 Queen St. W.

The Motor Saw Co. of Canada, Montreal, P. Q., was recently registered with Arthur R. Harris as proprietor.

An up-to-date upholstering shop has been opened in the Miller factory, Fredericton, N. B., by Thomas Chapman.

Mackisco & Sanderson, Reg., Lachine, P. Q., were recently formed to conduct a general woodworking business.

The Berliner Gramophone Co., Limited, Montreal, P. Q., have commenced work on a large factory to cost $400,000.

The Ontario Spring Bed Co., London, Ont., have awarded a contract for a small addition to their factory at a cost of $4,000.

N. D. McPhail, Vancouver, B. C., is reported to have disposed of his interests in the Province Furniture Mfg. Co. of Vancouver.

Seaman, Kent Limited, Toronto, Ont., manufacturers of hardwood flooring, are erecting an office and warehouse at a cost of $50,000.

The twenty-third annual convention of the National Hardwood Lumber Dealers' Association will be held in Chicago on June 17-18.

The plant of the McKay School Equipment Co., Limited, Toronto, was recently damaged by fire. The loss is fully covered by insurance.

A. Gill, St. Catharines, Ont., is equipping a woodworking plant and is in the market for a few machines, such as circular ripsaw, band saw, etc.

The Canadian Nashua Paper Co., Limited, Peterborough, Ont., are manufacturing a line of gummed tapes for taping veneer joints and other similar uses.

The Aubernaie, a wooden vessel of 1,500 tons, built for the French government, was successfully launched at the Davie Shipbuilding plant at Lauzon, P. Q.

The planing mill of Allen & Cline, Picton, Ont., was totally destroyed by fire. The loss, which amounted to $18,000, was only partially covered by insurance.

The Rhodes-Curry Co., Limited, Amherst, N. S., are building an addition to their plant at Sydney, N. S. Some new equipment will be added. Cost $4,500.

The Piercy Supply Co., Halifax, N. S., manufacturers of sash and doors and general woodwork, are building a warehouse and office at a cost of $7,000.

The Canada Clothespin Co. of Western Ontario, have installed a shavings exhaust system to take care of the shavings and sawdust from their clothespin equipment.

Ham Bros. Co., Limited, Brantford, Ont., manufacturers of refrigerators and screens, are building a three-storey brick addition to their factory at a cost of $20,000.

Potter's, Limited, Winnipeg, Man., contemplate erecting a furniture factory at St. Boniface, on the site formerly occupied by the Rat Portage Lumber Company's mill.

The Chamber of Commerce of Stratford, Ont., have issued an invitation to the Retail Furniture Association of Ontario, asking them to hold their next convention in Stratford.

The planing mill of Samuel Lambert, Welland, Ont., was recently damaged by fire. The loss which amounted to $5,000, was not covered by insurance. The cause of the fire is not known.

Walter T. Piggott, Windsor, Ont., has commenced the construction of a new planing mill and dry kiln, together with office buildings, etc., A short time ago Mr. Piggott disposed of the site on which the present plant is located and it was announced then that a new factory would be put up as soon as a suitable location was secured. The new building will be two storeys, 60 x 150, of mill and brick construction, and will cost in the neighborhood of $35,000.

The partnership known as Pollender & Frere, who have been conducting a sash and door factory at Farnham, P. Q., has been dissolved and E. & A. Pollender registered as proprietors.

S. E. Johnson & Son, Racine, Wis., have awarded a contract for a Canadian factory to be erected at Brantford, Ont., where they intend to manufacture their prepared waxes and wood stains.

Alp. Bavil, Shawinigan Falls, P. Q., is rebuilding the sash and door factory and saw mill that was destroyed early in the year. The new building is 2 storeys, 100 ft. x 40 ft., of concrete construction. Cost $15,000.

The sash and door factory of Neate & Co., Ottawa, Ont., was recently damaged by fire. The damage, which amounts to $1,000, will not interfere with the operation of the mill. About sixty hands are employed at present.

Work has commenced on the new woodworking plant that Gordon C. Scott is erecting on the West End sawmill site, Fredericton, N. B. A box shook factory and a cooperage plant will be operated in connection.

The London Brush Co. Limited, London, Ont., have been incorporated to manufacture and deal in brushes, brooms and other wood products. Capital $40,000. Two of the incorporators are F. Rossiter and F. G. Rossiter, both of London, Ont.

Fry & Blackhall, Limited, Wingham, Ont., were recently incorporated to manufacture and deal in all kinds of upholstered and other furniture. Capital $50,000. J. A. Mills and S. Bennett, both of Wingham, Ont., are two of the incorporators.

Leclerc & Beauchamp, Limitce, Montreal, Que., were recently incorporated to manufacture and deal in furniture, toys and other articles. Capital $45,000. J. E. Beauchamp, agent, and Gustav Adam, both of Montreal, are two of the incorporators.

The plant of R. E. Truax & Co., Walkerton, Ont., narrowly escaped destruction when a large roller-skating rink on the adjoining property was wiped out. As it was, a considerable quantity of lumber and the company's stables were destroyed.

The Regina Sash & Door Co., Regina, Sask., will erect a big mill plant here this spring to cost approximately $40,000. The mill will be fitted out with new equipment, will undertake all kinds of wood manufacture, and employ about fifty workmen.

La Librarie St. Jean Limitce, Victoriaville, Que., have been incorporated to manufacture musical instruments, toys, pencils and other wood products. Capital $20,000. E. Marchand and A. Marchand, both of Victoriaville, Que., are two of the incorporators.

The Brunswick Canadian Products Co. Limited, Woodstock, Ont., have purchased a large block of land adjacent to the ten-acre site granted by the city. This gives this company a very fine industrial site with connections with the Grand Trunk and C. P. R.

Canadian Motors & Machine Co. Limited, Quebec, Que., have been granted a provincial charter to manufacture motor boats, aeroplanes and other wooden vehicles. Capital $500,000. Two of the incorporators are T. Craig, W. Campbell, financiers, both of Quebec City.

The Port Arthur Shipbuilding Corporation, Limited, Montreal, Que., have been incorporated to build and deal in steamships, barges, tugs and other water craft. Capital $100,000. F. H. Markey and W. W. Skinner, both of Montreal, are two of the incorporators.

Francis, Limited, Port Arthur, Ont., have been granted a provincial charter to manufacture and deal in all kinds of musical instruments. Capital $40,000. Two of the incorporators are W. F. Langworthy, solicitor, and S. E. Flook, surveyor, both of Port Arthur, Ont.

The Collingwood Shipbuilding Corporation, Limited, Montreal, Que., have been granted a federal charter to construct and deal in steamships, barges, and other water craft. Capital $100,000. Among the incorporators are F. H. Markey and W. W. Skinner, both of Montreal.

The Amherst Pianos, Limited, Amherst, N. S., were signally honored when Queen Alexandra selected an Amherst piano, from their London warerooms, as a birthday gift to the Princess Royal. To celebrate this achievement the Board

The worker's smile is a big asset for you. Cultivate it!

Other International Products :

In addition to the Card Time Recorder, shown in the accompanying illustration, the International Business Machines Company, Limited, manufactures

Card Time Recorders
Dial Time Recorders
Job Recording Devices
Electric and Self-Winding Master Clocks
Autograph Recorders
Secondary Clocks
Time Stamps
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Recording Door Locks
And a full line of kindred devices.

We will gladly send full data concerning any of the above instruments on request.

SHOW workers that their wages are infallibly protected for EVERY MINUTE of service given and you will establish a basis of understanding and harmony which can not be attained in any other way.

Such a positive guarantee of payroll accuracy and satisfaction is made possible by

INTERNATIONAL TIME RECORDERS

The confident smile of the worker who records his time on an International is a genuine asset for you. It means freedom from payroll disputes. It stands for close, profitable co-operation between employees and management. It is the mark of a satisfied, capable producer.

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Internationals, on the other hand, are **automatic.** They leave nothing to chance. They keep all necessary payroll data, correct-to-the-minute, clearly printed for quick, errorless computation.

Internationals are made in 260 models, either electrically-operated or spring-driven, and adapted to all lines of business. May we show you how YOUR requirements can be filled perfectly?

INTERNATIONAL BUSINESS MACHINES CO. LIMITED

FRANK E. MUTTON, Vice-President and General Manager

Head Office and Factory : 300 to 350 Campbell Avenue, TORONTO

Offices at
HALIFAX, 44 Granville St.; QUEBEC, 506 Merger Bldg.; MONTREAL, 1 and 3 Notre Dame St. W.; OTTAWA, 188 Queen St.; TORONTO, 415½ Yonge St.; HAMILTON, 175 James St. N.; WALKERVILLE, 44 Lincoln Rd.; WINNIPEG, 227 McDermott Ave.; SASKATOON, 254 3rd Ave.; CALGARY, 172 6th Ave.; EDMONTON, 10118, 102nd St.; VANCOUVER, 110 Water St.

(Also Manufacturers of Dayton Scales and Hollerith Electric Tabulators)

of Trade of Amherst held a banquet for the management and employees of the above-mentioned firm, at which laudatory addresses were given and a presentation made to each of the workmen. This consisted of a neatly engraved card and a $5.00 gold piece for each employee.

The Pacific Crating & Manufacturing Co., who are erecting a crating and broom handle plant on Sidney Island, B. C., is now operating the crating mill. Sufficient contracts have been accepted to keep the plant going for several years. About sixty men are being employed.

The Forest Products, Limited, Parry Sound, Ont., are erecting a two-storey brick factory 65 ft. x 162 ft. A new power house and dry kiln is also being equipped. This firm, which employs from sixty-five to seventy-five hands, specializes in sash, doors and millwork of all kinds.

The Toronto Specialty Mfg. Co. are nicely settled in their new plant at Bradford, Ont. About twenty-one hands are now employed but this number will be increased very soon. The output of this concern is confined chiefly to baby carriages and go-carts in reed and rattan.

The Hydrola Phonograph Co, Limited, Toronto, Ont., were recently granted a provincial charter to manufacture phonographs, and other musical instrumentss. Capital $200,000. G. H. Sedgwick and J. Aitchison, barristers, both of Toronto, Ont., are two of the incorporators.

Pacific Berry Growers Limited, Port Haney, B. C., have just completed the construction and equipping of a box factory to manufacture fruit and berry boxes. The capacity of this plant is sufficient to take care of the local demands and fill orders from other places outside B. C.

The British American Shipbuilding Corporation, Limited, Montreal, Que., was recently incorporated to manufacture, build and deal in steamships, barges and other water craft. Capital $100,000. Two of the incorporators are F. H. Markey and W. W. Skinner, both of Montreal, Que.

F. W. Anderson, 1056 Granville St., Vancouver, B. C., has purchased a site of 8¾ acres in Point Grey, B. C., and contemplates erecting a furniture factory at a cost of $25,000. The first unit of the plant will be proceeded with at once. Employment will be furnished for about one hundred hands.

Ideal Cabinets, Limited, Toronto, Ont., have been granted a provincial charter as general woodworkers, manufacturing and dealing in cabinets, furniture, musical instruments and all kinds of woodenware. Capital $40,000. J. M. Bullen and H. L. Steele, barristers, both of Toronto, are among the incorporators.

The Sea-Sled Company, Limited, Montreal, Que., have been incorporated to manufacture and deal in boats, aeroplanes and craft of all kinds. Capital $1,160,000. Among the incorporators of the company are Honorable William James Shaughnessy, and Chilion Graves Heward, both of Montreal, Que.

Burroughs & Company (Eastern) Limited, Montreal, P. Q., were recently granted a federal charter to carry on a business as paper and box makers and manufacturers of office furniture and supplies. Capital $50,000. Two of the incorporators are R. M. Edmanson, and W. G. Egbert, both of Calgary, Alta.

E. H. Shockly, Prince Rupert, B. C., has moved his woodworking plant to a more suitable site on the waterfront at Cow Bay. The new plant is equipped with a complete line of woodworking machinery. The products of this plant include general millwork, mouldings, building material and dressed lumber.

It is reported that H. R. Wansbrough of the Dominion Casket Co., Guelph, Ont., has purchased the building occupied by the Crowley Mfg. Co., Toronto, and intends to manufacture caskets. In all likelihood a company known as the Canadian Caskets, Limited, will be organized to conduct this new business.

The Dominion Boxes, Limited, Ottawa, Ont., have been incorporated and will take over the firm known as Boxes, Limited. The new company will manufacture chiefly boxes and other wooden products. Capital $250,000. Two of the incorporators are G. D. Kelly and W. L. Scott, barristers, both of Ottawa, Ont.

A very strong delegation of piano manufacturers, including representatives and employees from practically every factory in Ontario, recently waited on the Minister of Finance, Sir Henry Drayton, and made a strong protest against the new taxes. They intimated that if the present regulations were enforced their business would be cut in half, if not reduced further. They suggested that instead of an excise duty of 10 per cent. on ordinary pianos and 20 per cent. on players and phonographs, that this tax be reduced to 5 per cent. on all lines. The delegation were assured that the representations made would receive careful consideration.

The contract has been let for the new furniture factory that the Langslow-Fowler Furniture Co. of Rochester, N. Y., are erecting at Cobourg, Ont. The main factory will be 223 x 63 of brick construction, and a separate power house and dry kiln will be built. The cost will run in the neighborhood of $150,000 including equipment.

The Sterling Caskets, Limited, Toronto, Ont., have been incorporated to conduct a general woodworking business, manufacturing and dealing in caskets, hearses, and other undertakers' supplies. Capital $200,000. Two of the incorporators are F. A. Williamson, contractor, and P. Kirkegaard, engineer, both of Toronto, Ont.

At the first meeting of the Woodworkers section of the Manufacturers' Asscіation of British Columbia, held in Vancouver, Mr. A. Robertson of the Robertson-Hackett Sawmills, Limited, was appointed president, as this was the initial meeting of the newly-formed Association and the election of officers was the only business transacted.

The St. Thomas Cabinets, Limited, St. Thomas, Ont., recently held an open day when about one hundred and fifty citizens of St. Thomas visited their plant. Among those calling were Genet Bros., Richmond, Indiana, manufacturers of the Starr Phonograph. They pronounced the St. Thomas plant one of the best on the continent.

The Dominion Composition Furniture & Toy Mfg. Co., Limited, Victoria, B. C., manufacture furniture of all kinds but specialize particularly in ornamental composition articles made by a new process. The directors of this company are A. B. U. Robson, president and G. L. Asquith, vice-president, T. F. C. Salt, secretary-treasurer and Paul Beygrau, treasurer.

At a meeting of the Advisory Council for Industrial and Scientific Research, held in Toronto recently, it was stated that alcohol could be made to-day for 50c a gallon, whereas the present price of $11.00 was largely due to the heavy government tax and the large profits accruing to the distillers. This cheap alcohol can be produced from sawdust and pulp waste by treating with acids.

The plant of the Harriston Furniture Co., Harriston, Ont., was completely destroyed by fire, during a severe electric storm. The loss of $75,000 is only partly covered by insurance. This plant was recently taken over by Zeigler Bros. and was enjoying a good trade; in fact alterations and additions were planned for this summer. The future plans of the company are not definitely decided on.

Desks, tables and other furniture are being turned out at the Government cabinet shop at Edmonton, Alta. These articles are for the new agricultural school at Raymond, Alta. It has been found that the product of the Government shop compares very favorably with the regular commercial lines of furniture, and the authorities figure that they are effecting a saving by doing the work themselves.

The Dominion Lumber & Building Co., Orillia, Ont., who have been operating a plant on flooring, moulding and other building material for the past thirteen months, report that business has been exceptionally good and that the orders on hand and the business in sight augur well for the immediate future. A sash department is being added and such machines as a sash sticker, tenoner, mortiser and relisher are being installed.

The National Show Case Co., Limited, Toronto, who were recently incorporated to take over the business conducted as the Toronto Wood Specialty Co., have purchased the plant of Cameron & Campbell and are making additions and alterations, preparatory to moving into the new premises. The dry kiln is being remodelled, a small addition being built to the factory, and such machines as a planer, matcher, tenoner and saws installed.

Work is now in progress at the Cholberg Shipyard on the four wooden, lumber-carrying barquentines which will be built by the Victoria Shipowners, Ltd., a co-operative concern whose stock is held by the business men and public of Victoria. The vessels, which will be of four-masted type, and which will have a 2,400 tonnage, will be operated by the shipowners on their completion. The Federal Government is assisting the scheme to the extent of $700,000, while the company has invested $300,000. The Government's loan will

HARDWOOD LUMBER

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GREENWOOD, MISSISSIPPI,
U.S.A.

Any lumber which does not stand the acid test of the men who work it, is expensive. We welcome the judgment of your workmen.

Every board is branded as above, and this brand is your GUARANTEE and our mutual PROTECTION.

Manufacturers Exclusively

BAND MILLS:

GREENWOOD, MISS. MOORHEAD, MISS.

Our Kraetzer-Cured Gum is guaranteed to be practically *flat, straight* and *bright.*

be repaid by the operation of the ships in the lumber-carrying trade. In laying the keel of the first vessel Premier the Hon. John Oliver expressed the belief that the present project was a forerunner of many similar enterprises in this

A movement is on foot below the border to create a better demand for union-made caskets. It consists of a proposal to amend the constitution of the United Brotherhood of Carpenters & Jointers. The amendment reads as follows: —"No member's legal heirs or wife's legal heirs will be entitled to beneficiary donations unless the deceased is buried in a coffin or casket bearing the label of the United Brotherhood of Carpenters & Joiners of America.

H. C. Slemin, managing director of the Office Specialty Mfg. Co., Limited, Newmarket, Ont., recently stated that he was well pleased with the volume of business being done by his company. He said that they were called upon to extend themselves to keep up with the many orders that were coming in, and although they were experiencing the usual trouble in securing an adequate supply of raw material, they had succeeded to date in maintaining deliveries.

The Canada Wood Specialty Co., Limited, Orillia, Ont., report that all departments are very busy and that the orders on hand will keep them going for many months to come. One large contract, on which they are working, consists of an order for parts for folding chairs. This order, which will fill quite a number of cars, is for export to Britain. A sawmill is being operated to supply their own requirements and about 1,250,000 ft., chiefly birch, will be cut this season.

Beatty Bros., Limited, Fergus, Ont., manufacturers of barn and stable equipment and woodenware of all kinds, have been authorized to increase their capital from $750,000 to $2,000,000. An additional amount of capital is required to take care of the increased business, both domestic and foreign, which is offering. They plan on making some changes and improvements to both the Fergus and London plants, and will likely spend about $150,000 in buildings and equipment.

The Malcolm & Hill, Limited, Kitchener, Ont., who recently acquired the plant of the D. Hibner Furniture Co., Limited, intend to confine their line to special bedroom furniture of exclusive design. In producing this line it is the intention to make exclusive use of Canadian birch lumber, with mahogany and walnut veneer panels in three colors, viz., mahogany, walnut and enamel. Henry Maxwell, formerly with Berkey & Gay, will have charge of the plant, while Fred Hansen of the Grand Rapids Chair Co., will conduct the finishing department.

A company known as the Hespeler Wood Specialty Co., Limited, Hespeler, Ont., was recently incorporated to manufacture and deal in hockey sticks, bent wood goods and other specialties, and to take over, as a going concern, the business carried on in Hespeler under the name of Dominion Wood Specialty Co. Capital $100,000. The very latest equipment for this class of work has been installed and they claim that they have one of the largest and best-equipped hockey stick factories in the world. O. Gryd and Z. A. Hall, manufacturers of Hespeler, are two of the incorporators.

The box manufacturers of British Columbia recently organized as a section of the British Columbia Division of the Canadian Manufacturers' Association as it was the feeling among the individuals that some such forms of association was necessary to enable them to co-operate in handling of not only domestic business but also the large amount of export trade offering. Many substantial orders have already been taken on and apportioned between the manufacturers according to the capacity of plant or the condition of their order books. The chairman of the new organization is Mr. R. B. Sharpe, of the Pacific Box Company, Vancouver.

Kalbfleisch Bros. Limited, with a capital stock of $150,000 and headquarters in Stratford, have been incorporated to carry on the business generally of manufacturers and repairers of automobiles, motor trucks, bicycles, etc., and planing mill proprietors, sawmillers, lumber dealers and general contractors. The new company is empowered to acquire and take over as a going concern the two businesses now conducted in Stratford, one by Henry Kalbfleisch and George Kalbfleisch in partnership under the name of Kalbfleisch Bros., machine shop and garage proprietors, and the other by Henry Kalbfleisch and Emil Kalbfleisch in partnership under the name and style of the Kalbfleisch Planing Mill, planing mill proprietors and lumber dealers.

A. H. Gilham, Toronto, has been appointed sales manager for the Engel Upholstering Co., Limited, of Waterloo, Ont. Mr. Gilham represented Walker & Clegg of Wingham, Ont., for a number of years.

Personals

J. H. Sherrard of Simmons Limited, Montreal, has been elected to the Executive of the Canadian Furniture Manufacturers Associations for the ensuing year.

Wm. Turnbull, Victoria, B. C., of the B. C. Department of Lands, Forests & Mines, together with M. A. Grainger, the chief forester for B. C., spent a few days recently in Montreal, Ottawa and Toronto.

G. A. Gignac of J. H. Gignac, Limited, Quebec, P. Q., lumber merchants and woodworkers, has been appointed a member of the Executive of the Quebec Division of the Canadian Manufacturers' Association.

J. R. Shaw, managing director of the Canada Furniture Manufacturers, Limited, Woodstock, Ont., was elected second vice-president of the Canadian Manufacturers' Association at the meeting recently held in Vancouver.

C. W. Murphy recently joined the sales staff of the Gall Lumber Co., Toronto. He spent several years overseas and took an active part in the Somme and other big engagements. Previous to enlisting he was with the Standard Chemical Co. at South River.

Matthew Brown, Toronto, who was recently appointed Canadian representative for the Thomas Hall Lumber Co. of Charlton, W. Va., has returned from a visit to the southern producing districts and reports that there is a steady demand for hardwood lumber of all kinds.

J. F. Alain, of the Victoriaville Furniture Co., Ltd., is a member of the executive of the Quebec Division of the Canadian Manufacturers' Association. Mr. Alain is also a member of the Industrial Development Committee formed to attract industries from other countries to the Province of Quebec.

Stanley H. Stirrup, the well-known English furniture designer, has severed his connection with Berkey & Gay and the Luce Furniture Co. of Grand Rapids, Mich., and will devote his time to bringing out new designs for Malcolm & Hill, Limited, of Kitchener, and the Andrew Malcom Furniture Co., Limited, of Kincardine.

Ald. E. R. Seabrook, London, Ont., was recently appointed manager of the London Art Woodwork Co., Limited. Mr. Seabrook has been very active in the business and political life of London and is well thought of by his fellow citizens as indicated by the fact that he headed the polls when he sought re-election this year.

Mrs. Eddy, wife of the late E. B. Eddy, who was the founder of E. B. Eddy Co., Hull, Que., the widely-known paper, match and fibreware manufacturers, has donated the sum of $300,000 to Dalhousie University, Halifax. The money is to be used in building Shireff Hall, a dormitory for the girl students of the University, which will be a memorial to Mrs. Eddy's parents.

At the meeting of the Toronto branch of the Canadian Manufacturers' Association the following woodworkers were elected to office:—Vice-chairman, R. H. Esson of the Otto Higel Co., Limited, manufacturers of piano actions; members of the executive council, A. H. Gourlay of Gourlay, Winter & Leeming, Limited, piano manufacturers Walter Laidlaw of the R. Laidlaw Lumber Co., Limited, lumber merchants and woodworkers; W. H. Shapley of the Sterling Action & Keys, Limited, manufacturers of piano actions; and George Valentine of the Massey-Harris Co., Limited.

Obituary

The many friends of T. Edgar Rathbone, of George Rathbone Limited, Toronto, will sympathize with him in the death of his wife, which took place recently at the family residence, 183 Westminster Ave., Toronto.

J. F. Peterkin recently passed away at his home in Toronto. Mr. Peterkin came to Toronto in 1851 and having artistic inclination took up the calling of a wood carver. He won a high place in this line, many of the carvings in tht old Government House, the University of Toronto buildings and on many of the lake steamers testifying to his skill. He is survived by his wife, one son and daughter.

Matthew Deans, president of M. & M. A. Deans, Limited, manufacturers of wagon hubs and lumber, Sprucedale, Ont., passed away on June 4th in his 85th year. The late Mr. Deans was one of Canada's pioneer lumbermen, having started his first mill sixty-three years ago at Dublin, Ont. After operating a number of years at Norwich and also at Waverley, he removed to Sprucedale some thirty-five years ago and founded the present business.

An Excellent Machine for Furniture and Cabinet Work

The "Famous" No. 16 Variety Saw Bench with boring and mortising attachment will do much to increase your output in your furniture and cabinet shops. Accuracy is a main factor in its operation, while the roughest class of work is handled with the same degree of efficiency.

Write us for further information regarding the "Famous" No. 16 Variety Saw Bench and many other machines that you may need and are included in our complete line of woodworking machinery.

The Sidney Machine Tool Company

SIDNEY, OHIO U. S. A.

Ontario Agent--H. W. Petrie, Ltd., Toronto

A Good Variety of Hardwoods For Quick Sale

2 Cars 4/4" No. 3 Com. and Btr. Winter Cut Basswood.

2 " 4/4" No. 3 Com. & Btr. Soft Elm

2 " 8/4" No. 2 Com. & Btr. Soft Elm

1 " 4/4" No. 3 C. & B. Soft Maple

2 " 8/4" No. 2 C. & B. Soft Maple

1 " 8/4" No. 2 Com. & Btr. Rock Elm

1 " 8/4" No. 2 C. & B. Hard Maple

2 " 4/4" No. 2 Com. & Btr. Birch

1 " 4/4" No. 3 Common Birch

OUR PRICES ARE RIGHT
SO IS THE STOCK

Canadian General Lumber Company, Limited

712 Bank of Hamilton Bldg.
TORONTO

MONTREAL OFFICE: 203 McGill Bldg.

Selling
Graves, Bigwood & Co.'s
Lumber, Lath and Box Shooks

Woodturner Wanted

WANTED—General Woodturner, with some experience on shaper. Apply Canadian Hanson & Van Winkle Co., 17 Morrow Avenue, Toronto. 6

Cabinet Maker and Machine Hands Wanted

We have an opening for a few good men on graphophones, also a man to take contract for assembly room. Highest wages and good living conditions, short distance from city. Apply J. E. Burnett, Alliston, Ont. 6

Bench-hands Wanted

WANTED—Two first class bench hands for Planing Mill work. Apply Box 90, Canadian Woodworker, Toronto.

Superintendent Wanted

Superintendent for mill room. Big job for big man. Good salary. Some parlor furniture experience preferred. Address, Pullman Couch Co., 38th St. and Ashland Ave., Chicago, Ill. 6

WANTED

Two Hundred Thousand Feet 4/4 Birch, No. 2 Common and Better. Box No. 88, Canadian Woodworker. 6-7

For Sale

Canadian Hardwood Lumber

5 cars 2″ Birch, No. 3 Common
3 cars 3″ Birch, No. 3 Common
3 cars 1½″ Birch, No. 2 Common
5 cars 2″ Birch, No. 2 Common
1 car 2½″ Maple, No. 1 Com. & Btr.

Send us your enquiries for Birch, Maple, Elm and Basswood.

Box 89, Canadian Woodworker. 6

FOR SALE

1 Preston W. W. Mchy. 26″ Single Surface Planer, divided rolls.
1 Buzz Planer, 24″ round head. Preston W. W. Mchy.
1 Wooden Frame Belt Sander.
1 Steam Retort, 4 ft. 6 in., Preston W.W. Mchy. Co.
1 McKnight Cane Seat Chair Borer.
1 Jig Saw. Am. Woodworking Mchy. Co.
3 Screw Veneer Presses. Preston W. W. Mchy. Co.
1 Wysong & Mile's Hollow Chisel Mortiser.

The above machines are all in good condition and practically new.

THE CANADA LAST CO., LTD.,
6 Preston, Ont.

Sticker Hand Wanted

Experienced Sticker Hand to take charge of two stickers. Highest wages and steady work. Apply Stratford Chair Co., Stratford, Ont. 5-6

WANTED

Correspondence with furniture manufacturers desiring practical designs and details of furniture in all the prevailing periods. Address C. Theodore Eichelsdoerfer, 56 West Mechanic St., Shelbyville, Ind. 3-6

Wanted

Ten to twenty four-wheel factory trucks, platform size about 27″ x 48″. Canadian Wood Products Limited, 1000 Gerrard St. East, Toronto. 6

Factory Superintendent

in Office and Store Fitting Factory desires change. Capable estimator and designer. Box 87, Canadian Woodworker, Toronto. 6-7

For Sale

60″ Berlin Invincible 3 drum Sander, in perfect condition. Have responsible machine man look this over for you. G. W. Murray Co., Ltd., Market St. East, Winnipeg, Man. 5

Drum Sanders For Sale

49″ Berlin, Spiral, run one week.
48″ Berlin, Straight, good as new.
43″ Berlin, Spiral, excellent shape.
48″ Fay & Egan, excellent shape.
Also
Mershon 44″ Band Rip, excellent.
Berlin No. 108-15″ Moulder, good as new.
Berlin No. 90 High Speed Matcher.
American No. 2 "BOSS" Timber Sizer.
70″ Sheldon Fan.
All the above are very fine tools.
Write Box 82, Canadian Woodworker, Toronto. t.f.

G. M. C. List

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S. A. Woods No. 29 Matcher, 15 by 6.
S. A. Woods Matcher, 14 by 6.
S. A. Woods Moulder, 12 by 6.
C. M. C. Moulder, 10 by 10.
Cowan No. 220 Endless Bed Planer, 26 by 10.
Cowan 3 drum Sander, 48″.
Columbia 3 drum Sander.
Horizontal Belt Sanders.
American Double Disc Sander, 36″.
Cowan Sash & Door Relisher and Mortiser.
McGregor-Gourlay Band Saw, 34″.
American and Whitney Scrapers and Knife Grinders.
General Electric, 35 K.W., 125 V., D.C. Dynamo, Switchboard and 5 H. P. Motor.
Dean Fire Pump, 500 gallon capacity.

GENERAL MACHINERY CO.,
67 Frederick Street,
Toronto, Ont.
Phone Main 2200. 5

Mechanics Wanted

Good Shaper Hand.
Lumber Yard Foreman.
Cabinet-makers and Helpers.
Varnish Rubbers.
Steady Work, Good Wages.

MALCOLM & HILL, LIMITED,
Kitchener, Ont.

Railways in China

Of 6,386 miles of railway in China in 1918, over 4,000 miles of main and branch lines were owned and operated by the government, these comprising 14 railways in 14 out of the 18 provinces. In addition there were 11 provincial and private railways, (some owned by mining companies) aggregating 425 miles and five concession lines aggregating nearly 2,300 miles. These figures are given in the report on the government railways by the Ministry of Communication, Republic of China, for the calendar year 1918.

Taking the 18 provinces as a whole, there are about 460 square miles of territory and 107,000 population per mile of railway. These figures compare with 40 square miles and 8,000 population for India, and 12 sq. mi. and 3,800 population for the United States. It is stated in the report that owing to the extent of wateways in China these average figures always will be higher there than in other countries.

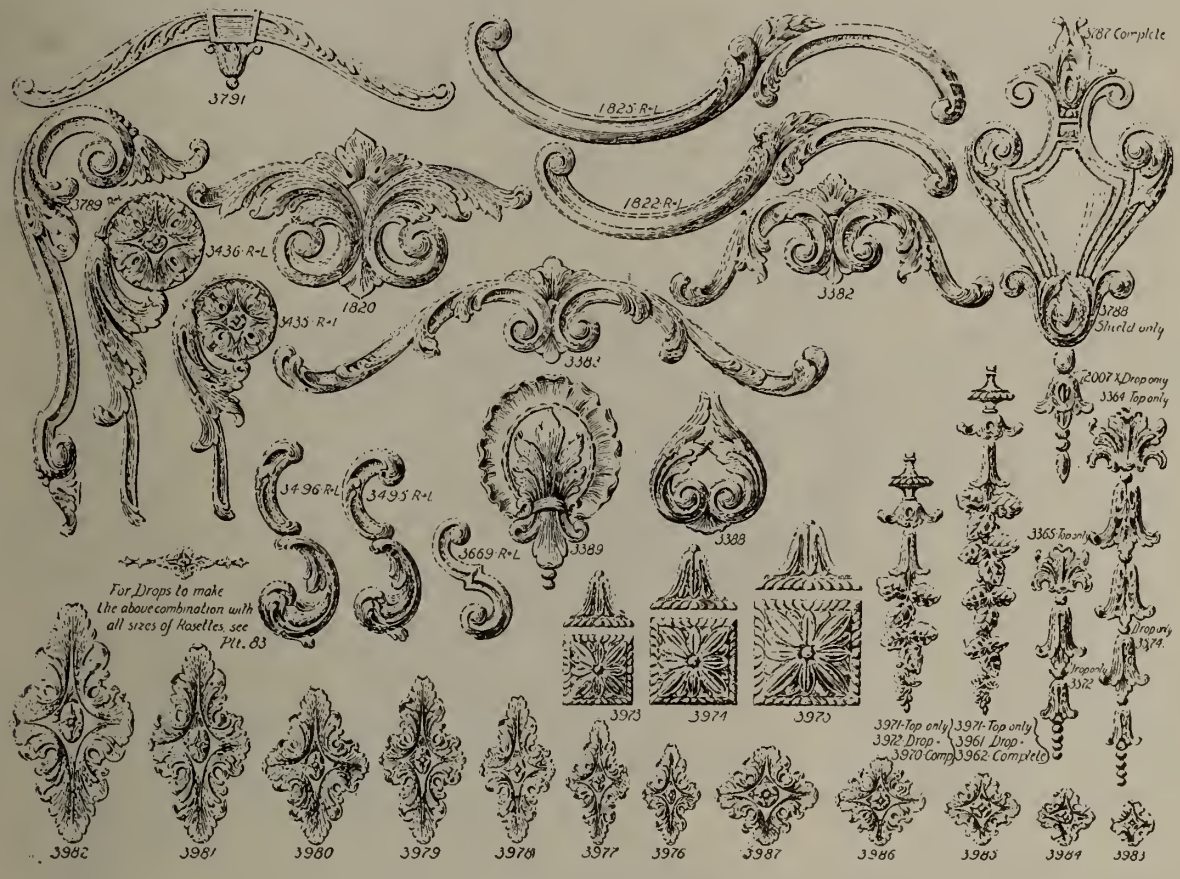
The construction cost for the government lines has averaged $126,000 per mile, ranging from $80,000 to $145,000. There are only 13 miles of double track, but sidings and industrial lines raised the trackage to a total of nearly 4,300 miles. The equipment included 653 locomotives. Owing to the fact that equipment must be purchased abroad, the policy is to extend the life of the engines as long as possible by means of extensive repairs and renewals, rather than to purchase new ones. Operating expenses were 44 per cent. of operating revenues. The traffic consisted of 25,475,379 passengers and 18,551,684 tons of freight.

Italian Housing Activities

According to the U. S. Department of Commerce, the Italian Government has considered legislative bills designed to increase materially housing facilities throughout the Italian domain. Legislative assistance offered so far includes loans to building organizations, co-operative societies and municipalities; state aid to commercial, industrial and agricultural organizations in the production of houses for their own employees; complete exemption from customs duties of imported building materials; exemption from the normal tax and the super tax for houses coming within the definition of popular or economical houses, as well as popular hotels and dormitories constructed by the municipality for a period of twenty years; and the exemption of certain other buildings not of a luxurious character from the normal tax and super tax for a period of 10 years.

In aiding tenants and discouraging rent profiteering Government commissioners will be appointed in cities of over 100,000 habitants to see that tenants receive full protection afforded them by law in connection with the leasing of apartments, furnished rooms, etc., and in regard to eviction.

Wood Fibre Carvings



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Water Powers in British Guiana

An investigation into the possible development of hydro-electric power in British Guiana has been made by Stafford X. Comber, M. Am. Soc. C. E., and Mr. Comber's preliminary report has been printed by the Government of British Guina. It records a remarkable piece of pioneer engineering investigation, for Mr. Comber had to proceed alone, at short notice, 150 miles into the vastness of the tropical Guina Jungle and secure his technical data with the assistance of only a few native Indians. The trip was made during the period of heaviest rainfall ever recorded in the forty years during which records have been kept. The report notes that the total amount of 24-hr. horsepower that could be developed on the three main rivers of British Guina from natural head, would probably be about 800,000 hp. It is understood that the provincial government is seriously considering the report with a view to the development of the more important and readily accessible powers revealed by Mr. Comber's investigation.

Traffic on British Canals

Strongly as the advocates of inland waterway transport press the case for putting the canal system in a position to handle a larger traffic, it seems to be widely felt that the outlay involved in the improvement schemes which have been put forward cannot be justified by the traffic possibilities. Perhaps the comparatively small expenditure involved in carrying out the scheme outlined in the report which Sir Maurice Fitzmaurice presented to the Canal Control Committee—the approximate cost was £4,000,000—might be authorized, but even this is doubtful. It is admitted that the cost of canal transport has in comparison with the pre-war period increased by about 200 per cent., so that in spite of the increase in railway rates there is still a considerable disparity in the operating costs of railways and canals, particularly in the low-grade traffic which forms the bulk of the leads on inland waterways. A review of the transport situation suggests the conclusion that for the time being at least the railway system can be relieved of only a comparatively small tonnage by the other transport agencies.

Water and Moist Air for Absorption Tests

Exposure to moist air has been found just as severe a test as immersion in water, in testing the absorption of moisture by wood through varnish and other coatings. In tests made recently at the Forest Products Laboratory, birch panels with various coatings were tested by exposure to moist air (95 to 100 per cent. humidity) and water, respectively, for periods of 17 days. The weight gained from the moist air exposure was practically identical with that gained in the water immersion; for example, a coating consisting of a filler plus three brush coats of spar varnish allowed 12.60 grams of water to pass per square foot of surface in water exposure and 12.25 grams in moist air exposure.

Teredos Work Under 40 lb. Pressure

Two wood-stave pipe lines through which the Union Oil Co. pumps salt water at Oleum, Cal., have been entirely destroyed by teredos which must have been drawn in through the centrifugal pumps and entered the wood staves from the inside. The pipe-lines were 10 and 12 in. diameter, respectively, and were operated under a pressure of 40 lb. per square inch. The pipes were damaged so badly that they had to be replaced. When detailed examination was made it was found that the teredos were in a thriving condition, some of them having attained a length of 8 in.

Sale of Lumber by Tender

Sealed tenders will be received by the undersigned up to Wednesday, the 23rd day of June, 1920, at the hour of 12 o'clock noon, for the purchase of a quantity of dry lumber consisting of approximately 400,000 feet of White Pine, 250,000 feet of Norway Pine, common and dressing grades, Spruce, Red American Oak and Birch.

The above lumber is of various grades and sizes and may be seen and inspected on the premises of the Department of the Soldiers' Civil Re-establishment, Speedwell Hospital, Guelph, Ontario.

The above lumber was purchased by the undersigned, subject to Government Inspection and grading, and will be sold by the undersigned subject to the same conditions and the said Government Inspection and Grading will be final as between the purchaser and the undersigned, but purchasers will be at liberty to have their own inspector go over the lumber with the Government Inspector, at time of loading.

Tenders will be received for any grade or for all grades and for any quantity not less than one car-load. Prices must be for board measure, f.o.b. cars, Guelph, Ontario, and subject to sight draft against Bill of Lading.

Each tender must be accompanied by a certified cheque for 10% of the amount of the tender made payable to Torno Lovitz Lumber Company. These cheques will be returned to the unsuccessful tenderers when the contracts are awarded. The cheques of the successful tenderers will be retained until the completion of the contract as a guarantee of the proper execution thereof and will be subject to forfeiture in the event of the purchaser's default.

The highest or any tender not necessarily accepted

Purchasers must give shipping instructions to the undersigned within five days after acceptance of tenders.

A complete list of the said lumber may be had upon application to the undersigned at Room 200 Crown Office Building, Toronto, on personal application or upon request by mail.

DATED at Toronto, this 1st day of June, 1920.

TORNO LOVITZ LUMBER COMPANY,
Room 200, Crown Office Building, Toronto.

HUGH JOHN MACDONALD, Crown Office Building, Toronto, Solicitor.

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of NEW and USED
WOOD TOOLS
FOR IMMEDIATE DELIVERY

Wood Lathes
No. 4 Waymouth, variety.

Wood Planers
24" Pony planer.
24" Crescent, single surfacer.
12" Buzz planer.

Band Saws
30" Ideal, pedestal.
60" Fay & Egan, band re-saw.

Saw Tables
No. 5 Famous, combination (2).
No. 4 Famous, combination.
McKenzie, combination.
Ballantine, tilting table.
MacGregor Gourlay railway cut-off.
No. 1 Greenlee automatic cross-cut.
No. 642 C. M. C. cut-off.
Galt, iron frame, cut-off.
Goldie & McCullough, power feed rip.
Davis, power feed rip.
7' Williams, swing saw.
Canadian, steel frame airmotor cut off.

Mortisers
Cowan, foot power.
No. 1 C. F. & F., foot power.
No. 2 C. F. & F., foot power.
No. 1 Defiance D handle mortiser.

Moulders
13" Clark-Demill four-side.
12" Woods four-side, inside.
10" Goldie & McCulloch, three side.
10" Houston, four-side.
8" Dundas four-side.
6" Dundas sash sticker.

Boring Machines
Ballantine, vertical.
Gear driven, post borer.
Fay, single spindle, horizontal.

Sanders
48" Berlin, three drum.
No. 176 Cowan, adjustable.
Post radial, surface sander.

Sawmill Machinery
No. 1 Sawyer-Massey, portable sawmill.
Boss, automatic, shingle machine.
Vaughan, gasoline driven, drag saw.
Champion, friction, drag saw.

Miscellaneous
Saw arbors, for 20"-30" saws.
McGregor-Gourlay 12 spindle dovetailer.
20" American, wood scraper.
Fay, iron frame, double head, tenon machine
C.M.C. 4 head rounding machines (3).
No. 3 Defiance, rim & felloe rounder.
No. 1 Defiance, axle shaper.
No. 1 Defiance, spoke driver.
No. 21 Covel bandsaw filing clamp.
No. 104 Covel band saw roller.
M. 137 Cowan, sash clamp.
M. 21 Cowan, door clamp.
3" x 7" universal wood trimmer.
Cowan veneer press screw.
Humphrey clothespin lathes (5).
Humphrey clothespin slotters (2).

Ask to see our large stock of used supplies—belting, pulleys, machine shop equipment, mill supplies, pipe and fittings, etc. Most of this material is as good as new, and can be bought at greatly reduced prices.

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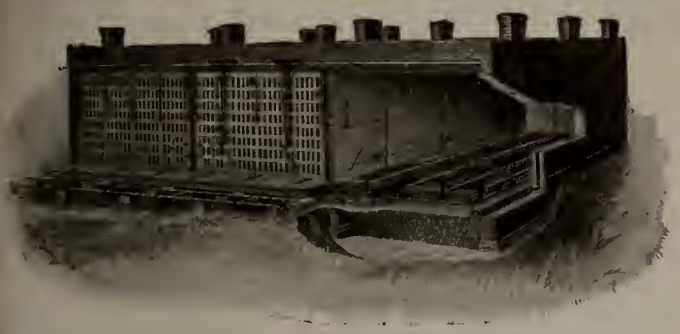
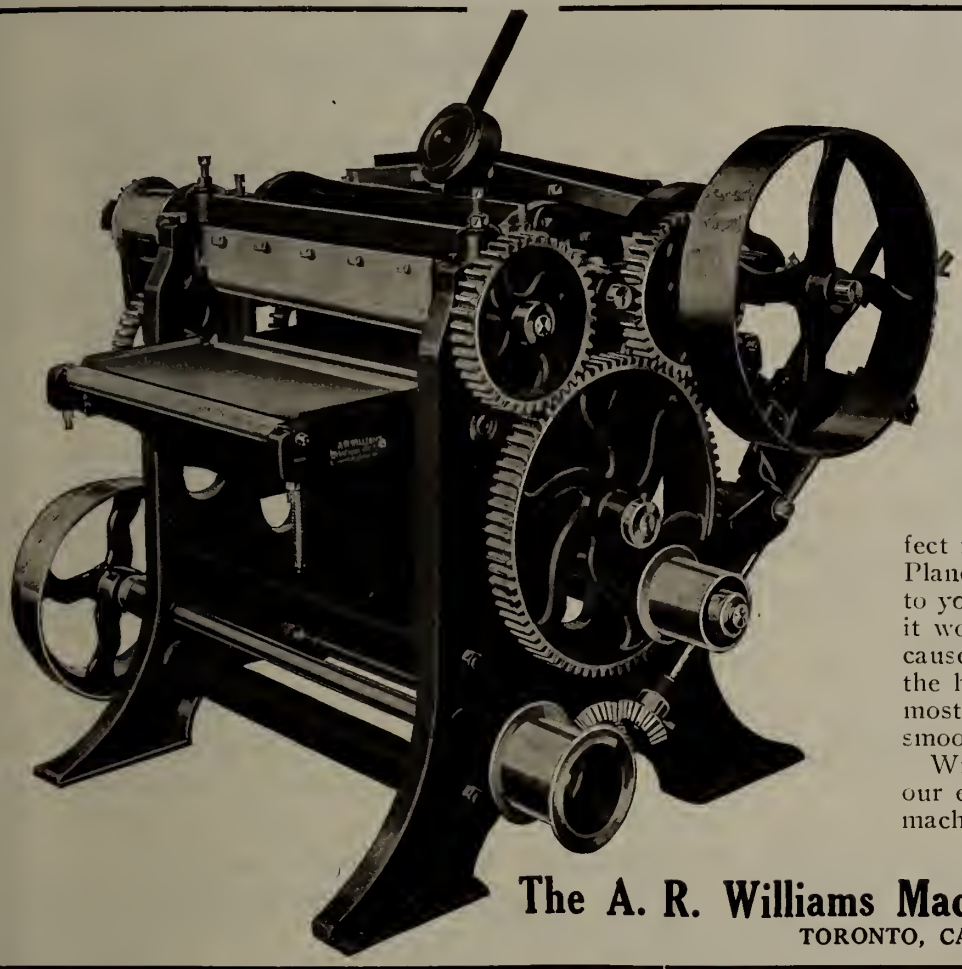


Even **before** you have made your selection, to aid you in formulating your ideas, start with a Dry Kiln Engineer's advice as to the location, the general "**layout**" of your kilns. This will mean much in their future efficiency. Without any obligation the advice of our Engineers is given showing you typical "layouts." Ask for some of these ideas. We will gladly send them. Address:

THE STANDARD DRY KILN COMPANY

1542 McCarty Street Indianapolis, Indiana



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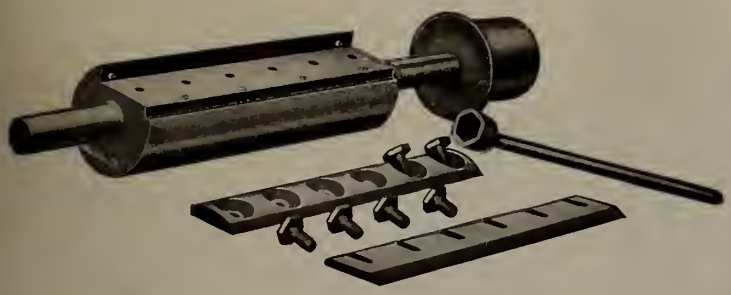

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"CASCO" Waterproof Glue

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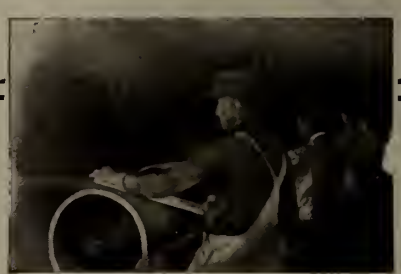

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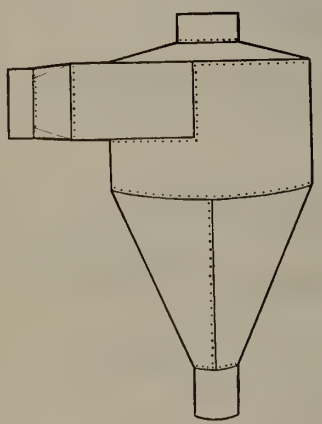

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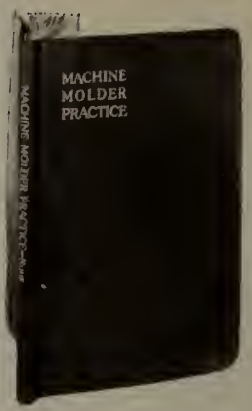

16 CHAPTERS

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A clean shop with machines free from shavings, chips, or sawdust, makes for greater efficiency.

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Process and Product Patents covering Perkins Glue were granted July 2nd and March 19, 1912, and have been held valid and infringed by the United States Circuit Court of Appeals. Patents have also been granted in Canada, Great Britain, Germany, France, Belgium, Italy and other foreign countries.

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Sales Office:
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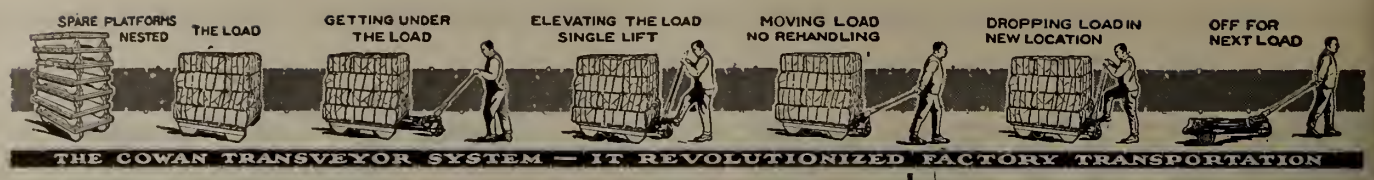
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TRADE MARK REG. U. S. PAT OFFICE

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FOR storage and movement among different departments of small parts, a box-skid like the drawing herewith is recommended. These boxes are easily put together by any factory carpenter and serve many useful purposes. The weight of the box being shown, the net weight of the contents can be instantly secured without the necessity of removal. The Transveyor meets all conditions, and the construction of the skids fits it to the varied requirements.

THEY AUTO PLEASE

THE Winton Co. say that six Cowan Transveyors are saving $5,280 a year for them on their factory trucking. The Republic Motor Truck Co. reports that the Transveyor Lift Trucks cut their interior trucking expense 90%; saving $5,400 a year, or over $16,000 up to the time of writing.

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FIRE wrecked the Puritan Rubber plant, and down with the burning mass plunged a Transveyor into the cellar. The fire burned for 24 hours. The Transveyor was eventually dug out, with paint missing, but otherwise perfectly workable. It was put to work clearing up the mess. They say the "durn thing" looks as if it will still outlast its original guarantee period of 5 years.

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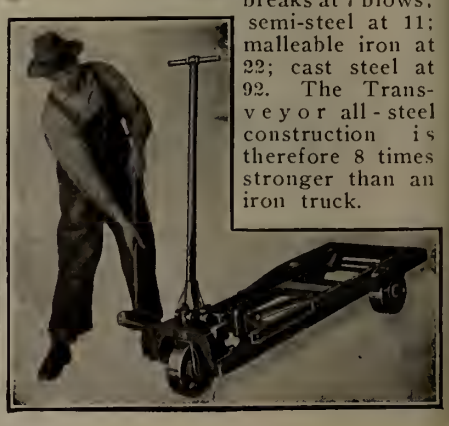
OF course no user of a Cowan Transveyor will deliberately try to scrap it with the aid of a sledge hammer. Nevertheless, a device of this kind must encounter many severe blows in the course of daily use. The All Steel construction of the Transveyor will stand these without serious effect. Actual breaking tests on bars of given sizes, show that cast iron breaks at 7 blows; semi-steel at 11; malleable iron at 22; cast steel at 92. The Transveyor all-steel construction is therefore 8 times stronger than an iron truck.



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Applied cold—and mixed cold

Profitable in its saving

Consistent in all grades of work

Odorless in the glue room

NAPCO is absolutely uniform. It eliminates waste, is easily applied, is impervious to water, and never lets go.

NAPCO joints are as strong as the wood.

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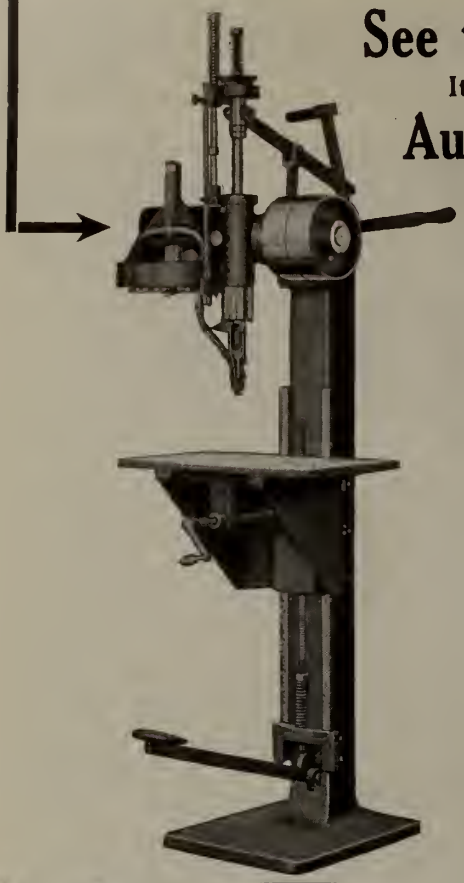


See that Magazine Feed

It's the whole secret of the

Automatic Operation

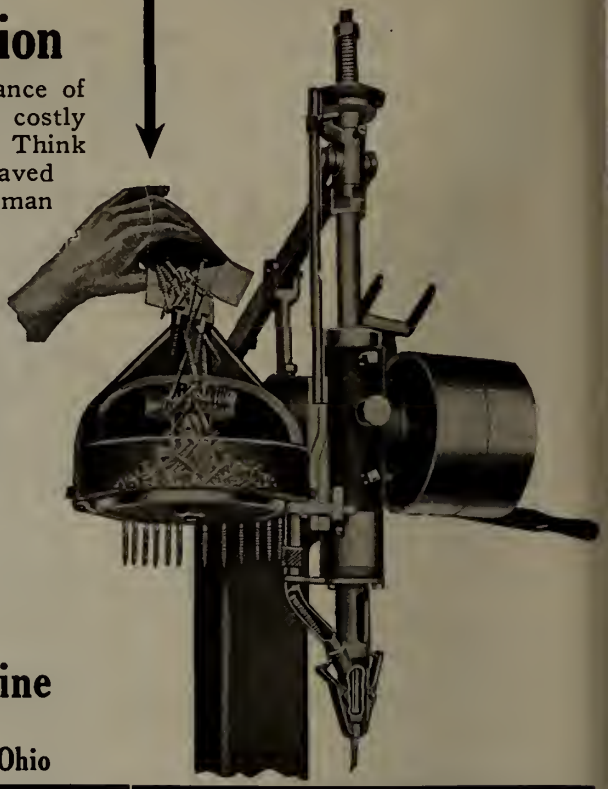
What a step it is in advance of the old style, man-tiring costly way of driving screws! Think of the amount of labor saved when any inexperienced man or boy can drive as many as 18,000 screws (wood or machine) in a day. Reynolds Automatic Screw Driving Machines are made in many different sizes and types to do almost any kind of work where a quantity of screws are to be driven. Special machines for almost any special kind of screw driving work will be supplied—just tell us what it is you want to do.

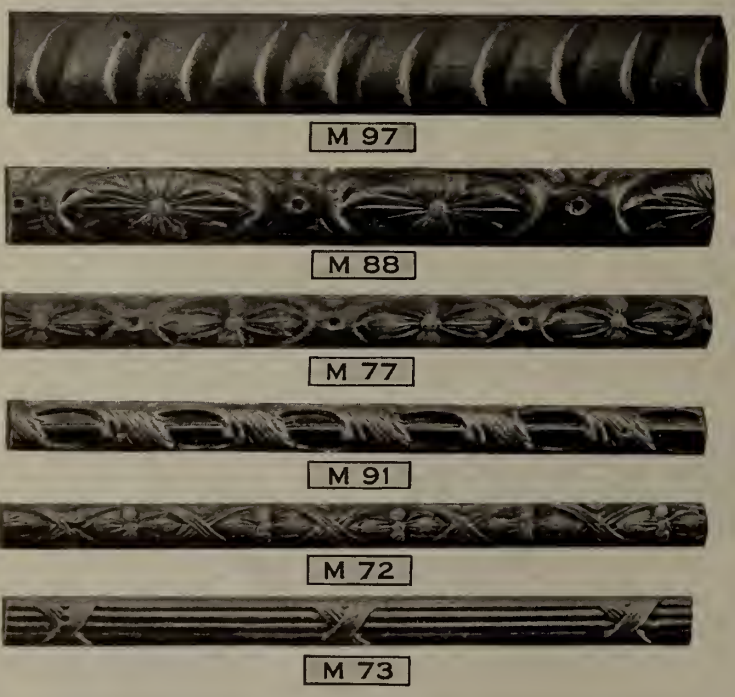
The Reynolds Machine Company

Dept. C. Massillon, Ohio

Just a Simple Operation

All you have to do is dump a box of screws into the magazine and start the machine. Both hands are always free to handle the work.





MOULDINGS We are making more Period Mouldings than ever before. Orders should be placed early to assure your supply when needed.

KNOBS The Period Knobs we placed on the market a few months ago are proving very popular. If you have not received samples ask for them now.

ROSETTES A new Period item to accompany the knobs.

Waddell Manufacturing Company

Coldbrook and Taylor, N. W. **Grand Rapids, Mich.**

HOW DO YOU DRIVE WOOD SCREWS?

The Automatic Electric Screw Driver is small. It weighs only 6 pounds and everything larger than this is impracticable for driving wood screws.

With an automatic your men can drive screws all day long and not get tired out and it will do the work so much faster than the hand brace, that you will be putting two-thirds the men now driving screws on to more profitable work where their skill will count.

Ask for Bulletin 1 now and learn how to drive wood screws the MODERN way.

GEO. C. McKAY & COMPANY

1046 St. Clair Avenue, Cleveland, Ohio

Canadian Agents: The Jas. Buckley Co., St. Nicholas Street, Montreal, Canada.

Order Now - Good Service!

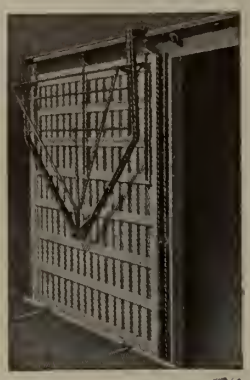
Just now our materials, supplies and working facilities are in excellent shape. For Boilers — all types — Tanks, Plate Work, etc., we are ready to quote for early deliveries.

Engineering & Machine Works of Canada, Limited

St. Catharines, Ont.

Eastern Sales Offices :
Hall Machinery Co., Sherbrooke, and Birk's Bldg., Montreal.

The Door Carrier System



Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

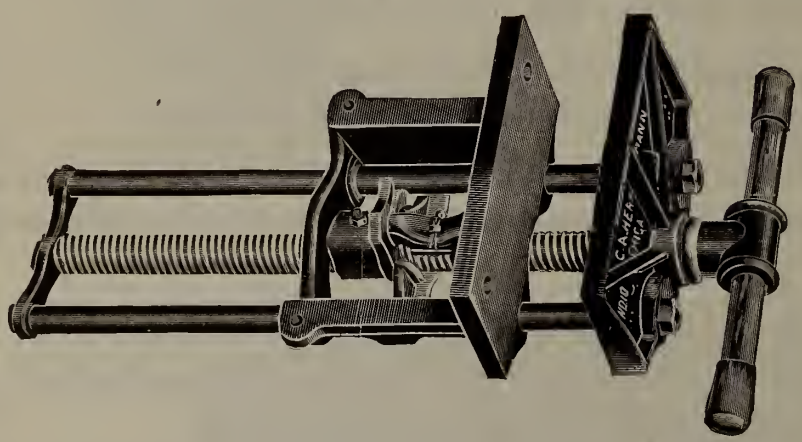
Ask for catalogue.

DRY KILN DOOR CARRIER CO.
1117 Cornell Ave.
INDIANAPOLIS, IND.

SAVES 2 HOURS A DAY
SAVES 10 FEET OF LUMBER
That's $25.00 a MONTH or More than Total Cost of this
ALL STEEL AUTOMATIC SWING SAW GUAGE.
WE SHIP ON TRIAL.
3500 IN USE
ACT NOW.
GUARANTEED AND SOLD BY THE
TANNEWITZ WORKS,
GRAND RAPIDS, MICH.

A simple twist of the wrist locks or unlocks this master vise

The Herriman Master Vise



Unparallelled in the rapid action and grip. Unmatchable in the performance of its work.

Time and Labor Cut ½ or Better.

SAVE YOURS

One feature alone is worth more to you than its entire cost in the saving in operating time over any other vise made.

The fact that this vice need not be "screw set" or "screw loosened" is the reason of its adoption in all efficiently operated plants.

Exclusive Distributors for the Herriman Master Vises

The O. E. JOHNSON COMPANY

1223 W. Washington Boulevard, - CHICAGO, Illinois.

The Peter Hay Knife Co., Ltd.

Manufacture the Best

PLANER KNIVES and CUTTERS

OF ALL DESCRIPTIONS

The Peter Hay Knife Co., Limited
GALT, ONTARIO

BOX NAILS and WIRE for Every Use

We manufacture a complete line of nails and wire in every style and size. Your special needs can be supplied. Write us today. We manufacture special styles to order.

Laidlaw Bale-Tie Co., Ltd.

A. T. Diggins, Toronto, Ont. H. E. O. Bull, Montreal, Que.
Harry F. Moulden & Sons, Winnipeg, Man.
Mr. Norman Jessiman, 505 Hastings St. W., Vancouver, B.C.
Head Office and Works: HAMILTON, CANADA

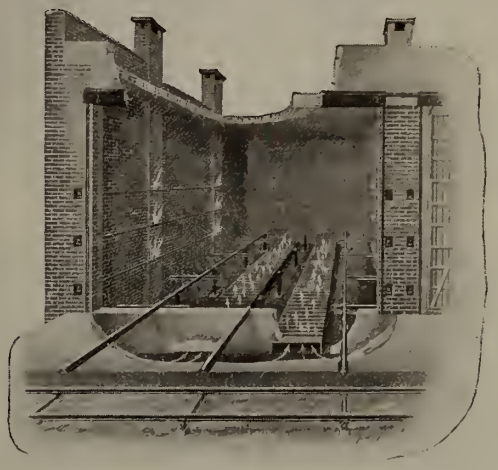
KILNS

that will dry your lumber ***right*** no matter what you make.

Grand Rapids Vapor Kiln
Grand Rapids, Mich.

Western Vapor Kiln Co. Seattle, Wash.

High Speed Production
REQUIRES
Automatic Control



National Humidity Controlled Dry Kilns
are
AUTOMATIC
Both temperature and humidity are controlled
Ask for full information.

The National Dry Kiln Company
1117 East Maryland St. - INDIANAPOLIS, Ind.

The Sidman Lumber Curing Kiln

IS DESIGNED and built on STRICTLY SCIENTIFIC PRINCIPLES, toned down by years of practice to achieve the following results:
BUILDING: The simplest and best. Nothing wasted on looks, but built to last.
PIPE WORK: The cheapest to construct, and the best system of heating coils in dry kiln use. No cumbersome expensive headers with stiff expansion pipes, but PLAIN circulation, so arranged to give the maximum of heat, and take care of the expansion.
VENTILATION: POSITIVE CROSS VERTICAL. The only system of ventilation used in any kiln that the outside weather can NEVER INTERFERE WITH.
HUMIDITY: ABSOLUTE CONTROL, at any predetermined per cent. desired.
FLEXIBILITY: The entire operation of the kiln is so flexible that every kiln we design can PERFECTLY CURE any lumber from 5 in. oak, green from the saw, to quarter inch veneer.
OPERATION: Takes less time and can be learned easier than any other.
DESIGN: EACH and EVERY kiln designed for EACH CLIENT to suit his exact needs.
REFERENCE: EVERY USER. Let us send you a partial list.

THE SIDMAN L.C.K.
Reg. Trade Mark
LONDON CANADA

The SIDMANS of CANADA
Ventilating and Heating Engineers
Lumber Curing Specialists
LONDON : ONTARIO

THE COMING BATTLE

When this old world has finally adjusted itself to post-war conditions and the market swings from the buyers to the sellers, as it has already done in many lines, we will then be in the greatest commercial battle—the battle for the world's trade.

TO THE VICTOR BELONGS THE SPOILS

Every operation must be speeded up and cost cut to the minimum for the cream of the trade will come to those who can produce most efficiently and economically —to the Victor belongs the spoils.

Adopt The WALLACE IDEA At Each Bench

PRODUCTION AND SPEED

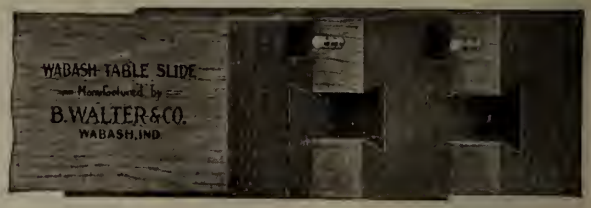
The Wallace Bench Machines are designed so that the workman may do from 75% to 80% of his cabinet, pattern and fitting work right at the bench—he will do more and better work with less physical effort.

Your inquiry will bring an illustrated book explaining the Wallace Idea and how to use these machines.

The Wallace 4" Bench Planer
The Wallace 6" Bench Jointer
The Wallace Universal Bench Saw
The Wallace Plain Bench Saw
The Walace 14" Band Saw

J. D. WALLACE & COMPANY
1414 West Jackson Boulevard - CHICAGO

THE SLIDE IS THE HEART OF YOUR EXTENSION TABLE



If the Slide Does Not Work Properly Your Whole Table is Condemned

Wabash Slides insure Satisfied Customers

SLIDE MAKING is a SPECIALTY BUSINESS

We can Furnish Better Slides for Less Cost

Eliminate Slide Troubles by using WABASH SLIDES

MADE BY

B. Walter & Company

Edsall St., Wabash, Ind.

Cut Miles without Grinding

A Characteristic Experience

Richmond, Indiana.

G. M. Diehl Machine Works,
Wabash, Ind.

Gentlemen:—

You may possibly be interested in an experience which we had recently in our factory with your Diehl Heads and Cutters.

Our Sticker man recently made a run of 10,000 stiles, each piece being 73 inches long, of hardwood, in which we cut a groove ¼ inch wide by 9/16 inch deep, and we made the entire run without taking the Heads or Bits off the machine and without resharpening, which makes a total run of a little more than 11½ miles. The Bits would, no doubt, have run quite an additional number of feet before it would have been absolutely necessary to sharpen them. We consider this a very good performance, especially in view of the fact that these stiles were all run from the rough wood and the Heads being used on a four-sided Sticker

Very truly yours,

RICHMOND FURNITURE MFG. CO.,
Per O. H. BRUBAKER, Manager.

Send for Catalogue

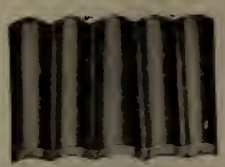
The G. M. Diehl Machine Works

WABASH, INDIANA - U. S. A.

On the Banks of the Wabash

Cary's SUPERIOR QUALITY Corrugated Fasteners

SAW EDGE



PLAIN EDGE

According to final decision, after long litigation, we have been granted the SOLE RIGHT to manufacture a Saw Tooth Corrugated Fastener with a continuous cutting edge. Our fastener is beveled evenly on both sides, which enables fasteners to be driven in straight, and much easier than any other fastener made. Our Corrugated Fastener is made in various widths and corrugations, also in coils wound right and left. Try our products and you will use no other.

Samples and prices on request.

CARY MFG. CO., Brooklyn, N.Y.

The Largest Plant in America devoted exclusively to the manufacture of special table parts for the table maker

TABLE SLIDES
TABLE RIMS
TABLE PEDESTALS

QUEEN ANNE
WILLIAM & MARY
TABLE LEGS

THE JEFFERSON WOODWORKING CO., Inc. **Louisville, Ky.**

Greater Production
with
Less Experienced Help

The No. 370 Drum Sander is so simple and accident proof that any boy or girl can feed and take away with absolute safety.

Write for descriptive bulletin.

Patented May 6, 1919

The patented RUBBER PADS used for the bed of this sander are decidedly an improvement and are used in large quantities on every make of Endless Bed Sander. Ask for sample.

Solem Machine Company
ROCKFORD, ILL., U. S. A.

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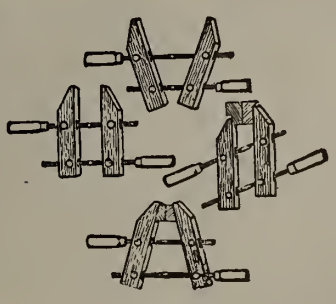
For Veneer and Veneer Drying

Made in Canada

William R. Perrin
Limited
Toronto



"JORGENSEN"
the Efficiency Clamp

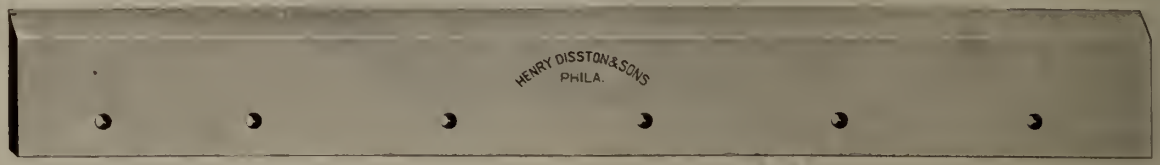
Adjustable Steel Spindle Clamps that hold better and are far superior. Their guarantee against breakage protects you. Write for further particulars.

If you cannot buy them from your Jobber write us direct.

Adjustable Clamp Company
216 N. Jefferson St., Chicago, U.S.A.

DISSTON

ALL STYLES OF KNIVES FOR WOODWORKERS

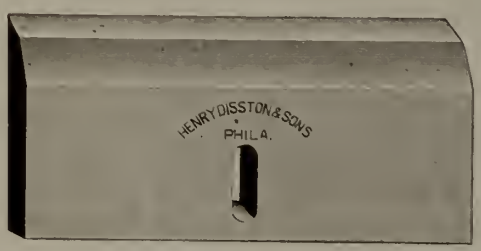


Are you getting the maximum production from your knife equipment? With the present necessity for greatly increased production, be sure your knives will give you the best possible results.

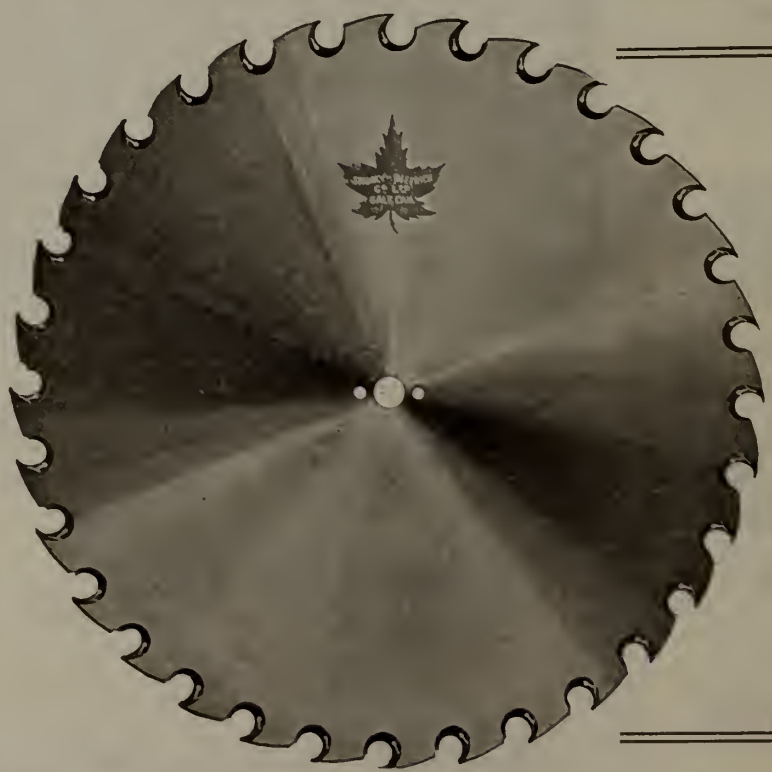
Disston knives cut fast and clean ,and hold their cutting edge.

Write for the Disston booklet on Machine Knives.

HENRY DISSTON & SONS LIMITED
TORONTO CANADA
Branch: Vancouver, B. C.



"MAPLE LEAF" Saws are guaranteed

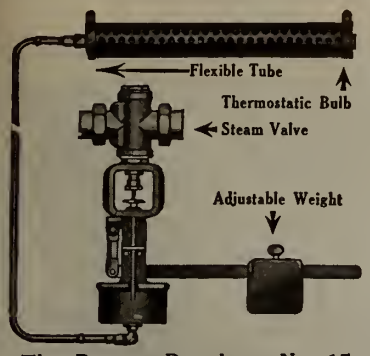


"MAPLE LEAF" SAWS

Inserted Tooth Saws
Solid Tooth Saws
Shingle Saws
Lath Saws
Special grooving Saws
Dado Heads
Band Saws
Cross Cut Saws
Hand Saws
"Crowell" Swages and Shapers.

Maple Leaf Saws are made by the largest All-Canadian Saw Manufacturers

Shurly Dietrich CO., Limited **Galt, Vancouver, Ottawa**



The Powers Regulator No. 15
Specially designed to control temperature in dry kilns, ovens, varnish and dry room. Entirely automatic

Eliminate the Human Element From Heat Control

A man's eye watching the thermometer. A man's hand turning the valves. He does his absolute best but you know his results cannot be uniformly right and perhaps the glue pot got too cold or the drying room too hot.

Automatic Heat Control Stops That

Eliminate the human element—guesswork—by applying the Powers Automatic Heat Regulators. They are scientifically constructed; made to operate according to certain known physical laws. Manufactured in a great variety of types suited to practically any heat regulation condition.

Your own problem can be solved. It is worth your while to investigate.

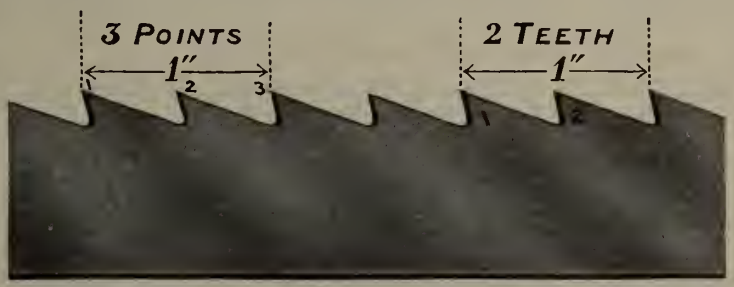
Write us at once for Bulletin No. 138.

In our thirty years of experience and study we have effected substantial economies for many users. We can do the same for you.

The Canadian Powers Regulator Co.
Limited
Specialists in Automatic Heat Control
82 Chestnut Street - Toronto, Ont.

Have you ever tried "Beaver" Brand

NARROW BAND SAWS



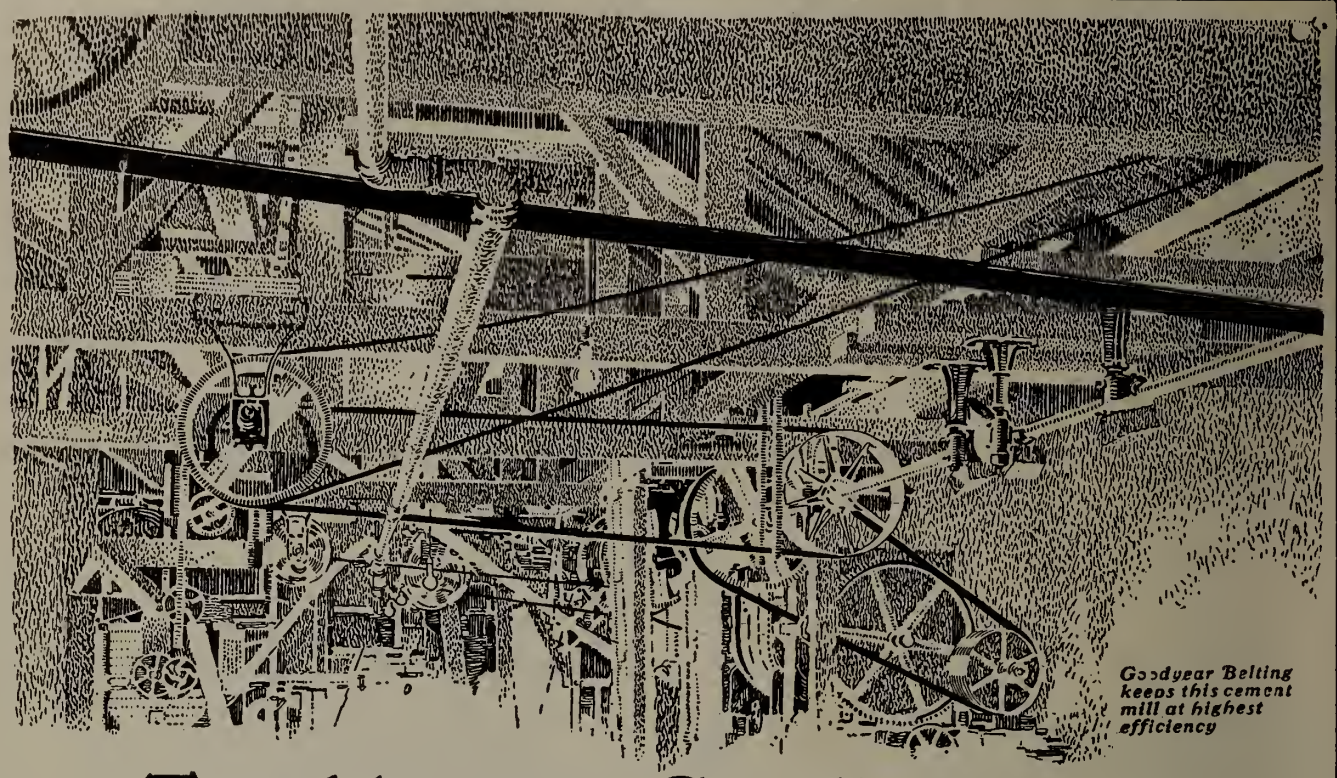
Made of the best quality Swedish Steel, evenly set and filed, the Radcliff "Beaver Brand" Saws stand without a peer. The installation of "Beaver Brand" Narrow Band or Scroll Saws, means more and better work.

If you want the best of the good saws, write us to-day.

Radcliff Saw Manufacturing Company, Limited

1550 Dundas Street West TORONTO, ONT.

AGENTS FOR L. & I. J. WHITE CO., MACHINE KNIVES



Goodyear Belting keeps this cement mill at highest efficiency

Troublesome Small Pulleys

Have you trouble getting belts flexible enough for small pulleys, yet strong enough to last?

Goodyear has produced Extra Power Belting—belting flexible enough that it need not be too tight! Gripping enough to prevent slipping at any speed!

For this is 5-point belting.

1. It is extremely strong, because of specially-designed, properly-woven fabric.

2. Yet it is very flexible, for it is not stitched, but is welded together with high-grade rubber, forced through and through the fabric and surrounding every thread. It hugs even small pulleys.

3. It has a friction surface which *grips*, dry or damp, and needs no dressing.

4. It has a seam *sealed* tight with high quality rubber.

5. The same rubber which gives Goodyear Extra Power its flexibility, prevents ply separation, even when the edge is worn or torn by shifters or accident.

The list of satisfied users of Goodyear Extra Power Belting on small pulleys is very great—too long to print here. But a few are:

O'Neil Morkin Machinery Co., Edmonton, Alta.
MacEachern Milling Co., Wetaskiwin, Alta.
Silber Standard Mining Co., Ltd., New Hazelton, B.C.
Hollinger Consolidated Gold Mining Co., Timmins, Ont.
Tilbury Flour Mills, Tilbury, Ont.
Chisholm Milling Co., Toronto, Ont.
Essex Canning Co., Essex, Ont.
Border Cities Tool Co., Windsor, Ont.
Breckin Roller Flour Mills, Breckin, Ont.
Nipissing Mining Co., Cobalt, Ont.
St. George Pulp & Paper Co., St. George, N.B.
Ungar's Laundry & Dye Works, St. John, N.B.
Ganong Bros., St. Stephen, N.B.
Robb Engineering Works, Amherst, N.S.
Ed. Sinclair Lumber Co., Newcastle, N.S.
O'Brien, Limited, Nelson.
Dominion Pulp Co., Chatham.
Richard's Mfg. Co., Campbellton.

Any one of these firms will be glad to tell you of their experience with Extra Power. Or a Goodyear Belting man will call without obligation to you. Phone, wire, or write the nearest branch.

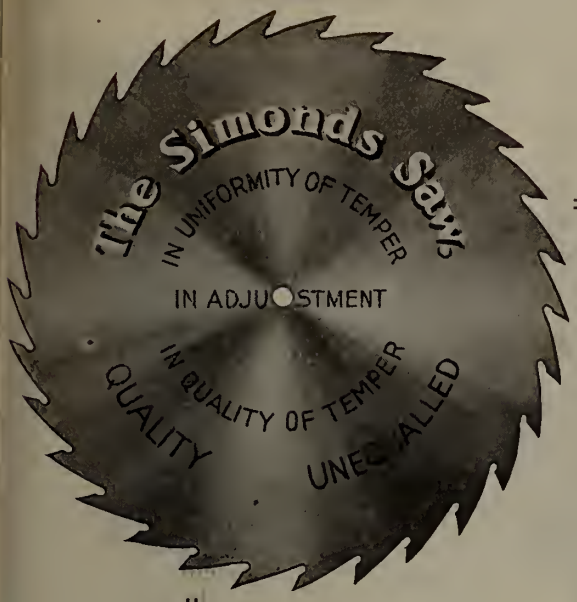
The Goodyear Tire & Rubber Co. of Canada, Limited

Branches—Halifax, St. John, Quebec, Montreal, Ottawa, Toronto, Hamilton, London, Winnipeg, Regina, Saskatoon, Calgary. Edmonton, Vancouver. Service stocks in smaller cities.

GOODYEAR

MADE IN CANADA

EXTRA POWER BELT



SIMONDS
CIRCULAR AND BAND
SAWS

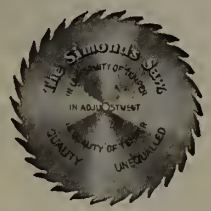
In every mill or woodworking shop in the land the demand for greater production is urgent. Devious methods to secure the desired results are being tried out. Some are making good—some are not. They have the man-power, but they can't get production. Many mills and woodworking shops have discovered one of the greatest hindrances to efficient operation are poor saws and knives. The saws dull easily and do not hold their tension, while the knives lose their cutting-edge quickly and this results in unsightly marks on the lumber, and consequently damage.

Inferior saws and knives are being discarded by many, and in most cases Simonds Products are replacing them. There is no question about Simonds Saws and Knives. They are made of the finest steel obtainable, hardened and tempered right and made mechanically perfect. They produce smooth lumber and cut down your operating expense.

Write for catalog and prices.

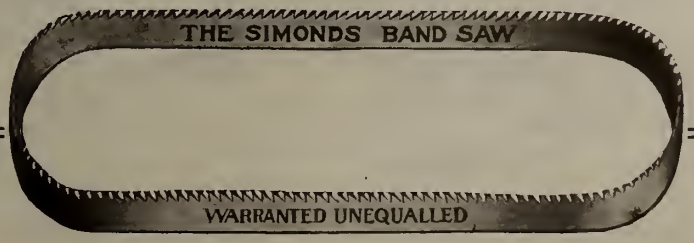
Simonds Canada Saw Co., Limited

"The Saw Makers"



MONTREAL, QUE.

VANCOUVER, B. C. ST. JOHN, N. B.



Hardwood Dowels

Plain, Straight and Spiral Grooved

"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co. Limited

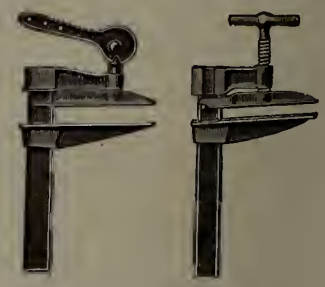
ORILLIA ONTARIO

Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

Colt's Clamps

for the

Woodworker



Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

For further information write for Catalogue No. 294.

Batavia Clamp Co.

235 Centre St. BATAVIA, N. Y.

WHAT THE "ELLIOT" CAN DO FOR YOU

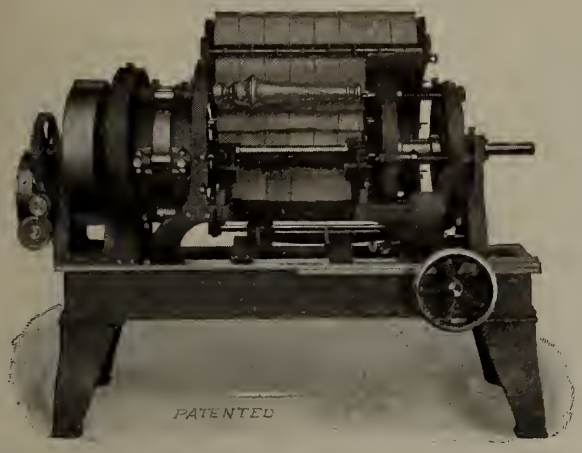
The "Elliot" Woodworker will do all your cutting, trimming, fitting, housing, dadoing, etc. Its use will enable you to handle more work and to do it quicker, better and cheaper than it is now being done. Unless you are employing the "Elliot" your plant is not working at capacity and you are not getting the profits that should be yours. Think it over.

Pat. 1910-1914.

ELLIOT MACHINERY Company, Limited

BELLEVILLE · ONTARIO

WHAT'S THE USE



Of spending your good money for sanding furniture turnings by hand when you can get a machine which will do the work better and at a saving of upwards of $15.00 a day?

Let me submit the evidence.

J. M. NASH, Milwaukee, Wis.

H. & B. BANDSAWS

Represent the highest type of design and manufacture, built to produce a steady output with the lowest possible cost of maintenance and upkeep. Built in two sizes, 30 and 36-inch, and arranged for both belt or direct motor drive and with latest type of safety guards.

Write for Large Circular and Prices

Hall & Brown Wood Working Machine Co.
Home Office and Factory, 1913 to 1933 N. Broadway
SAINT LOUIS, U.S.A.

Fits any Lamp Socket----Use it Anywhere in Shop or Factory

"INTERNATIONAL" Electric Glue Heaters

Fireless cooker principle conserves and utilizes every bit of heat generated. Holds glue at correct working temperatures without guesswork. Average cost of operation about one cent per day. Keeps glue at correct temperature for greatest tensile strength. Properly glued joints never fail. This heater has a place in every shop and factory. Sizes, one pint to 50 gallons. Heavy spun copper construction. No seams or soldered joints. Three heats. No water bath. Clean, safe, economical. Portable. Fits any lamp socket. Used by prominent concerns everywhere.

Write for folder "Correct Temperature in the Glue Room."

INTERNATIONAL ELECTRIC COMPANY
MANUFACTURERS
ELECTRICAL HEATING APPLIANCES

INDIANAPOLIS, U.S.A.

Canadian Distributors

R. E. T. PRINGLE, Limited

TORONTO
95 King Street East

MONTREAL
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WINNIPEG
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VANCOUVER
402 Vancouver Block

"International Electric Heaters are the best."

The "Canadian Woodworker" Buyers' Directory

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Yates Machine Co., P. B., Hamilton, Ont.

BAND SAWS
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Dominion Machinery Company, Toronto.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

BAND SAW MACHINERY
Silver Mfg. Co., Salem, Ohio.
Williams Machinery Co., A. R., Toronto, Ont.

BAND SAW STRETCHERS
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

BELTING
Goodyear Tire & Rubber Co., Toronto, Ont.

B. C. FOREST PRODUCTS
B. C. Lumber Commissioner, Toronto, Ont.

BENCH PLANER
Wallace, J. D. & Company, Chicago, Ill.

BENCH SAW
Wallace, J. D. & Company, Chicago, Ill.

BENDING MACHINES
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Perfection Wood Steaming Retort Company, Parkersburg, W. Va.
Williams Machinery Co., A. R., Toronto, Ont.

BLOWERS
Canadian Blower & Forge Co., Kitchener, Ont.

BLOW PIPING
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

BOILERS
Engineering & Machine Works, St. Catharines, Ont.

BORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Elliot Machinery Co., Toronto, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Reynolds Machine Co., Massillon, Ohio.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

BOX BANDS
Cary Mfg. Company, Brooklyn, N.Y.
Laidlaw Bale-Tie Co., Hamilton, Ont.

BOX MAKERS' MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Morgan Machine Co., Rochester, N.Y.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CABINET PLANERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CANE WEBBING
Overseas Reed and Cane Co., Ionia, Mich.

CARVING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.

CASTERS
Faultless Caster Co., Evansville, Ind.
Foster, Merriam Co., Merriden, Conn.

CIRCULAR SAWS
Wallace & Co., J. D., Chicago, Ill.

CLAMPS
Adjustable Clamp Co., Chicago, Ill.
Batavia Clamp Company, Batavia, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

CLAMP CARRIERS
Taylor Mfg. Co., Poughkeepsie, N.Y.

CORRUGATED FASTENERS
Cary Mfg. Company, Brooklyn, N.Y.

CUT-OFF SAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

CUTTER HEADS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Diehl Machine Works, G. M., Wabash, Ind.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Shimer Cutter Head Co., Galt, Ont.
Yates Machine Co., P. B. Hamilton, Ont.

CYLINDER HEADS
Cowan & Company, Galt, Ont.

DOOR CARRIERS FOR DRY KILNS
Dry Kiln Door Carrier Co., Indianapolis, Ind.

DOVETAILING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

DOWEL MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Williams Machinery Co., A. R., Toronto, Ont.

DOWELS
Canada Wood Specialty Co., Ltd., Orillia, Ont.

DRY KILNS
Canadian Blower & Forge Co., Kitchener, Ont
Grand Rapids Veneer Works, Grand Rapids Mich.
National Dry Kiln Co., Indianapolis, Ind.
Sidmans, London, Ont.
Standard Dry Kiln Co., Indianapolis, Ind.

DUST COLLECTORS
Anketell & Davies, Toronto, Ont.
Canadian Blower & Forge Co., Kitchener, Ont.

DUST SEPARATORS
Canadian Blower & Forge Co., Kitchener, Ont.

EDGERS (Single Saw)
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

EDGERS (Gang)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

END MATCHING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

EXHAUST FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.

EXHAUST SYSTEMS
Canadian Blower & Forge Co.

FIBRE CORD
Grand Rapids Fibre Cord Co., Grand Rapids.

FLOORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

FLUTING HEADS
Fay & Egan Co., J. A., Cincinnati, Ohio.

FURNITURE LEATHER
Eagle-Ottawa Leather Co., Grand Haven, Mich

FURNITURE TRIMMINGS
Faultless Caster Co., Evansville, Ind.
Foster, Merriam Co., Meriden, Conn.

GARNET PAPER AND CLOTH
Carborundum Co., Niagara Falls, N.Y.
Macdonald, Norman, Toronto, Ont.
Oakey & Sons, Limited, John, London, S.E.I. (Wellington Emery & Black Lead Mills).

GRAINING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N.Y.

GLUE
Casein Mfg. Company, New York, N.Y.
Lefeber, H., Montreal, Que.
Perkins Glue Company, South Bend, Ind.

GLUE CLAMPS
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane, & Company, Kitchener.

GLUE HEATERS
Cincinnati Glue Heater Co., Cincinnati, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
International Electric Co., Indianapolis, Ind.
Jackson, Cochrane, & Company, Kitchener.
Pringle, R. E. T., Toronto, Ont.

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"Canadian Woodworker" Buyers' Directory—Continued

GLUE JOINTERS
Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GLUE SPREADERS
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane, & Company, Kitchener.

GLUE ROOM EQUIPMENT
Perrin & Company, W. R., Toronto, Ont.

GRINDERS (Cutter)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

GRINDERS (Knife)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane, & Company, Kitchener, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N.Y.

GROOVING HEADS
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.

GUM LUMBER
Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
Anderson-Tully Co., Memphis, Tenn.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Brown & Co., George C., Memphis, Tenn.
Churchill-Milton Lumber Co., Louisville, Ky.
Cornelius Lumber Co., St. Louis, Mo.
Darnell-Love Lumber Co., Leland, Miss.
Gum Lumber Association, Memphis, Tenn.
Hyde Lumber Company, South Bend, Ind.
Merceau-Hawkins Tie Co., Huntington, W.Va.
Nickey Bros, Memphis, Tenn.
Paepcke-Leicht Lumber Co., Chicago, Ill.
Probst Lumber Co., Cincinnati, Ohio.
Sondheimer Co., E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Thomas & Proetz Lumber Co., St. Louis, Mo.

HAND SCREWS
Fay & Egan Co., J. A., Cincinnati, Ohio.

HANDLE & SPOKE MACHINERY
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.

HARDWARE
Laidlaw Bale-Tie Co., Hamilton, Ont.

HARDWOOD LUMBER
Aberdeen Lumber Co., Pittsburgh, Pa.
American Column & Lumber Co., Columbus, Ohio.
American Hardwood Lumber Co., St. Louis, Mo.
American Oak Mfrs.' Assn., Memphis, Tenn.
American Walnut Association, Washington, D.C.
Anderson-Tully Co., Memphis, Tenn.
Astoria Mahogany Co., New York, N.Y.
Atlantic Lumber Company, Toronto, Ont.
Baker-Matthews Lumber Co., Memphis, Tenn.
Banning, Leland G., Cincinnati, Ohio.
Barr- Holaday Lumber Co., Greenfield, Ohio.
Bedna Young Lumber Co., Jackson, Tenn.
Boland Lumber Co., Grand Rapids, Mich.
Bonner & Sons, J. H., Memphis, Tenn.
Brown & Company, Geo. C.
Brown & Hackney, Inc., Memphis, Tenn.
Bury & Company, Robert, Toronto, Ont.
Buskirk Rutledge Lumber Co., Cincinnati, O.
Conkling Lumber Co., Frank A., Memphis, Tenn.
Cornelius Lumber Co., St. Louis, Mo.
Canadian General Lumber Co., Toronto, Ont.
Churchill-Milton Lumber Co., Louisville, Ky.
Clark & Sons, Edward, Toronto.
Dacus-Richards Hardwood Co., Memphis, Tenn.
Darby Hardwood Lumber Co., Memphis, Tenn.
Darnell-Love Lumber Co., Leland, Miss.
Des Moines Sawmill Co., Des Moines, Iowa.
Dooley Lumber Co., F. T., Memphis, Tenn.
Evansville Band Mill Co., Evansville, Ind.
Felger Lumber & Timber Co., Memphis, Tenn.
Gayoso Lumber Co.. Memphis, Tenn.
Hall Lumber Co., Thos., Charleston, W.Va.
Hart & McDonagh, Toronto. Ont.
Heeney, Percy E., Kitchener, Ont.
Hunt, Wellington & Smith, Nashville, Tenn.
Hyde Lumber Co., South Bend, Ind.
Johnson Bros., Memphis, Tenn.
Kersley, Geo., Montreal, Que.
Korn-Conkling Co., Cincinnati, Ohio.
Kosse, Shoe & Schleyer Co., Cincinnati, O.
Kraetzer-Cured Lumber Co., Greenwood, Miss.
Lawrence & Co., P. J., St. Louis, Mo.
Long-Knight Mfg. Co., Indianapolis, Ind.
McLennan Lumber Co., Montreal, Que.
Memphis Band Mill Co., Memphis, Tenn.
Merceau-Hawkins Tie Co., Huntington, W.Va.
Mowbray & Robinson, Cincinnati, Ohio.
Murrelle Lumber Company, Memphis, Tenn.
Paepcke Leicht Lumber Co., Chicago, Ill.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Perkins Bros., Kelso, Ark.
Pickrel Walnut Co., St. Louis, Mo.
Probst Lumber Co., Cincinnati, Ohio.
Reese Sheriff Lumber Co., Williamsport, Pa.
Sondheimer Co., E., Memphis, Tenn.
Spencer, C. A., Montreal, Que.
Stark & Co., Jas. E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Stimson Hardwood Co., J. V., Memphis, Tenn.
Tallahatchie Lumber Co., Memphis, Tenn.
Thompson, Katz Lumber Co., Memphis, Tenn.
Tustin Hardwood Lumber Co., Memphis, Tenn.
Utley-Holloway Co., Chicago, Ill.
Warren-Ross Lumber Co., Jamestown, N.Y.
Wheeler-Timlin Lumber Co., Wausau, Wis.
Woodruff Powell Lumber Co., South Bend, Ind.
Yellow Poplar Lumber Co., Coal Grove, Ohio.

HYDRAULIC VENEER PRESSES
Perrin & Company, Wm. R., Toronto, Ont.

KNOBS
Waddell Mfg. Co., Grand Rapids, Mich.

JOINTERS
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Onio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochane & Company. Kitchener. Ont.
Mattison Machine Works, Rockford, Ill.
Petrie. H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Smith, C. W., Grand Rapids, Mich.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

LEATHER (Artificial)
Burch Co., A. F., Grand Rapids, Mich.
Fibro Mfg. Company, Beverly, N. J.

MACHINE KNIVES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

MIRRORS
Hart Mirror Plate Co., Grand Rapids, Mich.

MITRE SAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

MOTOR TRUCK EXTENSIONS
Swedish Crucible Steel Co., Windsor, Ont.

MOULDERS
Hall & Brown Woodworking Machine Co., St. Louis, Mo.

MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.

MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

NAILS
Laidlaw Bale-Tie Co., Hamilton, Ont.

NAILING MACHINES
Morgan Machine Co., Rochester, N.Y.

OIL STONE GRINDERS
Mummert-Dixon Co., Hanover, Pa.

PANELS
Holden Company, Henry S., Chicago, Ill.
Roberts, Geo. G., Chicago, Ill.
Waetjin & Co., L., Milwaukee, Wis.

PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago. Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PERIOD MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.

PERIOD TURNINGS
Walter & Sons, J., Kitchener, Ont.

PLANERS
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PORTABLE DRILLS
Wisconsin Electric Co., Wisconsin, U.S.A.

PRESSES (Veneer)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

REED
Overseas Reed and Cane Co., Ionia, Mich.

RESAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A. Cincinnati, Ohio.

RIP SAWING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Waddell Mfg. Co., Grand Rapids, Mich.

RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.

SAFETY DEVICES
Cowan & Company, Galt, Ont.

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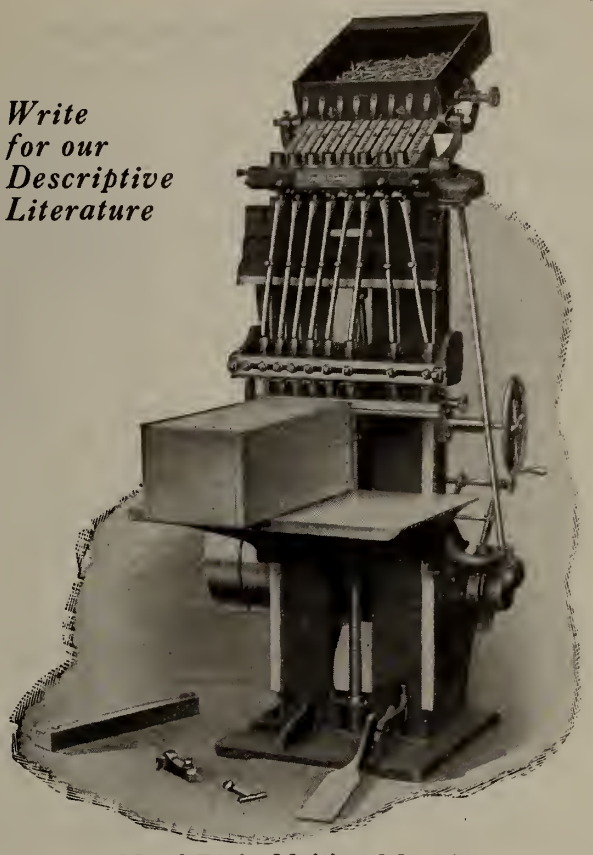

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Irvin Lumber Company, Toronto, Ontario.

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"Canadian Woodworker" Buyers' Directory—Continued

SANDERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Solem Engineering Co., Sheboygan, Wis.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAND PAPER
Manning Abrasive Company

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Elliot Machinery Co., Belleville, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS
Atkins & Co., E. C., Indianapolis, Ind.
Disston & Sons, Henry, Toronto, Ont.
Elliot Machinery Co., Belleville, Ont.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Silver Mfg. Company, Salem, Ohio.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.

SAW BENCH
Sidney Machine Tool Co., Sidney, O.

SAW SWAGES
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES
Canada Machinery Corporation, Galt, Ont. ..
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Company, Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont. ..
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY
Reynolds Machine Co., Massillon Ohio.

SCROLL SAWS
Canada Machinery Corporation, Galt, Ont. ..
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane, & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamiltonfi Ont.

SECOND-HAND MACHINERY
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Osborne Sexton Machinery Co., Columbus, O.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS
Anketell & Davies, Toronto, Ont.
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

STAINS
Ault & Wiborg, Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ohio.
Shannon Co., Ed. J., Cincinnati, Ohio.
Standard Paint & Varnish Co., Windsor, Ont.

SINGLE SPINDLE BOXING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE
Whitney & Son, Baxter D., Winchendon, Mass.

STEEL DOOR MATS
Cary Mfg. Company, Brooklyn, N.Y.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Colladay Machine Works, Indianapolis, Ind.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Tannewitz Works, Grand Rapids, Mich.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohoa.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES
Jefferson Woodworking Co., Louisville, Ky.
Walter & Company, B., Wabash, Ind.

TEMPERATURE REGULATORS
Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Compan, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS
International Business Machines Co., Toronto, Ont.

TRIMMERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Preston Woodworking Machinery Company, Pretson, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS
Cowan Truck Company, Toronto, Ont.
National Dry Kiln Co., Indianapolis, Ind.

TURNED WOOD GOODS
Algoma Wood Products Co., Algoma, Wis.

TWINES & WEBBING
Doon Twines, Ltd., Kitchener, Ont.

UPHOLSTERY FABRICS
Burch Co., A. F., Grand Rapids, Mich.

UPHOLSTERY SUPPLIES
Burch Co., A. F., Grand Rapids, Mich.

VARNISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto. Ont.
Penfound Varnish Co., Toronto, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N.Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS
Astoria Mahogany Co., New York, N.Y.
Batesville Lumber & Veneer Co., Lawrenceburg, Ind.
Birds Eye Veneer Co., Escanaba, Mich.
Bury & Compny, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christmann Veneer & Lumber Co., St. Louis, Mo.
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Evansville Veneer Co., Evansville, Ind.
Freiberg Lumber Co., Cincinnati, Ohio
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Holden, Henry S., Chicago, Ill.
Geo. Kersley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Litton Veneer Co., Rockford, Ill.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Pickrel Veneer Co., New Albany, Ind.
Roberts, Geo. G., Chicago, Ill.
Southern Veneer Mfg. Co., Louisville, Ky.
Stimson Veneer & Lumber Co., Memphis, Tenn.
Sturm Co., Adolph, Chicago, Ill.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Underwood Veneer Co., Wausau, Wis.
Veneer Manufacturers Co., Chicago, Ill.
Waetjen & Co., George L., Milwaukee, Wis.

VENEER TAPE
Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.

VENEER JOINTERS
Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY
Garlock-Walker Machinery Co., Toronto. Ont

VENEER PRESSES (Hand and Power)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont
Perrin & Company, Wm. R., Toronto, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Johnson Co., O. E., Chicago, Ill.

WOOD FINISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Penfound Varnish Co., Toronto, Ont.

WALNUT LUMBER
American Walnut Mfrs. Assn., Chicago.
Des Moines Saw Mill Co., Des Moines, Iowa.
Pickrel Walnut Company, St. Louis.
Purcell Walnut Lumber Co., Frank, Kansas City.

WIRE
Laidlaw Bale-Tie Co., Hamilton, Ont.
Pakanship Company, Brooklyn, N.Y.

WIRE BOX STRAPPING
Cary Mfg. Company, Brooklyn, N.Y.

WOOD SCREWS
Robertson Mfg. Co., P. L., Milton, Ont.

WOOD TURPENTINE
Brown Corporation, Quebec, Que.

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Garlock-Walker Machinery Co., Toronto, Ont.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WODD LATHES
Colladay Machine Works, Indianapolis, Ind.

4 Yates No. 275
) and 60-in. Automatic
Knife Grinders,
and New, at
One-half Price

Machines arranged for Motor Application as per cut, or regular belt drive, if wanted.

New Andrew Mutiple Vertical Borers, 20, 30, 42 and 60-in., any number of heads.

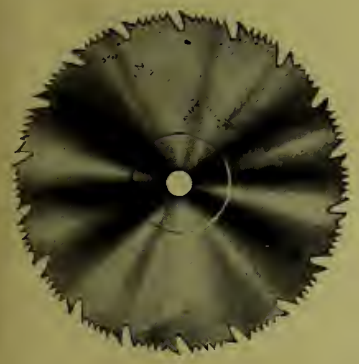
New Hermance Molders, 8, 10 and 12-in., stationary and slip-on heads.

and rip saw, Fay & Egan, 42-in.
and saws, 32, 36 and 38-in.
orer, Andrew, 10-ft., 13-spindle, power table.
orers, Andrew mult. vert., 20, 42 and 60-in., new.
arver, 5-spindle, Moore.
oor clamp, Fay-Egan, heavy.

Edgers, two, three and four saws.
Glue cookers and retainers. Glue spreaders.
Hogs, two, Mitts & Merrill.
Jointers, 8, 12, 16, 20, 24 and 30-in.
Knife grinders, two 32-in., F. & E.
Lathe, Ober spoke and handle, almost new.
Lathes, Mattison, No. 8 auto; No. 6 block mach.
Lathes, speed, eight, mounted on iron bed.
Lock-corner machine, Morgan No. 8, full set.
Matcher, American Northwest, 24x8-in., 3 sides.
Matcher, end, Sherman, fine condition.
Matcher, 24x6-in., 3 and 4 sides.
Automobile spoke machines, Defiance, complete set.
Band resaw, 50-in., Fay & Egan, tilting rolls, full set of filing room tools.

Molder, Smith 14-in. outside, latest style, practically new.
Molders, 4-side, 9, 10 and 12-in. American.
Molder, Fay & Egan No. 184, 12-in. outside.
Molders, inside, 13-in. American and Woods.
Mortiser and router, Fay & Egan No. 124.
Mortiser, chain saw, New Britain No. 1, 25 chains.
Mortiser, chain saw, New Britain No. 7, new.
Mortisers, F. & E. vertical, hollow-chisel; also plunger type.
Nailers, two, Morgan No. 8, used three months.
Nailing machines, 2 closed back, 4-track, 4d, 15-in. spread.
Pony planers, 16, 20 and 24-in.
Relisher and mortiser, Greenlee.
Rip saws, self-feed, Hoosier, F. & E., Greenlee.
Router for stair stringers, H. B. Smith, flexible arm with adjustable table and forms.
Sand belt, closet seat and similar work.
Sander, H. B. Smith, spindle and disc, practically new.
Sanders, 30 and 42-in. Columbia; 30, 42 and 48-in. Invincible; 30-in. double Invincible.
Saw, 8-ft. double cut-off, roller table.
Saws, combination and variety, single and double arbor, also tilting arbor, stationary and tilting table, 24 and 30-in. circular resaw.
Saw, circular re-slab, 40-in. blade, power feed rolls.
Shapers, Fay single-spindle reversible, also Shimer single with overhead routing attachment.
Surfacer, 30-in. double, cabinet, B. & M., practically new.
Surfacer, Whitney 30-in. double, sectional roll and sectional chipbreaker; American No. 4½, 36-in. sectional and solid; Fay & Egan No. 140, 27 and 30-in. double divided rolls; also 18, 20, 24 and 30-in. single cylinder panel planers.
Tenoners, B. & M. double-end, also several single-end tenoners with and without copes.
Timber sizer, Fay-Egan 4s, 17x12-in.
Window frame machines, Smith & Phillips combination.
Wood-worker, universal, Fay & Egan and Bentel & Margedant. One lot of glue room machinery.

The Osborne & Sexton Machinery Co.
Re-manufacturers **COLUMBUS, OHIO**



ATKINS

STERLING QUALITY

SAWS and KNIVES

mean continuous, efficient work and 100 per cent. production.

The extraordinary demand for more buildings and homes means that the Lumber output must increase.

Atkins Sterling Quality Saws and Knives will assist you in making the year 1920 the biggest and best in the history of your business.

Write to-day for our Knife Booklet "C W" and Pattern Template Paper.

E. C. ATKINS & CO.

Makers of Sterling Saws

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

More Legs--Less Hands

One man on a Mattison Lathe can turn out as many legs per day as can be produced by ten hand-turners.

On the MATTISON LATHE, it does not matter whether the shape to be turned is plain or complicated. The most difficult square, oval, octagon, or hexagon pattern can be produced just as easily as the plainest round turning.

The work comes from the machine smooth and uniform without any of the grain in the stock being torn out, or the corners or fine members being broken off.

You are invited to send for a circular of the new Model "Mattison." It describes the heavier construction; the new cutterhead, and other improvements.

Mattison Mach. Works

Rockford, Illinois, U. S. A.

Volume Twenty TORONTO, JULY, 1920 Number Seven

CANADIAN WOODWORKER and Furniture Manufacturer

G.M.C. No. 433 Belt Sander

Our No. 433 Hand Block Belt Sander will pay its way in the smallest shops and is an absolute necessity in the larger plants. It is fully illustrated and described in our new special bulletin—

"POWER SANDING WITH THE HUMAN TOUCH."

CANADA MACHINERY CORPORATION, GALT, ONTARIO
LIMITED

Toronto Office and Warerooms: Brock Avenue Subway

Alphabetical Index to Advertisers, Page 12

Model 1-D Portable Drill

HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—4¾ pounds.

Capacity—Steel, 0 to $\frac{3}{16}$". Wood and alloys, 0 to $\frac{13}{32}$".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3⅜ inches.

Spindle—Offset from center $\frac{3}{4}$".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

Jacob's Chucks used as a regular equipment.

FOR speed in drilling and countersinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

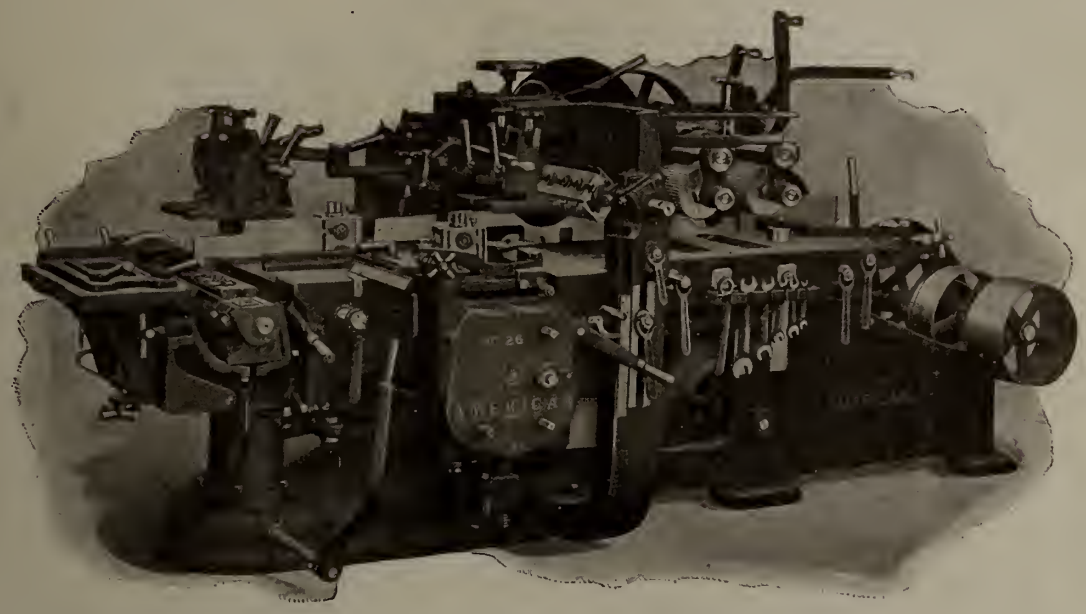
If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

Wisconsin Electric Company

7125 Sixteenth Street, Racine, Wisconsin, U. S. A.

DUMORE GEARED ELECTRIC DRILLS

American No. 26 Four Sided Outside Moulder



A fast-feed machine—slip on and off heads—quick adjustments—heavy type—chip-breaker throws back out of the way when applying or changing cutters—Large size feed rolls with chain drive—and many other improvements which make possible quicker setting up and operation on this outside Moulder.

American No. 25 Edging Saw

Large size arbor and pulley allows high speed with plenty of power. Two chains in table and four sets upper feed rolls. Strong and accurate feed. Owing to arrangement of upper feed rolls very short stock can be fed through this machine. Compact, but with strength in every line and dimension.

Both of these machines for delivery from our Toronto warehouse.

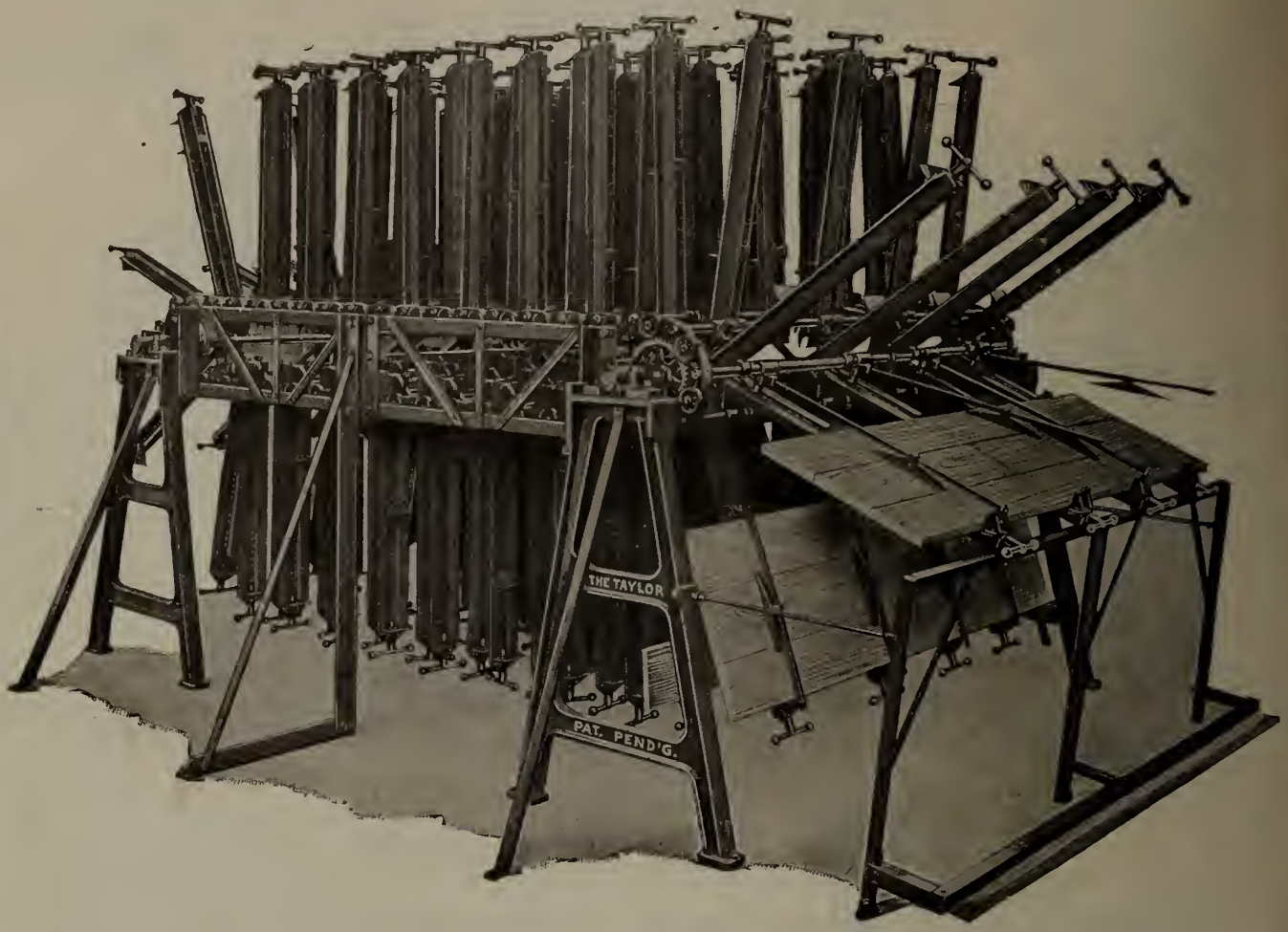
Write for further particulars

Garlock-Walker Machinery Company, Limited

MONTREAL TORONTO WINNIPEG

"Everything in Machinery"

CLAMP The Taylor TRADE MARK CARRIER



Forty section machine carrying 160 clamps, measuring 8 ft. 2½ in. between shaft centers.

The clamp is one of the most interesting features of the clamp carrier. A remarkable strain can be applied with greatest ease; the work it turns out—both thick and thin stock—is 100 per cent. perfect.

An Engineering concern recently wrote:

"I am recommending Taylor clamps to the Germain Mfg. Co. because I have proven the clamps more efficient through scientific time studies on both and all existing types of gluing-up machines and devices."

As a result of the above recommendations, The Germain Mfg. Co. referred to bought two Taylor carriers. They installed them, and tested them and have since purchased two more. We can tell you numerous instances where customers are using from two to nine Taylor carriers each as a result of similar experiences.

Let us prove the truth of these claims by showing you one of these carriers in operation, or you can try the clamps out on your own work. Ask for C. C. Folder and further information.

A. R. Williams Machinery Co., Toronto, Canada — Representatives

James L. Taylor Manufacturing Co.

POUGHKEEPSIE, N. Y.

The Connecting Link

-between Fine Forests and Fine Product

"The Invariable Choice of the Man Who Knows"

Yates

The Connecting Link

Between the raw material and the finished product are many steps in transformation, links in a chain. But one link is always of vital consequence. In the chain from saw log to surface finish there is one link that it is expensive to leave out. It is a Yates Type B-2 Surfacer. We have literature setting forth the reasons why. Send for it today.

P. B. Yates Machine Company Ltd.
HAMILTON, ONT. CANADA
U. S. Plant, Beloit, Wis.

Will do the work of Five Hand Jointers in making Glue Joints

This is the guarantee given with our

No. 4 Continuous Feed GLUE JOINTER

Strongest and most complete machine on the market.
Any part may be readily removed or renewed.
Feeds in opposite direction, giving 100 feet per minute.
Works material from six inches up to any length desired.
Also from one quarter to 3 inches thick, and from three-quarters of an inch wide up to any width.
1 set Shimer Special Jointer Heads supplied with machine.

Investigate the merits of this machine—it will pay you!

Jackson, Cochrane & Company

KITCHENER - CANADA

SIXTY YEARS

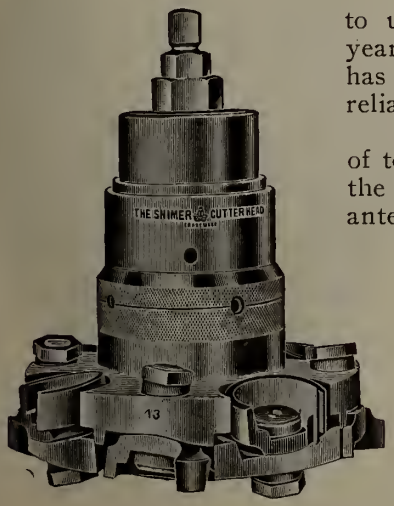


Fig. 627

The name "Shimer" has been quite familiar to users of woodworking machinery for sixty years. The reputation of Shimer Cutter Heads has withstood the severe test of time, and their reliability is unquestioned.

The cutter shown is turned to cut the shape of tongue and groove desired, so that to sharpen the cutter, it is filed or ground on its face, guaranteeing the user the same shape of cut during the life of the cutter. The cutter being fastened to a concave seat on a compound angle, assures the user of the proper clearance of cutters, consequently they never burn.

These heads are fitted with or without self-centering sleeve, and made expansion or solid, to suit the customer's wishes.

Write for Catalogue.

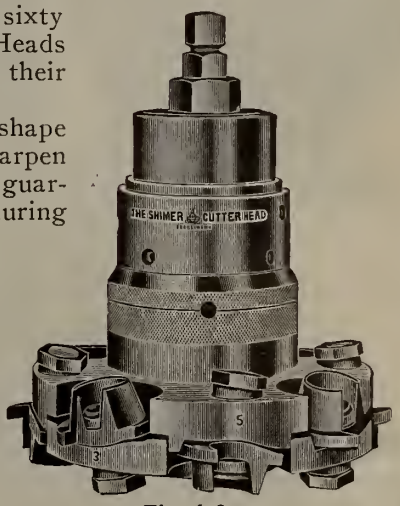


Fig. 628

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

SUCCESSORS TO SAMUEL J. SHIMER & SONS, Inc.

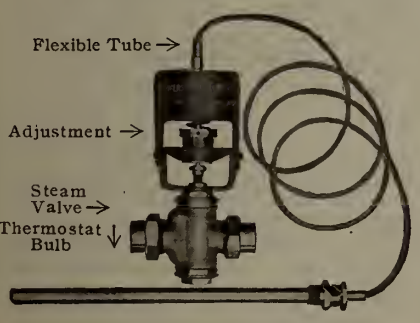
GALT, ONTARIO

"Come on, Bill, give us a hand."
"Can't! Have to watch this temperature."

A highly paid man made into a watcher instead of a worker. Labor is so scarce and costly, each man should be made to **produce.** Don't let him do automatic work that a machine can do.

The Powers Automatic Heat Regulator

Wherever temperature control or heat regulation is necessary, there is a Powers Automatic Heat Regulator made to just fit the requirement.



The Powers Regulator No. 11

This Regulator is self-contained, requiring no outside power for operation. Automatic, reliable, accurate. Specially adapted to the control of liquid temperatures in hot water tanks, glue kettles, acid baths, etc. Get our Bulletin 129.

This simple, scientific appliance, once installed, stays on the job every minute and releases high-priced men for work that a machine can't do.

Don't keep Bill watching the temperature. He's human, and he might **forget** to "turn 'er off."

Tell us your heat control problem, and we'll send you the type you require. If it doesn't make good in thirty days, send it back and we will cancel the charge.

The Canadian Powers Regulator Co.

Limited

Specialists in Automatic Heat Control

82 Chestnut Street - Toronto, Ont.

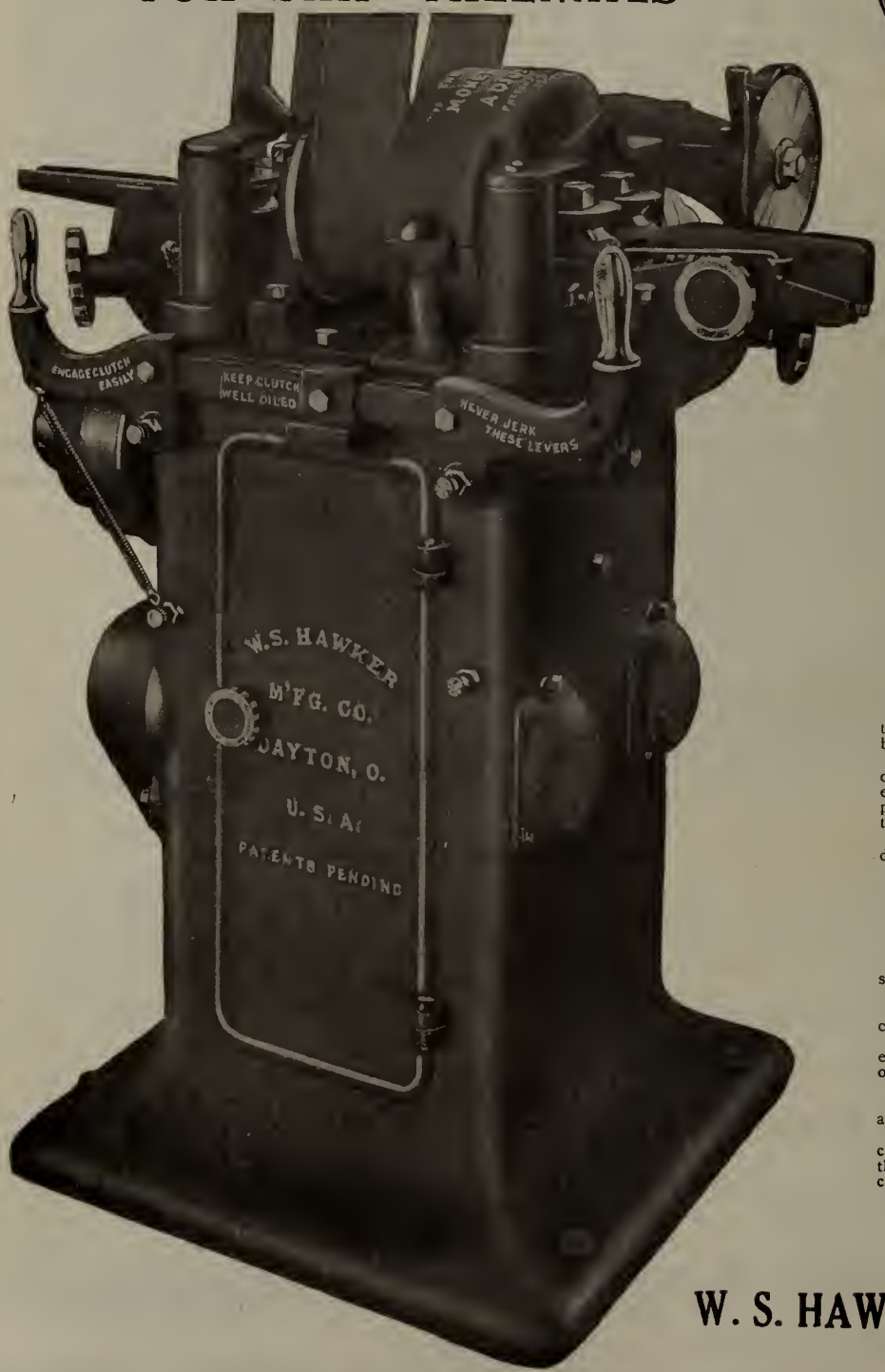
(1232)

UNIVERSAL ADJUSTABLE CUTTER HEAD Patented
Infringements (maker or user will be vigorously prosecuted.

Two Heads

that have put 100% more profit in the production of Dowel Stock.

FOR SHIP TREENAILS



W. S. HAWKER.

Inventor and Designer of the World's most efficient Tubular Turning Machinery

THE

Money Maker Adjustable Rod

and

Dowel Machine

The machine that is sent under a guarantee to show you a gain of from 100 to 400 per cent. before you buy it.

The improved dowel machine that 90 per cent. of the largest and oldest machinery builders and dealers now endorse and recommend in preference to the solid chuck machines they themselves previously built.

One cutter head turns from 1/4 in. to 2 in. diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

Works stock as short as five inches.

Rolls automatically centre variations in squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid chuck dowel machine.

We can save you from one dollar out of every two, to four out of every five, that the operation of solid chuck machines costs you.

Engagements for competitive test solicited.

Formal orders not solicited. All sales made after demonstration.

The only question is, are you willing to cut cost of your dowel turning to one-half or one-third of what it costs with any make of solid chuck machine?

Machine delivers the goods before you buy.

State conditions of stock closely.

Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY

DAYTON, OHIO.

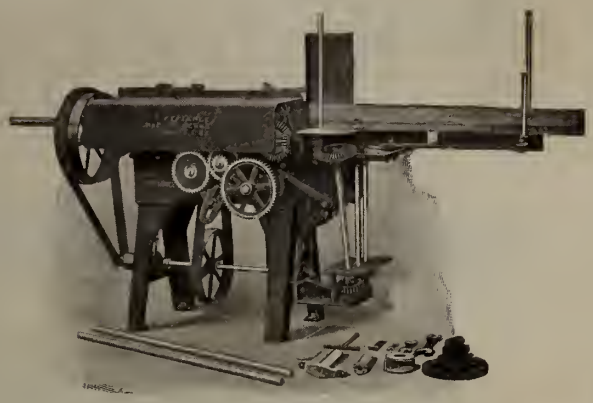
The Chaplin Automatic Handle Lathe

is The Shortest Cut to Efficiency

IT WILL TURN

Broom—Fork—Rake and Hoe Handles, Golf Sticks, Whip Stock, Vienna Chair Backs, Curtain—Flag and Pike Poles, etc. Capacity 6,000 to 10,000 handles a day.

Write for illustrated and descriptive circular



Chaplin Patent Automatic Handle Lathe

THE DEFIANCE MACHINE WORKS

New York City ***DEFIANCE, OHIO, U.S.A.*** *London, England*

HART MIRROR PLATE CO.

IMPORTERS AND MANUFACTURERS OF

MIRRORS

GRAND RAPIDS QUALITY

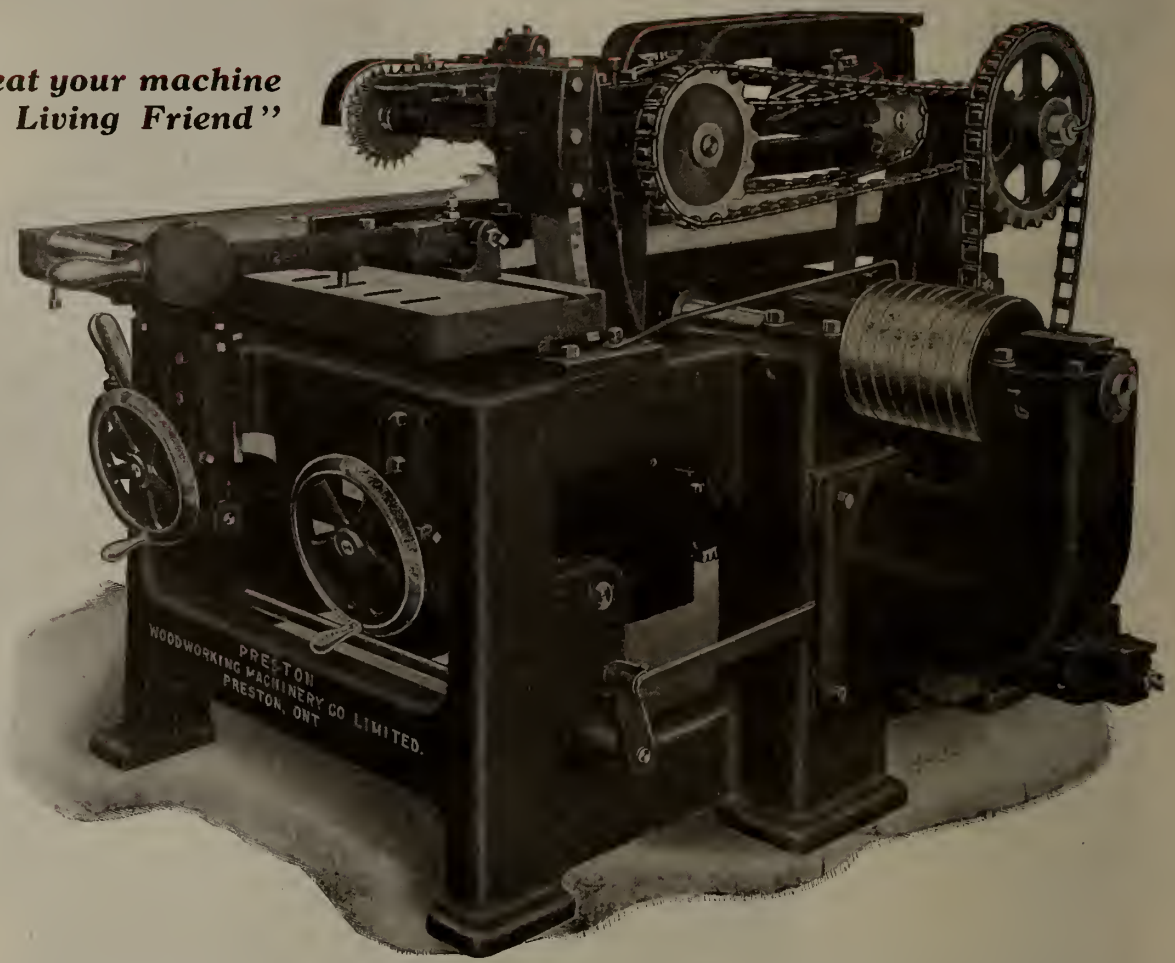
Grand Rapids, Mich.

Largest manufacturers of high grade mirrors in America serving the furniture trade exclusively.

Made like all other "Preston" machines to give maximum service

No. 129 "PRESTON" POWER FEED RIP SAW

"Treat your machine as a Living Friend"



Carefully made to give genuine service the PRESTON No. 129 Power Feed Rip Saw, with variable feed will increase production and cut down your labor costs.

The frame is one solid casting, each bearing is self oiling and both table and upper works are raised and lowered by hand wheels.

The PRESTON No. 129 Power Feed Rip Saw will merit your approval by its efficient service.

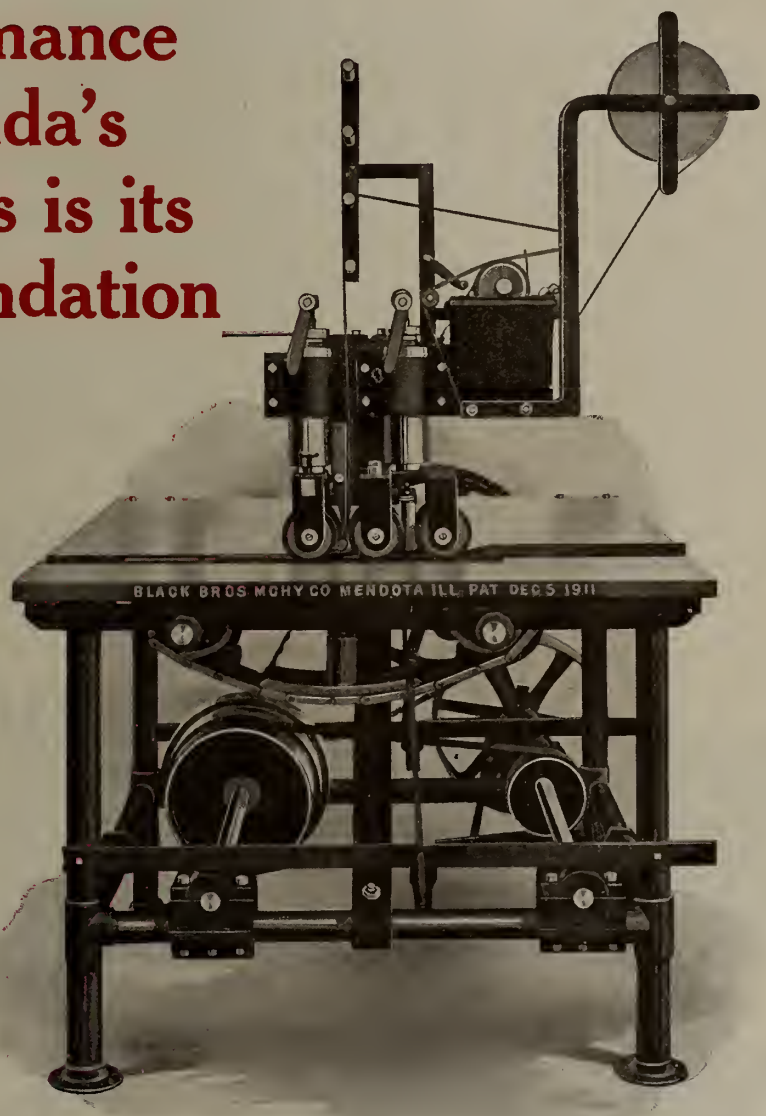
Our catalogue describes this and many other woodworking machines that are worthy of investigation every time you contemplate a new machine. You should have a copy of it. Let us send one.

The Preston Woodworking

PRESTON

Black Bros. Model
VENEER TAPING MACHINE

Its daily performance in many of Canada's Largest Factories is its best recommendation



The volume and quality of work performed by this leading veneer taping machine will positively reduce the operating costs in your veneer room. Not only will it turn out more work with less men but it will do it better. It is designed to apply tape already gummed or will apply the glue as the tape is used.

We know this machine will do all we claim for it and to show our confidence in it we will place one in your plant on trial. If it does the work you will want to keep it—if it doesn't we will take it back.

Machinery Company Ltd.
ONTARIO

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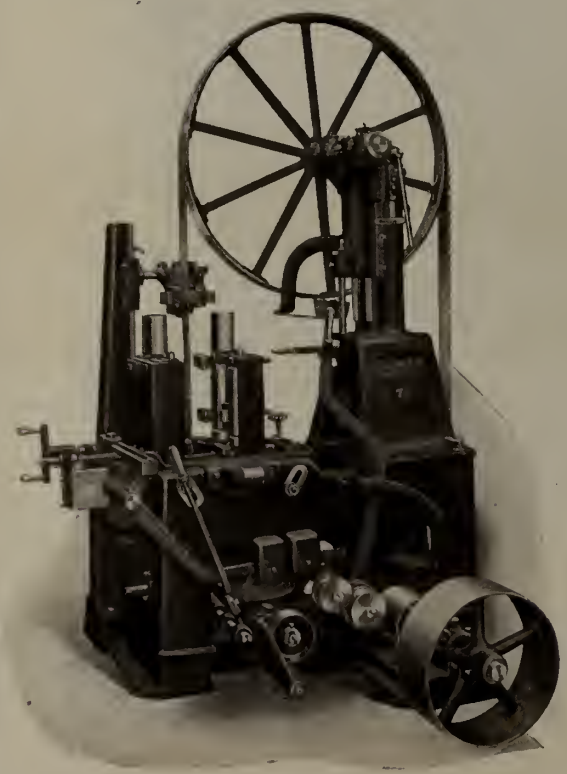

Band Resaw 76

48 in. Wheels Tilting Rolls
Capacity 1/8 in.-8 in. Horizontally
26 in. Vertically

Full particulars of this or other Woodworking Machinery on request

COWAN & COMPANY OF GALT, LIMITED, Galt, Canada

Canada's Chief Industrial Need

Canada's chief industrial need at present is not only increased production—but increased QUALITY in its increased production. It is vital not only in our domestic markets, but also in the world's markets overseas where need of goods has flung the gates open for a time but only QUALITY of goods can prop the gates open for all time.

To the manufacturer seeking to increase both the quality and quantity of production, S K F's foresight in organizing a scientific research for the study of bearing application and design is of value, we believe. For it enables the manufacturer to place his bearing problems in the hands of this technical staff with the assurance that a sincere attempt will be made to solve them.

This scientific, specialized engineering service is offered not only to those manufacturers who have already accepted the bearings produced by S K F as the highest type of anti-friction device, but to all others who recognize both the individual's and the nation's need of higher quality in our increased production.

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412 St. James St.
MONTREAL

83 King Street W.
TORONTO

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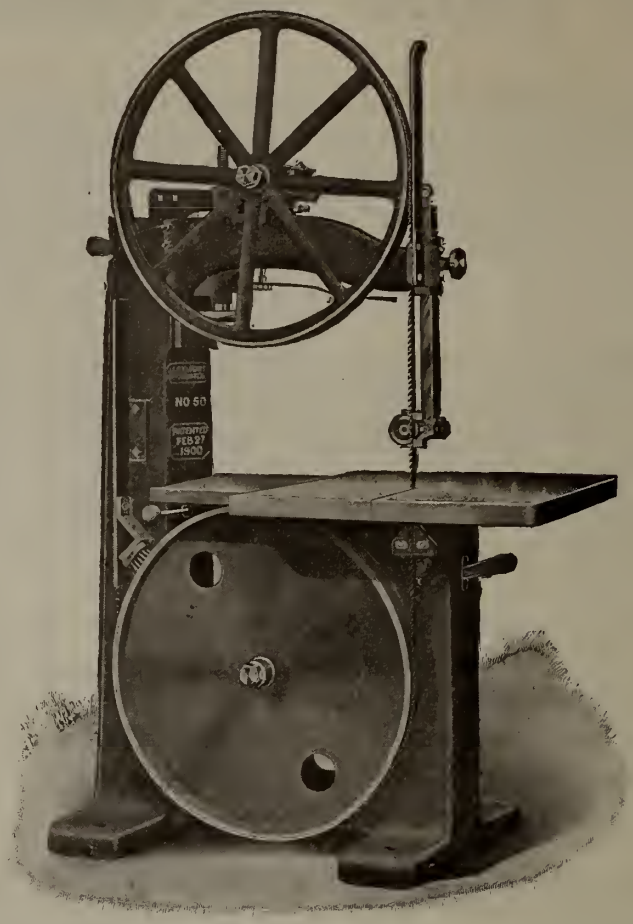
Hess-Bright Ball Bearings
S K F Ball Bearings
Atlas Steel Balls
Gronkvist Chucks
Transmission Hangers

The S K F Research Laboratories where friction problems are solved.



Save 25% to 50% of Blade Upkeep and Power Cost

Get Two, Even Three Times As Much Work

It's not the blades that wear out that cost, it's those that break.

It's the broken blades that cut down productive time and cost to repair and to replace.

Blade breakage is reduced to a minimum on Fay-Egan No. 50—36" **Square Column "Lightning Line" Band Scroll Saws.**

The Fay-Egan "Knife Edge" Blade Tension, made on the principle of a fine laboratory balance scale, is so sensitive that it compensates for changes in atmospheric conditions—yet, so flexible, you can pass a block between blade and wheel, while running, without breaking the blade. Folks tell us blade expense on "No. 50" averages 50 to 75 per cent. less than on the old timers.

The solid lower wheel acts like the fly wheel on your engine, its momentum carrying the load, so that the power consumption is reduced fully one-half, while at the same time it controls the light-spoked upper one, preventing over-running and choking down on a heavy cut.

The heavy square column eliminates vibration and permits the wheels to be revolved at 50 to 100 per cent higher speed, increasing the cutting capacity to double, and in some cases, triple that of the ordinary band saw.

As a user of saws, you cannot afford to ignore what Fay-Egan Square Column Band Saws are doing for others and can do for you. An investigation does not obligate you.

Write for Bulletin M-4

J. A. FAY & EGAN CO.

153-163 W. Front St. **CINCINNATI, O.**

L. D. LEACH & COMPANY

FISHER BUILDING, - CHICAGO

Manufacturers

OAK	Furniture and Vehicle Dimensions Plain Sawed, Red and White Car Stock Wagon Stock
GUM	Plain and Quartered, Sap and Red
HICKORY	Flitch and Dimensions
ELM	2, 2½ and 3 inch.

Hardwood Lumber

An adequate supply of timber in the heart of the best Hardwood forests. Superior facilities for manufacture and distribution, located tributary to five, great, independent railway systems, and in five separate states.

Standard manufacture in every variety of our production.

Complete organization in every department of our business.

Enable us to render

A SUPERIOR SERVICE

To our patrons.

If you would like to know some of the reasons why we are able to render the service which has brought us innumerable satisfied patrons, watch this space.

W. M. Ritter Lumber Co.

COLUMBUS, OHIO., U. S. A.

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DRY AND PARTLY DRY STOCK

Ready for Shipment

Your inquiries will bring very prompt quotations. You can depend on straight grades, quick service, and well manufactured lumber.

RED GUM

18917	ft.	6/4 1sts & 2nds. Qtd.
51022	"	6/4 No. 1 Com. & Sel. Qtd.
10195	"	6/4 No. 2 Com. Qtd.
2842	"	5/4 1sts & 2nds Figured
3575	"	4/4 No. 1 Com. & Btr. Figured
94088	"	6/4 1sts & 2nds
499648	"	6/4 No. 1 Com. & Sel.
66177	"	6/4 No. 2 Common.
11921	"	5/4 1sts & 2nds
57017	"	5/4 No. 1 Com. & Sel.
20131	"	5/4 No. 2 Common
90920	"	4/4 1sts & 2nds
255095	"	4/4 No. 1 Com. & Sel.
4425	"	4/4 No. 1 Com. & Btr.
101592	"	4/4 No. 2 Common

SAP GUM

82480	ft.	8/4 No. 1 Com. & Btr.
13300	"	8/4 No. 2 Com. & Btr.
175791	"	6/4 1sts & 2nds
370990	"	6/4 No. 1 Com. & Btr.
219408	"	6/4 No. 2 Common.
21760	"	6/4 No. 3 Common.
43453	"	5/4 1sts & 2nds
12429	"	5/4 No. 1 Com. & Sel.
20594	"	5/4 No. 2 Common
1280	"	5/4 No. 3 Common
53325	"	4/4 9-12" Box Boards
64777	"	4/4 1sts & 2nds
183204	"	4/4 No. 1 Com. & Sel.
82737	"	4/4 No. 2 Common
16250	"	4/4 No. 3 Common

LA. WHITE ASH

15000	ft.	3" No. 1 Com. & Btr.
7500	"	8/4 1sts & 2nds
15000	"	8/4 No. 1 Common
76476	"	10/4 12/4 No. 1 Com. & Btr.
3900	"	6/4 8/4 Log Run
7450	"	6/4 8/4 No. 3 Common.
18000	"	8/4 No. 2 Common
8110	"	6/4 No. 2 Common
30000	"	5/4 No. 1 Common
10365	"	5/4 No. 2 Common
34000	"	4/4 No. 2 Common
1432	"	4/4 No. 3 Common
7725	"	4/4 8/4 12/4 Log Run

ARKANSAS YELLOW PINE

14760	ft.	4/4 B. & Btr.

OAK

2800	ft.	4/4 1sts & 2nds Qtd. Red
1540	"	4/4 No. 1 Com. & Sel. Qtd. Red
5000	"	4/4 No. 2 Com. Qtd. White
5709	"	4/4 No. 3 Com. Qtd. White
11265	"	4/4 Log Run Qtd. Red
33080	"	4/4 No. 1 Common Red
31018	"	4/4 1sts & 2nds Mixed
181900	"	4/4 No. 1 Com. & Sel. Mixed
79525	"	4/4 No. 2 Common Mixed
68075	"	4/4 No. 3 Common Mixed
27210	"	4/4 Sound Wormy
3920	"	5/4 No. 2 Common Red

LA. CYPRESS

13121	ft.	10/4 1sts & 2nds
18241	"	10/4 Select
11097	"	10/4 No. 1 Shop
6012	"	10/4 No. 1 Common
18900	"	8/4 No. 1 Shop
9590	"	8/4 No. 1 Common
42839	"	6/4 Select
3067	"	6/4 No. 1 Com.
8190	"	6/4 No. 2 Common
18588	"	6/4 Dog Bds. small % 8/4
21812	"	5/4 No. 1 Common
5800	"	5/4 No. 2 Common
10000	"	4/4 Select
8605	"	4/4 Shop & Better
25600	"	4/4 Shop.
132861	"	4/4 No. 1 Common
14121	"	4/4 No. 2 Boxing
26401	"	4/4 No. 2 Common
42870	"	4/4 Peckie
5800	"	5/4 No. 2 Common

ELM GREEN

23421	ft.	8/4 No. 2 Com. & Btr.
42790	"	10/4 No. 2 Com. & Btr.

PECAN—GREEN

1000	ft.	8/4 Log Run
660	"	4/4 Log Run
4000	"	8/4 Flitches
4500	"	8/4 No. 2 Common
1200	"	5/4 No. 3 Common

ABERDEEN LUMBER COMPANY, Pittsburgh, Pa.

Tennessee Aromatic Red Cedar

STRAIGHT CARS OR MIXED WITH HARDWOODS

Quartered Sap Gum

8 cars 4/4" Common and Better
8 " 6/4" Common and Better

Plain Sap Gum

1 car 4/4" Panel 1 & 2—18" and up
2 " 4/4" 1st and 2nd—13-17"
5 " 4/4" 1st and 2nd—6/12"
10 " 4/4" No. 1 Common and Selects
2 " 4/4" No. 2 Common
3 " 4/4" No. 3 Common
4 " 6/4" Common and Better
6 " 6/4" No. 2 Common
10 " 6/4" No. 3 Common
5 " 8/4" No. 3 Common

Plain Red Gum

5 cars 4/4" 1st and 2nd
5 " 6/4" No. 1 Com. and Selects
5 " 4/4" No. 2 Common
3 " 6/4" No. 2 Common
1 car 8/4" No. 2 Com. and Btr.

Quartered Red Gum

1920' 3/4" Common and Better
1 car 4/4" 1st and 2nd
5 " 4/4" No. 1 Com. and Selects
2 " 6/4" Common and Better
5 " 8/4" 1st and 2nd
5 " 8/4" No. 1 Com. and Selects

Red Gum Figured Wood

3 cars 4/4" No. 1 Com. and Selects
1 " 4/4" Com. and Btr. Qtd.
2 " 8/4" Com. and Btr. Qtd.

Plain Red Oak

3 cars 4/4" No. 1 Com. and Selects
3 " 4/4" No. 2 Common
2500' 5/4" Common and Better
4000' 8/4" Log Run

Quartered Red Oak

1260' 3/4" Common and Better
1 car 4/4" 1st and 2nd
2 " 4/4" No. 1 Com. and Selects
1 " 4/4" No. 2 Common
3000' 5/4" No. 1 Common and Selects

Plain White Oak

3 cars 4/4" 1st and 2nd
7 " 4/4" No. 1 Common and Selects
10 " 4/4" No. 2 Common
1 " 10/4" No. 2 Com. and Btr.
1 " 12/4" No. 2 Com. and Ber.

Quartered White Oak

3 cars 4/4" 1st and 2nd (10% 10" and wider)
5 " 4/4" No. 1 Common and Selects
3000' 4/4" No. 2 Common
2 cars 4/4" Strips, 2" to 5½"
1 " 6/4" Common and Better

Miscellaneous Oak

2 cars 4/4" Sound Wormy
7 " 4/4" No. 3 Common Mixed
1 " 8/4" No. 2 and 3 Common

Miscellaneous Hardwoods

9000' 4/4" L. R. Elm
1 car 4/4" No. 2 & 3 Common Elm
3940' 5/4 L. R. Elm
2 cars 6/4" No. 2 Com. & Btr. Elm
1 " 6/4" No. 2 & 3 Common Elm
10 " 8/4 Log Run Elm
5 " 10/4" Log Run Elm
1 " 8/4" No. 2 and 3 Com. Elm
2 " 10/4" No. 3 Common Elm
3 " 6/4" Log Run Pecan
4500' 4/4" Log Run Maple
3 cars 4/4" to 8/4" No. 3 Com. Ash
9000' 4/4" Log Run Sycamore
2 cars 4/4" Shop and Better Cypress
2 " 4/4" Log Run Pl. Black Gum
1 " 6/4" No. 3 Common Maple
4/4" Com. and Btr. Tenn. Aromatic Red Cedar

St. Francis Basin Hardwoods

GEO. C. BROWN & COMPANY

Mills — PROCTOR, Ark., COSGROVE, Ark., GRENADA, Miss.

Main Office — MEMPHIS, Tenn.

Canadian Representative: M. E. Cummings, 814 Richmond Ave., Buffalo, N. Y.

Memphis Band Mill Co.
Memphis, Tenn., U.S.A.

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Leadership in any field is never gained without effort. Nor is it gained in a day. Rather it must be attained by hard consistent service—by giving one's customers just a little more, perhaps, than they expected. Always striving to do the thing that is right whatever the cost.
When we say that we are leaders in our field and that we offer you just the treatment that leadership has to offer—then this is no mere boast but a real "honest-to-goodness" wish that you will let us get acquainted. Will you?

31M	4/4	FAS Qtd. White Oak, 10" & up	125M	8/4	Com. & Btr. Rift-sawn Poplar, S.N.D.
172M	4/4	FAS Qtd. White Oak, regular	75M	4/4	Sound Wormy Oak
396M	4/4	No. 1 Com. Qtd. White Oak	40M	4/4	FAS Qtd. Red Oak
43M	4/4	Clr. Qtd. White Oak Stps. 4-5½"	66M	4/4	No. 1 Com. Qtd. Red Oak
4M	4/4	Clr. Qtd. White Oak Stps. 2½-3½"	58M	4/4	FAS Plain Red Oak
12M	4/4	Clr. Qtd. White Oak Stps. 1½-2"	66M	4/4	No. 1 Com. Plain Red Oak
25M	5/4	FAS Qtd. White Oak	28M	4/4	FAS Cottonwood, 6-12"
28M	5/4	No. 1 Com. Qtd. White Oak	66M	4/4	No. 1 Com. Cottonwood
21M	6/4	FAS Qtd. White Oak	55M	10/4	Log Run Elm
18M	6/4	No. 1 Com. Qtd. White Oak	103M	12/4	Log Run Elm

OAK POPLAR GUM
Quarter-Sawn or Plain. All thicknesses.

QUALITY SERVICE

Boland Lumber Company
Murray Bldg., Grand Rapids, Mich.
Manufacturers and Wholesalers Northern and Southern Hardwoods

Northern Woods:
Ash, Basswood, Beech, Birch, Hard Maple, Quartered Maple, White Maple, Soft Maple, Soft Elm, Rock Elm.

Southern Woods:
Cherry, Chestnut, Cottonwood, Cypress, Gum, Hickory, Magnolia, Oak, Poplar, Sycamore, Walnut, Willow.

Please send us your inquiries and it will be a pleasure to quote you and describe our stocks

Band Mill and Yards, Memphis Plant.

YES

YES Cars are extremely scarce and the indications are this condition will exist for some time.

YES Freight rates on lumber are going to be increased materially.

YES Stocks of all kinds of hardwoods are badly broken and scarce.

YES It will be good judgment to get such stock as you are needing in transit promptly.

YES We operate two band mills on our own timber, and manufacture all the lumber we ship, which enables us to furnish stock of even grade, color and texture.

YES We will appreciate an opportunity of serving you and will be pleased to quote you at all times.

YES We are manufacturers of all kinds of high grade Southern hardwoods.

DIRECT FROM PRODUCER TO CONSUMER.

GAYOSO LUMBER COMPANY

P.O. Box 1097 MEMPHIS, TENNESSEE U.S.A.

Reese Sheriff Lumber Co.

WILLIAMSPORT, PENNSYLVANIA

Manufacturers of

Northern and Southern Hardwoods White Pine, Spruce and Hemlock

With special attention to **Oak, Chestnut, Poplar, Cherry, Walnut, Gum and Basswood.**

OUR MOTTO

REASONABLE PRICES—that you can afford to pay.
EFFICIENT SERVICE — that you have a right to expect
FAIR TREATMENT — that you can depend on getting

We would appreciate an opportunity of furnishing a portion of your lumber requirements.

Are You Prepared "To Ride the Crest" of the Steadily Rising Tide of RED GUM *Popularity?*

Manufacturers of Desirable Grades of Furniture, those who have their fingers on the pulse of public taste, are rapidly *increasing* their lines of good

RED GUM

"Slow beginners" (known as the ultra-conservatives)—those who follow public taste at a safe distance behind—are *also* using a most unaccustomed quantity of **Red Gum**.

*This is the final proof that "**Red Gum** has COME."*

HOW IS YOUR LINE? ARE YOU "TO BAT" or on the bench, "waiting"?

The appropriate grades of **Red Gum**, "America's Finest Cabinet Wood," for good furniture (and trim), for every sort of use, are READY for PROMPT DELIVERY—and at prevailing prices are "the wisest buy for wise buyers" in the whole list of high-class furniture woods today.

Up-to-date architects and "interior landscape artists" are waking up and "giving their clients what they want"—i. e., **Red Gum**. (*ARE YOU?*) IT WILL PAY YOU TO *RIDE THE TIDE.*

WRITE US FOR ANY INFORMATION YOU WANT. WE'LL GIVE IT TO YOU RIGHT.

ADDRESS: RED GUM DIVISION,
AMERICAN HARDWOOD MANUFACTURERS' ASSOCIATION
1314 Chamber of Commerce Bldg., Memphis, Tenn.

I offer the following West Virginia stock for immediate shipment:

100,000 Ft. 4/4 Sound Wormy Chestnut.
100,000 " 5/4 " " "
75,000 " 6/4 " " "
70,000 " 8/4 " " "

No. 1 Common and Better Chestnut

100,000 Ft. 4/4
100,000 " 6/4
100,000 " 8/4 60% 14 and 16 feet long, 50 to 60% 10" and wider.
15,000 " 4/4 FAS Plain White Oak.
75,000 " 4/4 No. 1 Com. Pln. Wh. Oak.
100,000 " 6/4 No. 1 Com. Pln. Wh. Oak.

I have also a car of 4/4 No. 1 C & B Tennessee Red Cedar in transit.

I can make immediate shipment of Crating Lumber, Excelsior and Wood Wool.

Write, Wire or Phone for Prices.

PERCY E. HEENEY
202 Weber Chambers, KITCHENER, ONT.

H. W. Darby Hardwood Lumber Company

Manufacturers of

Hardwood Lumber

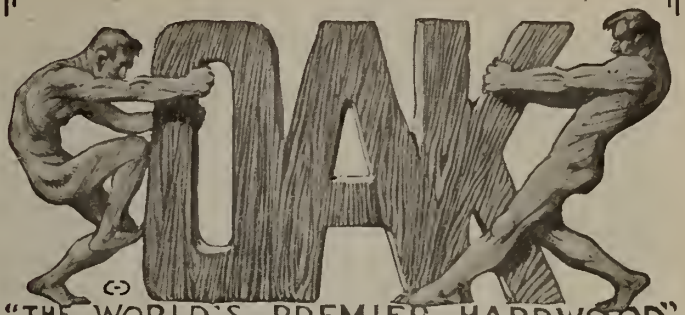
Red and Sap Gum a Specialty

Gum, Oak, Tupelo, Poplar
Ash, Elm, Cypress

Rooms 1531-33 Bank of Commerce & Trust Bldg
MEMPHIS, TENN.

Mills at:
Sidon, Miss Money, Miss.
Greenwood Miss.

"YES!" IS THE WORD FOR AMERICAN OAK TODAY!



"THE WORLD'S PREMIER HARDWOOD"

to ALERT FURNITURE MAKERS: "A WHISPER IS ENOUGH"

From FILING CABINETS and other Office Furniture to "the bones of great ships"—OAK is **OAK.** (Supreme.)

From ***DELICATELY CARVED FURNITURE*** for the ***DILETTANTE TASTE*** to the sills and ribs of great structures whose nobility is in their sheer strength (and to the historic beams of Westminster Abbey) OAK is **OAK.** (Supreme.) ***GOOD*** **OAK FURNITURE is "COMING *IN.*"**

Without a rival, without an apology, without a substitute, OAK is indeed

"*The* WORLD'S PREMIER HARDWOOD"

(has been, is and ever shall be), AND EVERYBODY KNOWS IT.

Nature will never grow another wood as good as OAK for the uses for which it is historically appropriate.

No need to mention Economy—*you know it.*

AMERICAN OAK is PLENTIFUL, ECONOMICAL, INDISPENSABLE.

ADMIRE IT. TRUST IT. INSIST ON IT. ***SPECIFY*** *IT. USE IT.* WRITE us. TELL us. ASK us. *We will give you a Straight Personal Letter in prompt reply—WITH ALL THE FACTS.*

Address: Oak Division,
AMERICAN HARDWOOD MFRS. ASSOCIATION
1408 BANK OF COMMERCE BLDG., MEMPHIS, TENNESSEE

I O W A

BLACK WALNUT

No cabinet wood responds as fully to the art of the furniture designer or the skill of the workman as American Black Walnut. It meets every requirement.

Furniture of Walnut possesses a lasting charm and beauty that age does not destroy and the liberal use of this wood in furniture factories, guarantees the quality of their product.

Our customers assure us IOWA WALNUT is superior to all other varieties for its texture, grain and beautiful coloring. We can prove this by our first shipment.

Send us your list of Walnut requirements in lumber and veneers.

Des Moines Sawmill Co.
DES MOINES, IOWA

"Hartzell's Choice Walnut"

Are you a believer in the fact that

"Quality Counts"

Have you ever experienced that delightful sensation of accidently overhearing a person speaking in a complimentary way of the "Quality of your Product."

"We emphasize Quality"

If your finished product is made from Hartzell's American Walnut Lumber and Veneers you will have the last word in "Quality"

There is a difference and it will pay you to think it over.

Samples submitted and quotations made upon application.

Our Motto is
"Satisfied Customers."

Geo. W. Hartzell - Piqua, Ohio

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

WHITE ASH

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	22,000	3,800	60,000	95,000
1¼ in.	78,000	5,500	108,000	35,000
1½ in.	26,900	1,200	10,000	36,000
2 in.	85,300	500	19,000	58,000
2½ in.	50,500	.....	10,000	5,500
3 in.	59,500	.....	15,500	7,500
4 in.	500	.....	1,000	500

BUTTERNUT

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	12,300	35,800	23,600	.....
2 in.	8,400	17,000	10,000	.....
2½ in.	3,000	3,000	.....	.....

CHERRY

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	13,500	210,200	94,500	62,000
1¼ in.	11,500	9,600	18,500	41,900
1½ in.	22,000	20,700	78,300	36,000
2 in.	4,100	22,200	31,900	5,500
2½ in.	4,500	2,100	1,200	.....
3 in.	20,700	2,500	2,300	.....
4 in.	9,900	.....	.....	.....

CHESTNUT

	1 & 2	Clear Strips	No. 1 Com.	S.W.& No. 2 Com.
¾ in.	.....	.....	.....	.....
1 in.	15,900	1,500	49,300	180,500
1¼ in.	149,800	1,800	68,200	125,200
1½ in.	116,500	.....	86,000	29,000
2 in.	33,200	.....	54,300	91,200
2½ in.	4,000	.....	1,150	500
3 in.	2,800	.....	1,300	500
4 in.	1,500	.....	300	.....

PLAIN RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
⅜ in.	30,200	.....	.....	.....
¾ in.	43,000	.....	30,400	20,200
⅝ in.	2,500	.....	87,000	53,600
1 in.	193,200	.....	38,000	73,400
1¼ in.	94,700	2,400	4,000	1,200
1½ in.	157,900	4,300	39,200	40,000
2 in.	83,100	.....	92,800	20,000
2½ in.	61,100	.....	10,000	2,100
3 in.	28,800	.....	14,500	11,000
4 in.	16,600	.....	8,900	.....

PLAIN WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
⅜ in.	1,000	.....	.....	.....
½ in.	.....	.....	.....	.....
⅝ in.	25,150	.....	2,000	16,900
¾ in.	37,900	.....	95,000	6,000
1 in.	29,300	1,200	75,000	60,200
1¼ in.	73,300	.....	6,000	8,000
1½ in.	48,500	.....	21,000	9,000
2 in.	47,000	.....	80,000	50,000
2½ in.	166,800	.....	47,500	3,000
3 in.	75,800	.....	51,800	14,400
3½ in.	5,500	.....	3,000	1,500
4 in.	72,000	.....	18,500	2,000

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	300	.....	3,700	200
1 in.	20,200	2,300	500	.....
1¼ in.	2,000	.....	.....	.....
1½ in.	150	.....	500	.....
2 in.	1,000	.....	7,400	.....

QUARTERED WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
½ in.	5,500	.....	.....	.....
¾ in.	18,500	.....	44,600	9,000
⅝ in.	5,800	.....	6,500	.....
1 in.	41,400	9,000	22,400	17,000
1¼ in.	6,000	.....	400	1,300
1½ in.	9,500	.....	8,000	.....
2 in.	31,500	.....	25,100	4,700
2½ in.	1,000	.....	.....	.....

POPLAR

	1 & 2 18" & up	1 & 2	Box Boards 13" & up	Bright Saps
⅝ in.	.....	17,600	.....	.....
1 in.	.....	45,000	4,600	11,200
1¼ in.	2,800	9,300	.....	2,000
1½ in.	4,300	.....	.....	9,000
2 in.	.....	13,600	.....	1,000
2½ in.	.....	44,800	.....	11,000
3 in.	.....	27,900	.....	20,600
4 in.	.....	6,000	.....	7,300

POPLAR (Continued)

	Stained Saps	No. 1 Com.	No. 2 Com.	No. 3 Com.
⅝ in.	10,800	22,300	2,600	.....
1 in.	40,600	160,900	171,000	40,000
1¼ in.	7,600	23,600	8,000	.....
1½ in.	6,700	41,000	9,500	4,000
2 in.	4,000	118,500	27,500	.....
2½ in.	3,700	2,000	500	500
3 in.	1,500	21,000	47,000	10,000
4 in.	700	17,750	5,000	.....

Also Large Stock of BEECH, BIRCH and MAPLE

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

Brown & Hackney, Inc.

MEMPHIS, TENN.

Manufacturers of High Grade
Bandsawn Southern Hardwood

LUMBER

June 1920—Stock List

BROWN & HACKNEY, Inc., LITTLE ROCK, ARK.

QUARTERED WHITE OAK

5,000 ft. 5/8" 1s&2s
60,000 ft. 5/8" No. 1 Common
15,000 ft. 4/4" 1s&2s
100,000 ft. 4/4" No. 1 Common
30,000 ft. 4/4" No. 2 Common
1,500 ft. 6/4" 1s&2s
2,000 ft. 6/4" No. 1 Common
10,000 ft. 8/4" 1s&2s
50,000 ft. 8/4" No. 1 Common
10,000 ft. 6/4&8/4" No. 2 Common

PLAIN OAK

20,000 ft. 3/4" 1s&2s Plain Red Oak
40,000 ft. 3/4" No. 1 Common Plain Red Oak
20,000 ft. 3/4" No. 2 Common Plain Red Oak
40,000 ft. 3/4" Sound Wormy Oak
30,000 ft. 4/4" 1s&2s Plain Red Oak
100,000 ft. 4/4" No. 1 Common Plain Red Oak
30,000 ft. 4/4" No. 2 Common Plain Red Oak
30,000 ft. 4/4" No. 1 Common Plain White Oak
50,000 ft. 4/4" Sound Wormy Oak

PLAIN GUM

6,000 ft. 4/4" 13"-17" Sap Gum Box Boards
100,000 ft. 4/4" No. 1 Common Sap Gum
15,000 ft. 4/4" No. 2 Common Sap Gum
15,000 ft. 4/4" Common & Better Plain Black Gum

QUARTERED GUM

30,000 ft. 4/4" Common & Better Quartered Black Gum
5,000 ft. 8/4" Common & Better Quartered Black Gum
15,000 ft. 6/4" Common & Better Quartered Sap Gum

MISCELLANEOUS

15,000 ft. 6/4" No. 2 & No. 3 Common Elm, 70% No. 2 Com
30,000 ft. 8/4" No. 1 Common Cypress
30,000 ft. 4/4" Pecky Cypress
9,000 ft. 4/4" Long Run Maple
3,000 ft. 4/4" Log Run Elm
1,000 ft. 4/4" Log Run Lynn

BROWN & HACKNEY LUMBER COMPANY
TRANSYLVANIA, La.

QUARTERED WHITE OAK

20,000 ft. 4/4" 1s&2s
40,000 ft. 4/4" No. 1 Common
12,000 ft. 4/4" No. 2 Common

QUARTERED RED OAK

14,000 ft. 4/4" 1s&2s
20,000 ft. 4/4" No. 1 Common

PLAIN OAK

20,000 ft. 4/4" 1s&2s Plain Red Oak
10,000 ft. 4/4" 1s&2s Plain White Oak
40,000 ft. 4/4" No. 1 Common Plain White Oak
40,000 ft. 4/4" Sound Wormy Oak
30,000 ft. 4/4" No. 3 Common Oak

PLAIN GUM

8,000 ft. 3/4" Log Run Sap Gum
50,000 ft. 4/4" 1s&2s Sap Gum
75,000 ft. 4/4" No. 1 Common Sap Gum

QUARTERED GUM

20,000 ft. 6/4" 1s&2s Quartered Red Gum
30,000 ft. 8/4" No. 1 Common & Better Quartered Red
100,000 ft. 6/4" No. 1 Common Quartered Sap
50,000 ft. 8/4" No. 1 Common Quartered Sap

CYPRESS

12,000 ft. 4/4" 1s&2s
15,000 ft. 4/4" Selects
20,000 ft. 4/4" Shop
50,000 ft. 4/4" No. 1 Common
15,000 ft. 8/4" 1s&2s
15,000 ft. 8/4" Selects
15,000 ft. 8/4" Shop

ELM

30,000 ft. 6/4" No. 2 Common
15,000 ft. 6/4" No. 3 Common

PECAN

30,000 ft. 8/4" Log Run

WRITE US FOR PRICES

HAVE you considered contracting for 1920 Hardwood requirements?

Edward Clark & Sons, Limited
807-9 Bank of Hamilton Bldg.
Toronto, - Ont.

If Dryness Counts--You Can't Beat This

Bone Dry Plain Oak

402,500' 2 " No. 1 Com. White and Red.
239,600' 2 " No. 2 " " " "
106,800' 2½" No. 1 " " " "
12,400' 2½" No. 2 " " " "
83,900' 3 " No. 1 " " " "
15,600' 4 " No. 2 " " " "

We also have a good stock of dry Oak in other thicknesses of both Plain and Quartered. Prices on request.

James E. Stark & Co., Inc.

MEMPHIS, TENN.

Canadian Hardwoods

Good Stocks, Right Goods,
Prompt Shipment

C. A. SPENCER, Limited
LUMBER MERCHANTS

Offices—500 McGill Building
MONTREAL - - Quebec

WARREN ROSS LUMBER CO.

JAMESTOWN - N. Y.

Please let us quote you on the following:—

455′	3/4″ 1s and 2s Tanguile Mahogany.	2,000′	6/4″ No. 1 C. Cherry
		4,000′	8/4″ 1s and 2s Cherry
156,000′	4/4″ 1s and 2s Tanguile Mahogany	2,000′	8/4″ No. 1 C. Cherry
		7,000′	4/4″ No. 1 C. Walnut
468′	5/4″ 1s and 2s Tanguile Mahogany	2,000′	5/4″ No. 1 C. Walnut
		2,000′	6/4″ No. 1 C. Walnut
450′	10/4″ 1s and 2s Tanguile Mahogany	12,000′	8/4″ No. 1 C. Walnut
		7,000′	8/4″ No. 2 C. Walnut
360′	12/4″ 1s and 2s Tanguile Mahogany	12,000′	4/4″ 1s and 2s Pl. Oak
		4,000′	5/4″ 1s and 2s Pl. Oak
6,900′	4/4″ No. 1 Com. Mhog.	4,000′	6/4″ 1s and 2s Pl. Oak
1,300′	5/4″ No. 1 Com. Mahog.	20,000′	8/4″ 1s and 2s Pl. Oak
20,000′	4/4″ 1s and 2s Cherry	4,000′	5/4″ No. 1 C. Pl. Oak
12,000′	4/4″ No. 1 C. Cherry	4,000′	6/4″ No. 1 C. Pl. Oak
4,000′	6/4″ 1s and 2s Cherry	10,000′	8/4″ No. 1 C. Pl. Oak

J. H. Bonner & Sons

Memphis, Tenn.

Mills:
Jonquil and Ruffwood, Ark.

Manufacturers

Band Sawn Hardwood Lumber

Write or wire for prices on

Gum, Oak, Elm, Etc.

Hardwood Lumber

Wire collect, or write for delivered prices on any or all of the following DRY STOCK

100 M′	4/4	No. 2 Com. & Btr. Soft Maple.
50 M′	10 & 12/4	No. 1 Com. & Btr. Soft Maple.
12 M′	8/4	No. 1 Common Ash.
30 M′	6/4	No. 2 Com. & Btr. Beech.
75 M′	4/4	Sound Wormy Chestnut.
85 M′	5 & 6/4	Sound Wormy Chestnut.
30 M′	8/4	Sound Wormy Chestnut.
50 M′	8/4	No. 2 Com. & Btr. Sap Gum.
35 M′	6/4	No. 1 Common Sap Gum.
50 M′	5, 6 & 8/4	No. 1 C. & B. Pl. Red Gum.
17 M′	8/4	No. 1 Com. & Btr. Qtd. Red Gum.
15 M′	12/4	No. 1 Com. & Btr. Hackberry.
75 M′	12/4	No. 1 Com. & Btr. Sycamore.
90 M′	4/4	No. 2 Com. & Btr. Sycamore.
15 M′	4/4	No. 1 C. & B. Pl. & Qtd. Tupelo.
28 M′	12/4	Bone dry No. 1 C. & B. Pl. Oak.

The Woodruff-Powell Lumber Co.
South Bend, Indiana

J. R. EATON & SONS, LIMITED

MANUFACTURERS OF HIGH GRADE WOOD PRODUCTS

Wood Turnings, Hardwood Dowels, Turned Table Legs, Kitchen Tables, Kitchen Cabinets, Oak Extension Tables, Oak Library Tables, "Empire Brand" Hardwood Flooring in Maple, Birch, and Plain or Quarter Cut Oak, Solid Pine and Veneered Hardwood Doors.

A Large Factory equipped with up-to-date machinery is at your service to furnish "WHAT YOU WANT"— WHEN YOU WANT IT."

YOUR ENQUIRIES SOLICITED

Orillia Ontario Canada

E. SONDHEIMER CO.

MEMPHIS, TENN., U.S.A.

Manufacturers and Exporters of

AMERICAN HARDWOODS

Specializing in RED GUM and SALIX

Dry Stock for Immediate Shipment

3	Cars	5/8"	Com. & Btr. Sap Gum.	3	"	10/4	No. Com. & Btr. Qtd. Red Gum	1	"	5/4	FAS Qtd. Red Oak.
3	"	3/4	No. 1 Com. Sap Gum.	3	"	4/4	FAS Qtd. Figured Red Gum.	3	"	4/4	No. 1 Com. Qtd. Red Oak.
10	"	4/4	FAS Sap Gum.	5	"	4/4	to 8/4 No. 1 Com. Figured Red Gum.	1	"	5/4	No. 1 Com. Qtd. Red Oak.
20	"	4/4	No. 1 Com. Sap Gum.					2	"	5/4	No. 2 Com. Qtd. Red Oak.
20	"	4/4	No. 2 Com. Sap Gum.	2	"	4/4	FAS Plain White Oak.	1	"	4/4	No. 1 Common Magnolia.
5	"	5/4	FAS Sap Gum.	5	"	4/4	No. 1 Com. Plain White Oak.	5	"	4/4	No. 2 Com. Cottonwood.
2	"	6/4	No. Com. & Btr. Sap Gum.	5	"	4/4	FAS Salix.	10	"	5/4	No. 1 Com. Cottonwood.
5	"	4/4	No. 1 Com. & Btr. Qtd. Sap Gum	10	"	4/4	No. 2 Com. Salix.	10	"	6/4	No. 1 Com. Cottonwood.
2	"	5/4	No. 1 Com. & Btr. Qtd. Sap Gum	15	"	5/4	Log Run Salix.	20	"	4/4	to 6/4 No. 2 Com. Cottonwood.
3	"	12/4	No. 1 Com. & Btr. Qtd. Sap Gum	3	"	6/4	No. 1 Com. Salix.	5	"	4/4	No. 1 Com. Ash.
1	"	3/4	FAS Plain Red Gum.	5	"	8/4	No. 1 Com. & Btr. Salix.	2	"	5/4	No. 1 Com. Ash.
2	"	3/4	No. 1 Com. & Btr. Pl. Red Gum	3	"	4/4	FAS Plain Red Oak.	1	"	6/4	No. 1 Com. Ash.
5	"	4/4	FAS Plain Red Gum.	1	"	4/4	FAS Qtd. White Oak.	1	"	8/4	No. 1 Com. Ash.
5	"	4/4	No. 1 Com. Plain Red Gum.	2	"	4/4	No. 1 Com. Qtd. White Oak.	3	"	4/4	to 6/4 No. 2 Com. Ash.
5	"	4/4	No. 1 Com. & Btr. Qtd. Red Gum	2	"	4/4	No. 2 Com. Qtd. White Oak.				
10	"	8/4	No. 1 Com. & Btr. Qtd. Red Gum	5	"	4/4	FAS Qtd. Red Oak.				

Also Pecan, Hickory, Sycamore, Black Gum, Poplar, Tupelo, Circassian Figured Red Gum

Distributing Yard and Sales Office
McLean & Chelsea Ave., Memphis, Tenn. U.S.A.
Cable Address : "Sonderco"

We have Four Band Mills :
Sondheimer, La., Tallulah, La.,
Ferriday, La., Baton Rouge, La.

Walnut Lumber with Mahogany

Straight or Mixed Cars

WALNUT VENEERS

Plain---Striped---Figured---Circassian Effect

Let Us Know Your Requirements

The Kosse, Shoe & Schleyer Company

Eastern Branch
Baltimore, Md.

325 Powers Theater Bldg.,
Grand Rapids, Mich.

Main Office and Band Mill
Cincinnati, O.

WHEN IN NEED OF HARDWOOD LUMBER—WRITE TO

Wheeler-Timlin Lumber Co.

WAUSAU, WISCONSIN

Our new cut is now dry and we are particularly anxious to move a few cars of the following:—

1 "	No. 2 Common and Better Basswood.	2½"	No. 1 Common and Better Birch.
1½"	No. 2 Common and Better Basswood.	1 "	No. 2 Com. and Btr. Wisconsin Plain Red Oak.
1¼"	No. 2 Common and Better Basswood.	1½"	No. 1 Common Hard Maple.
2 "	No. 2 Common and Better Basswood.	2½"	No. 1 Common and Better Hard Maple.
2½"	No. 1 Common and Better Basswood.	3 "	No. 1 Common and Better Hard Maple.
1 "	No. 1 Common and Better Birch.	1½"	No. 2 Common and Better Soft Elm.
1½"	No. 1 Common and Better Birch.		

Good Grades, Prompt Service, give us an opportunity to serve you.

POPLAR

We offer for prompt shipment from Louisville, Ky., where cars are more plentiful and embargoes less stringent than at other points, the following:

5,000	5/8	1s and 2s
80,000	5/8	No. 1 Common
50,000	5/8	No. 2 Common
40,000	4/4	Saps and Selects
150,000	4/4	No. 1 Common
30,000	4/4	No. 2A Common
40,000	5/4	No. 1 Common
17,000	8/4	No. 2 Common A & B
250,000	4/4	Mill Run
16,000	5/4	Mill Run

This Poplar is Kentucky and Tennessee mountain stock. It's soft textured, shows good widths and lengths and is nicely graded.

WE CAN SURFACE OR RESAW

North Vernon Lumber Mills

NORTH VERNON, IND.

LOUISVILLE, KY. DYERSBURG, TENN.

WRITE FOR COMPLETE LIST AND PRICES

The Hyde Lumber Co.

Band Mills: LAKE PROVIDENCE LA.

Southern Office: MEMPHIS, TENN.
Bank of Commerce Bldg.

Northern Office: SOUTH BEND, IND.

MANUFACTURERS

Plain Red Gum
Quartered Red Gum
Plain Sap Gum
Quartered Sap Gum
Cottonwood, Cypress
Tupelo, Ash, Elm, Oak

CHARLES O. MAUS
Canadian Representative

American Hardwood Lumber Co.

St. Louis, Mo.

Large stock of—

Dry Ash, Quartered Oak
Plain Oak and Gum

Shipments from — NASHVILLE, Tenn., NEW ORLEANS, La., and BENTON, Ark.

British Columbia Forest Products

British Columbia Lumber Commissioner

No. 1 Adelaide St. E., Toronto
(Street Floor)

Personal calls or correspondence cordially invited from Dealers and others interested in British Columbia Woods

Telephone Main 6872. Note: We do not quote prices.

An American Walnut Tree Selected For Our

LUMBER

PURCHASING AGENTS:—

Owing to embargoes and shipping delays, it is practically necessary for purchase orders to be placed thirty days earlier than in former years—we think this is especially advisable in Walnut today.

The years of experience of our buyers and the time and care used by them in selecting the raw material, for our output, terminates in the high character and quality of our lumber.

ALL GRADES AND THICKNESSES—American Walnut Exclusively

Pickrel Walnut Company

St. Louis, Missouri

Aromatic Tennessee Red Cedar

CAR LOAD LOTS
OR LESS

Earthman Lumber Co.
Murfreesboro, Tenn.

A name that should be on your inquiry list for Hardwood Lumber

American Column & Lumber Co.
Brunson Building, COLUMBUS, OHIO
—Manufacturers of—

West Virginia

Soft Yellow Poplar
Plain White Oak
Plain Red Oak
Quartered White Oak
White Oak Timbers and Plank

Chestnut	Butternut
Basswood	Ash
Maple	Cherry
Hickory	Walnut
Beech	Sycamore
Buckeye	Black Gum
Birch	Hemlock

Oak and Hardwood Dimension Stock

QUALITY—SERVICE

AT RIGHT PRICES

MANUFACTURERS OF

Cabinet parts	Enamel bath seats
Turned office stool tops	Special cabinet work of all descriptions
Turned piano stool tops	
Turned restaurant stool tops	Sanitary seats
Turned bath room stool tops	Toilet seats

Algoma Wood Products Co.
ALGOMA, WIS.

— A name worth remembering —

Thomas E. Powe Lumber Co.

St. Louis, Mo.

Manufacturers and Wholesalers of

SOUTHERN HARDWOODS

Specializing in

Ash-Oak-Gum-Poplar

Mills: PRESCOTT, ARK.—DOTHAN, ALA.

ST. LOUIS YARD

Mixed Carload Shipments
Carry stocks of the following:

Hickory	Magnolia	Elm
Maple	Willow	Sycamore
Tupelo	Red Cedar	Beech
Cypress	Plain Oak	Quartered Oak
Sap Gum	Red Gum	Mahogany
Poplar	Ash	Black Gum
Yellow Pine		

Steele & Hibbard Lumber Co.

ST. LOUIS, MO.

52 Years in Business

We carry a large stock of dry

Hardwood Lumber

25 Different Kinds
Quick Shipment
Write or wire for Prices

We specialize Oak cut from Mild Texture Missouri Timber with thin sap both plain and quarter sawed.

We ship also from Sawmills direct; Red as well as Sap Gum and Poplar, both plain and quarter sawed Sound Wormy Chestnut, Cypress and Ash.

F. Huntington Smith
Canadian Representative.

30 Million Feet Hardwoods Yearly

Manufactured by

Darnell-Love Lumber Co.

Leland, Mississippi

We own and operate two large band mills with sufficient timber to supply these mills, at present capacity, fifteen to twenty years

Cutting

Oak, Ash, Gum, Elm Cypress, Pecan

and various other Native Woods

Our Specialties are—

3/8", 1/2", 5/8" and 3/4" in Gum and Oak

and

8/4" Quartered Red Gum

8/4" Quartered Red Gum Sap No Defect

WE SOLICIT YOUR INQUIRIES AND ORDERS

ASTORIA MAHOGANY
LUMBER & VENEERS

Up the Loghaul to the Largest Mahogany Sawmill

HOUR after hour the giant mahogany logs from Africa and Central America ride up this great log-haul to the largest mahogany sawmill on the Atlantic and Gulf Seaboard—the last leg of their journey through the largest complete mahogany lumber and veneer organization in the United States.

Astoria Mahogany Company, Inc.
347 Madison Avenue, New York
Successors to
Huddleston-Marsh Mahogany Co.
Astoria Veneer Mills and Dock Co.
F. W. Kirch, Inc.

Mills and Yards, Long Island City, New York

BRANCHES:
44 North Market Avenue, Grand Rapids, Mich.
2256 Lumber Street, Chicago, Ill.

OAK

Plain and Quartered
Uniform Color—Soft Texture

Poplar, Ash

and other

Hardwoods

We have 35,000,000 feet dry stock—all of our own manufacture, from our own timber grown in Eastern Kentucky

Prompt Shipments

The Mowbray & Robinson Co.
(INCORPORATED)
Manufacturers
Office: CINCINNATI, OHIO

MILLS
Quicksand, Ky.; Viper, Ky.; West Irvine, Ky.

Canadian Representative:
M. E. CUMMINGS, 814 Richmond Ave., Buffalo, N. Y.

SPECIAL—DRY STOCK

Ready for Immediate Shipment in Straight or Mixed Cars

PLAIN WHITE OAK

		Feet
4/4	FAS	4,992
5/4	"	1,875
6/4	"	4,935
8/4	"	200
4/4	No. 1 Com.	99,523
5/4	"	8,458
6/4	"	8,190
8/4	"	5,540
4/4	No. 2 Com.	26,756
5/4	"	975
4/4	No. 3 Com.	4,278

PLAIN RED OAK

4/4	FAS	27,643
5/4	"	437
6/4	"	855
4/4	No. 1 Com.	56,005
5/4	"	9,396
6/4	"	4,447
8/4	"	1,810
4/4	No. 2 Com.	31,812
5/4	"	2,817
4/4	No. 3 Com.	15,041

QRTD. WHITE OAK

4/4	FAS	22,651
5/4	"	243
6/4	"	1,852
8/4	to 16/4 FAS	2,175
4/4	No. 1 Com.	28,720
5/4	"	14,561
6/4	"	10,237
8/4	"	1,300
8/4	to 16/4 No. 1 Com.	3,795
4/4	No. 2 Com.	5,719

QRTD. RED OAK

4/4	FAS	6,297
4/4	No. 1 Com.	17,442
5/4	"	2,112
6/4	"	1,116
8/4	"	2,240
4/4	No. 2 Com.	6,108

POPLAR

4/4	No. 1 Com.	13,395
5/4	"	1,787
6/4	"	4,297
8/4	"	2,480
4/4	No. 2 Com.	1,715
6/4	"	2,167
8/4	"	1,440

PLAIN RED GUM

4/4	FAS	4,912
5/4	"	2,193
6/4	"	2,610
8/4	"	902
4/4	No. 1 Com.	13,482
5/4	"	12,319
6/4	"	6,045
8/4	"	5,704

PLAIN SAP GUM

4/4	FAS	26,720
5/4	"	23,990
8/4	"	4,320
4/4	No. 1 Com.	21,984
5/4	"	437
6/4	"	1,170
8/4	"	4,420
4/4	No. 2 Com.	5,453
5/4	"	2,193
6/4	"	3,360

QRTD. RED GUM

4/4	No. 1 Com.	14,686
8/4	"	1,200
8/4	No. 1 C. & B.	10,548
4/4	No. 2 Com.	41

QRTD. SAP GUM

8/4	FAS	21,120
8/4	No. 1 Com.	7,240

SOUTHERN ELM

4/4	Log Run	11,317
5/4	" "	1,334
6/4	" "	34,172
8/4	" "	10,884
10/4	" "	23,692
6/4	No. 3 Com.	1,766
10/4	"	812

SOUTH'N SOFT MAPLE

4/4	Log Run	31,642
5/4	" "	2,356
6/4	" "	5,760
8/4	" "	26,212
10/4	" "	43,724
8/4	No. 3 Com.	40
12/4	"	4,500

WALNUT

4/4	Log Run	2,900
8/4	" "	990

WHITE ASH

		Feet
4/4	FAS	22,709
5/4	"	27,106
8/4	"	10,424
10/4	"	12,097
12/4	"	4,680
4/4	No. 1 Com.	37,980
5/4	"	17,587
6/4	"	4,888
8/4	"	11,540
10/4	"	10,487
12/4	"	495
4/4	No. 2 Com.	8,318
5/4	"	1,112
6/4	"	15,253
8/4	"	1,616
10/4	"	4,605
12/4	"	21,360
4/4	No. 3 Com.	4,391
5/4	"	75
6/4	"	450
8/4	"	3,630
10/4	"	490
12/4	"	9,780

CYPRESS

4/4	FAS	10,542
5/4	"	450
6/4	"	12,165
8/4	"	1,440
4/4	Select	30,921
5/4	"	5,827
6/4	"	52,819
8/4	"	8,020
4/4	Shop	37,343
5/4	"	1,125
6/4	"	8,383
8/4	"	9,214
4/4	No. 1 Com.	72,757
5/4	"	3,818
6/4	"	4,241
8/4	"	1,680
4/4	No. 2 Com.	36,729
5/4	"	3,500
6/4	"	14,040
8/4	"	600

COTTONWOOD

4/4	FAS 6-10"	14,633
4/4	" 11 and up	6,327
5/4	FAS	4,312
4/4	BB 13-17"	1,440
4/4	BB 9-12"	2,505
4/4	No. 1 Com.	38,249
5/4	"	4,400
6/4	"	144
8/4	"	896

WRITE OR WIRE FOR ATTRACTIVE DELIVERED PRICES

Baker-Matthews Lumber Co.

Memphis, Tennessee

GUM

Churchill-Milton Lumber Company

GUM

General and Sales Office: LOUISVILLE, KY. Mill: GREENWOOD, MISS.

Let us have your inquiries for—

Ash
Plain Oak
Quartered White Oak
Quartered Red Oak
Elm
Tupelo
Cottonwood

Plain Red
Quartered Red
Sap
Qtd. Red, Sap
No Defect

GUM

GUM

Our Specialty is DELTA GUM

GUM

F. T .DOOLEY, President. T. E. JONES, Secy.-Treas.

F. T. Dooley Lumber Co.

Inc.

MANUFACTURERS and WHOLESALERS of

SOUTHERN HARDWOODS

Plain and Quartered Oak
Cypress, Gum, Ash
Soft Maple and Elm

Send us your inquiries

Memphis ∴ ∴ Tennessee

Hardwoods

We can furnish you immediately Factory Stock including all grades and thicknesses of

Walnut, Chestnut
Mahogany, Teak, Oak
Ash, Cypress

ALSO

VENEERS

Oak, Maple, Walnut and other Fancy Woods

The McLennan Lumber Co.

Limited

MONTREAL

Felger Lumber and Timber Company

MANUFACTURERS AND WHOLESALERS

NORTHERN AND SOUTHERN HARDWOODS

Main Office:
GRAND RAPIDS
373 Mich. Trust Bldg.

Southern Office:
MEMPHIS, TENN.

Yellow Poplar Lumber Co.

Manufacturers of Band Sawed

Poplar Plain Oak
Quartered Oak
Chestnut Basswood

Capacity 50,000,000 per annum

SPECIALTY: Monogram Brand Oak Flooring

CANADIAN ENQUIRIES SOLICITED

COAL GROVE, OHIO, U. S. A.

We Offer For Prompt Shipment

10	cars	4/4	No. 1 Common Plain Red Gum
5	"	4/4	No. 2 Common Plain Red Gum
2	"	4/4	FAS Plain Red Gum
1	"	6/4	FAS Plain Red Gum
1	"	6/4	No. 1 Common Plain Red Gum
1	"	4/4	Common & Better Qtd. Red Gum
1	"	6/4	FAS Qtd. Red Gum
1	"	8/4	No. 1 Common Qtd. Red Gum
2	"	4/4	Common & Better Qtd. Gum SND
2	"	4/4	Common & Better Qtd. Red Oak
3	"	4/4	No. 3 Oak
2	"	10/4	to 12/4 Oak Crossing Plank
1	"	4/4	to 12/4 Log Run Ash
2	"	12/4	Log Run Elm
1	"	6/4	Log Run Pecan
2	"	8/4	to 10/4 Log Run Pecan

Send us your inquiries, as this is only a partial list of the stock we have at our mill

"CLAYTON QUALITY" TENSA DETA SOUTHERN HARDWOODS

UTLEY-HOLLOWAY COMPANY

General Office: 1226 Conway Bldg., CHICAGO, ILL. **Band Mill: Clayton, La.**

Indiana

Quartered Red and White

OAK

1,000,000 feet of dry stock carried at all times

ALSO PLAIN OAK AND ASH

We manufacture all stock carried

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
GEO. H. FOOTE, Vice-Pres. & Treas.
JOSEPH WALTMAN, Secretary

Mills at EVANSVILLE, Indiana

SPECIALS!

For Immediate Shipment

QUARTERED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.

PLAIN SAWED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.
5 " 1¼" Common.

QUARTER SAWED OAK

10 cars 1" No. 1 Com. and Btr., White.
10 " 1" No. 1 Com. and Btr., Red.

Thomas & Proetz Lumber Company

No. 3400 Hall St. St. Louis, Mo.

GUM

Sap Red Tupelo Black

Prompt Shipments any Time

Cypress Cottonwood Oak
Ash Elm Beech Sycamore
Crating Fir Spruce
Yellow Pine

INQUIRIES SOLICITED

Manufacturers & Wholesalers

Cornelius Lumber Co.

Home Office—Arcade Building, St. Louis, Mo.
Northern Office—Lumber Exchange, Chicago, Ill.
Northwestern Office—Bremer Arcade, St. Paul.
Southern Offices—Tupelo, Miss., Memphis, Tenn.
Saw Mills—Drew, Miss., Osmeek, La., Lake City, Fla.

ATTENTION:

"Auto Body and Furn. Manfgs."

We are one of the few firms in the country handling

White Ash Exclusively

We sort it to meet all requirements. Tough texture and Medium texture. Can furnish Special Widths and Lengths one to four inches thick. Write or wire when needing WHITE ASH.

THOMPSON, KATZ LUMBER CO.

Memphis, Tenn.

Cable Address "TomKats"

Tustin Hardwood Lumber Co.

MEMPHIS **TENN.**

KILN DRIED AND AIR DRIED SOUTHERN HARDWOODS

We operate five mills and Memphis yard, specializing in KILN DRIED Sap Gum, Elm, Maple, Ash. *Send us your inquiries.*

Will quote low prices on following to points not embargoed:

4 cars 4/4 No. 1 C. & B. Qtd. White Oak.
1 " 4/4 Fas Qtd. Red Oak.
1 " 4/4 No. 1 Com. Qtd. Red Oak.
2 " 4/4 Fas Plain Red Oak.
5 cars 4/4 No. 1 Com. Plain Red Oak.
3 " 8/4 No. 1 C. & B. Qtd. Red Gum.
4 " 8/4 No. 1 C. & B. Qtd. Sap Gum.

Johnson Brothers Hardwood Co.

(OUR NAME IS EASY TO REMEMBER)

Sales Agents:
Arko Lumber Co.
Arkansas City, Ark.

Bank of Commerce & Trust Building
Memphis, Tenn., U.S.A.

Double Band Mill Capacity
100,000 ft. per day

Manufacturers and Wholesalers

Southern Hardwoods

3,000,000 ft. dry stock on hand and 5,000,000 in process of drying—all thicknesses, ½" to 4", plain and quartered.

White and Red Oak—Red Gum—Sap Gum—Tupelo—Black Gum—Cottonwood—Salix—Willow—Pecan—Sycamore—Elm—Soft Maple—Magnolia.

We offer for quick Sale the following Bone Dry Stock:

3 cars 4/4 Log Run Hackberry.
3 " 4/4 Log Run Magnolia.
2 " 4/4 Log Run Sycamore.
5 " 4/4 Log Run Willow.
5 cars 4/4 FAS Cottonwood.
1 " 6/4 FAS Cottonwood.
5 " 8/4 Log Run Elm.
2 " 8/4 Log Run Hickory.

Wire us at our expense for quotations

West Virginia Oak

Thoroughly Dry, Accurately Sawn, Soft Textured, and Uniform in Color.

Write us when needing choice stocks. All lumber produced from virgin timber of large size and excellent quality.

Twenty Million Feet Hardwood Ready for Immediate Shipment

OAK

Yellow Poplar, Ash, Hickory, Beech, Chestnut, Basswood, Walnut, Maple

THE THOMAS HALL LUMBER COMPANY

Manufacturers

CHARLESTON, WEST VIRGINIA

M. BROWN, Canadian Representative. Address: 31 Sprucehill Rd., Balmy Beach, Toronto

Tallahatchie Lumber Company

MEMPHIS, TENN.

Manufacturers of

Band Sawn Hardwoods

Graded so as to be especially attractive to Furniture Manufacturers.

Careful attention to every detail of service.

SEND US YOUR INQUIRIES

Band Sawn Poplar, Plain and Quartered White and Red Oak— Quartered Red Gum, Sap No Defect

Below we offer, subject to prior sale and immediate acceptance, the following stock:—

ASH

4/4"	No. 2 Common and Better	10,000 ft.

BEECH

4/4"	Log Run	3,000 ft.
8/4"	Log Run	40,000 "
10/4"	Log Run	10,000 "
12/4"	Log Run	6,000 "

CHERRY

4/4"	No. 2 Common and Better	6,000 ft.

ELM

12/4"	No. 2 Common and Better	2,000 ft.

QRTD. RED GUM

4/4"	No. 1 Common and Better	22,000 ft.

QTRD. RED GUM SND.

4/4"	FAS	6,000 ft.
6/4"	FAS	18,000 "
6/4"	No. 1 Common	20,000 "
8/4"	FAS	28,000 "
8/4"	No. 1 Common	23,000 "

PLAIN SAP GUM

4/4"	FAS	18,000 ft.
4/4"	No. 1 Common	18,000 "
4/4"	No. 2 Common	12,000 "
4/4"	No. 3 Common	10,000 "

QTRD. BLACK GUM

4/4"	Log Run	32,000 ft.

HICKORY

6/4"	Log Run	5,000 ft.
8/4"	Log Run	8,000 "

MAGNOLIA

4/4"	Boxboards, 8" to 12"	18,000 ft.
4/4"	Boxboards, 13" to 17"	14,000 "

QRTD. WHITE OAK STRIPS

4/4"	1½" to 2½" Common	10,000 ft.
4/4"	4" to 5½" Clear	15,000 "
4/4"	2½" to 3½" Clear	11,000 "

QRTD. WHITE OAK

4/4"	FAS	52,000 ft.
4/4"	No. 1 Common	106,000 "
4/4"	No. 2 Common	40,000 "
5/4"	No. 1 Common	7,000 "

PLAIN WHITE OAK

4/4"	No. 1 Common	30,000 ft.
4/4"	No. 2 Common	20,000 "

PLAIN RED OAK

4/4"	FAS	59,000 ft.
4/4"	No. 1 Common	40,000 "
4/4"	No. 2 Common	30,000 "
5/4"	FAS	16,000 "

SOUND WORMY OAK

4/4"		60,000 ft.

POPLAR

4/4"	FAS Yellow	56,000 ft.
4/4"	No. 1 Common	220,000 "
4/4"	No. 2 Common	150,000 "

We own our stumpage and operate our own band mill in Bude, Miss., manufacturing ten million feet annually, on which we specialize in Quartered White Oak, manufactured from genuine forked leaf White Oak,and Yellow Poplar of fine soft texture grown in the hills of Southern Mississippi.

Our grades are dependable and the manufacture of our stock is unsurpassed. We respectfully solicit your enquiries, which will receive our prompt and courteous attention.

L. D. Murrelle Lumber Company

General Sales Office: 1524 Exchange Bldg., Memphis, Tennessee

Band Mill: Bude, Miss.

Stimson Veneer and Lumber Co.

(Inc.)

Office and Mill: McLean Ave. and Union Belt R.R.

Memphis - Tenn.

We sell only the product of our own mills and make band sawn lumber in all Southern Hardwoods.

We specialize in Quartered White Oak, Red Oak, and Red Gum.

With allied companies we make fifty million feet annually.

J. V. Stimson Hardwood Co.

Manufacturers and Exporters

Band Mills: Memphis, Tenn., Helena, Ark.

Memphis - Tenn.

STOCK LIST

QUARTERED WHITE OAK
- 3 cars 4/4" 1s and 2s.
- 5 cars 4/4" No. 1 Common.
- 2 cars 4/4" No. 2 Common .

QUARTERED RED OAK
- 5 cars 4/4" 1s and 2s.
- 10 cars 4/4" No. 1 Common.
- 4 cars 4/4" No. 2 Common.
- 2 cars 6/4" No. 1 Common and Better.

QUARTERED RED GUM
- 10 cars 4/4" 1s and 2s.
- 3 cars 4/4" 1s and 2s Fig.
- 2 cars 5/4" 1s and 2s.
- 2 cars 6/4" 1s and 2s.
- 15 cars 4/4" No. 1 Common.
- 2 cars 5/4" No. 1 Common.
- 2 cars 6/4" No. 1 Common.

QUARTERED RED GUM, Sap no Defect
- 5 cars 6/4" No. 1 Common and Better.
- 10 cars 8/4" No. 1 Common and Better.

ASH
- 4 cars 10/4" No. 1 Common and Better.
- 1 car 12/4" No. 1 Common and Better.
- 1 car 6/4" No. 1 Common and Better.
- 2 cars 4/4" No. 1 Common.
- 2 cars 4/4" No. 2 Common.

SAP GUM
- 10 cars 4/4" 1s and 2s.
- 20 cars 4/4" No. 1 Common.
- 10 cars 4/4" No. 2 Common.
- 2 cars 4/4" 18" up Panel.
- 5 cars 4/4" 13-17" Box Boards.

PLAIN RED OAK
- 2 cars 4/4" 1s and 2s.
- 2 cars 6/4" No. 1 Common and Better.
- 2 cars 10/4" No. 1 Common and Better.

PLAIN WHITE OAK
- 4 cars 4/4" No. 1 Common Plain.

COTTONWOOD
- 2 cars 4/4" 1s and 2s.
- 15 cars 4/4" No. 1 Common.
- 5 cars 4/4" No. 2 Common.

ELM
- 2 cars 4/4" Log Run.
- 10 cars 10/4" Log Run.
- 10 cars 12/4" Log Run.

MAPLE
- 4 cars 12/4" Log Run.

For Discriminating Buyers

TO produce any article of quality, good material with which to work and good workmanship are essential; so it is in producing Lumber of Quality.

By securing a Virgin Tract of Timber in the Sunflower River District of Mississippi, we laid the foundation to produce Lumber of Quality.

This Timber brought to our Modern Equipped Band Mill over our own Logging Road, sawn into Lumber and piled for seasoning on our well laid out Yards, properly graded and loaded, each operation under the direct supervision of experienced Operators—has Quality.

A Car will demonstrate to you this Fact.

The

Frank A. Conkling Company

Southern Hardwoods

Memphis, Tenn.

Mills: PERCY, Miss., ISSAQUENA, Miss.

Frank Purcell
Walnut Lumber Co.

Plenty of logs like the portion of our stock shown above have made possible the million and a half foot stock of well manufactured American Walnut Lumber which we now have to offer.

Prompt shipment
All grades and thicknesses
Guaranteed Inspection

12th AND BELT LINE
Kansas City - Kansas

Dacus-Richards Hardwood Co.

A. P. DACUS - H. J RICHARDS

MANUFACTURERS
Southern Hardwood
Specializing in
RED GUM
SAP GUM
PLAIN AND QUARTERED
OAK

Randolph Building,
Memphis, Tennessee.
Mills at EVANSVILLE, Miss., and PRITCHARD, Miss.

Perkins Brothers
Kelso, Ark.

Manufacturers of
Southern Hardwoods

Quartered and Plain White Oak, Plain Red Oak, Gum Elm, Maple, Ash and Cypress

We are also prepared to cut dimension stock to order in Ash, Oak, Gum, Hickory and Elm.

Let us know your requirements.

Mercerau-Hawkins Tie Company

Huntington - W. Va.

Manufacturers and Wholesale Dealers

West Virginia and Southern

HARDWOODS

We specialize in

Oak Tie Siding
White and Red Oak
Yellow Poplar
Basswood
Chestnut and
Gum Lumber.

Canadian Sales in Charge of

C. W. PETERS

Vice President and Manager of Lumber Dept.

BEDNA YOUNG Lumber Company

Jackson - Tennessee

Manufacturers of
Quartered White and Quartered Red Oak

Please let us quote you on the following:—

1 car 5/8". FAS Qtd. White Oak, 6-9".
2 " 4/4" FAS Qtd. White Oak, 6" and up.
1 " 5/4" FAS Qtd. White Oak, 6-9".
1 " 5/8" No. 1 Com. Qtd. Wh. Oak, 4" & up.
1 " 3/4" No. 1 Com. Qtd. Wh. Oak, 4" & up.
3 " 4/4" No. 1 Com. Qtd. Wh. Oak, 3" & up.
1 " 5/4" No. 1 Com. Qtd. Wh. Oak, 4" & up.
1 " 5/4" FAS Qtd. Red Oak, 6" & up.
1 " 6/4" FAS Qtd. Red Oak, 6" & up.
1 " 4/4" No. 1 Com. Qtd. Red Oak, 3" & up.
1 " 5/4" No. 1 Com. Qtd. Red Oak, 4" & up.
1 " 6/4" No. 1 Com. Qtd. Red Oak, 4" & up.

Wake-up, Mr. Furniture Man!
Walnut is Plentiful!

AMERICAN WALNUT

"The Cabinet-wood Superlative"

Bureau Drawers That Slide

(and slide easily) after 200 years of service.

Try the drawers of an old piece of Walnut furniture—no matter how old, nor of what grade of workmanship. They slide easily—if they are Walnut. That is because Walnut doesn't shrink nor swell with the variations of temperature and humidity, and doesn't warp nor twist nor misbehave in any way—never a bit.

The supreme beauty of Walnut, in addition to the above qualities (and plus its "workability" and its "carvability"), accounts for the world-old supremacy of Walnut as a cabinet-wood—and its price permits its use in *every grade* of furniture that the careful buyer is likely to ever consider.

It will help you in your furniture buying to *know all about* American Walnut. (The furniture man will respect your discrimination, and you may be sure he will honestly give you what you want. He knows the facts—and is glad that you do.)

Don't fail to WRITE NOW for the WALNUT BOOK—edition de luxe—which will come by return mail with our compliments—and our confidence in your appreciation of it.

AMERICAN WALNUT MANUFACTURERS' ASSOCIATION

Room 1019, 616 S. Michigan Blvd., Chicago

ALL BRANCHES OF THE FURNITURE TRADE

are feeling strongly the Effects of the series of tributes to our American Walnut which are running continuously in most of the Best Publications in America. Above is an example.

There are still a few Furniture Houses in the Country

who are giving some of their better-posted competitors a great advantage over them with the Best Trade. WHY? Simply because they "heard somebody say" that American Walnut was getting scarce. Let them ask us for THE FACTS! (See address above.)

Chas. Gill Lumber Co.

WAUSAU, WISCONSIN

MANUFACTURERS & WHOLESALERS

SPECIALIZING IN

MAPLE
BIRCH
AND
BASSWOOD

Complete Stock Crating Material

We solicit correspondence relative to all Northern Hardwoods

Chicago Office — 501 Lumber Exchange

Band Sawn West Virginia HARDWOODS

The W. C. Barlett Lumber Co.

Charleston, W. Va.

Manufacturers

ASH to WALNUT

We produce a complete line of Band Sawn Hardwoods, serving the Body and Wheel, Furniture, Piano, Cabinet and Interior Finish Trades.

If Superior Quality, Fine Width and Length, coupled with Real Service is desired, let us have your enquiries.

Why Wait for Annual Car Shortage? Why wait for Freight Rate Increase?

WE OFFER NOW FOR PROMPT SHIPMENT—

100,000 ft. 4/4" FAS Sap Gum
150,000 ft. 4/4" No. 1 Common Sap Gum
100,000 ft. 4/4" No. 2 and No. 3 Common Sap Gum
100,000 ft. 6/4" Quartered Red Gum Sap no Defect
100,000 ft. 8/4" Quartered Red Gum Sap no Defect
50,000 ft. 4/4" No. 1 Com. & Select Qtd. Red Gum
150,000 ft. 4/4" No. 2 and No. 3 Common Sycamore
150,000 ft. 4/4" No. Com. & No. 2 Com. Cypress
50,000 ft. 4/4" No. 1 Common Cottonwood
1 car 4/4" No. 1 Com. and FAS Qtd. White Oak
2 Cars 4/4" No. 1 Common Plain White Oak
1 Car 4/4" No. 1 Common Plain Red Oak

This stock will be moved this month.
Wire us for delivered prices, at our expense.

Chapman and Dewey Lumber Co.

Manufacturers

SALES OFFICE: MEMPHIS, Tenn. MARKED TREE, Ark. KANSAS CITY, Mo.

De Hewit Lumber Co.

Huntington, W. Va.

MANUFACTURERS

West Virginia Hardwoods

(Not Better than the Best but as Good as the Best)

FAS Plain White and Red Oak
No. 1 Com. Plain White and Red Oak
Implement Oak
Sound Wormy Chestnut
No. 1 Common and Better Chestnut
Hickory Plank
Poplar and Basswood

J. W. Darling Lumber Co.

N. W. Cor. 4th & Plum St. CINCINNATI, Ohio

In addition to our operation at Baton Rouge, La., we handle the sales of

J. H. Leavenworth & Son, Greenville, Miss.
Fisher Bros. Lumber Co. Cruger, Miss.
Kurz Brothers, Helena, Ark.

and have three buyers constantly traveling the South.

We are, therefore, in position to give the lumber consumer excellent service in

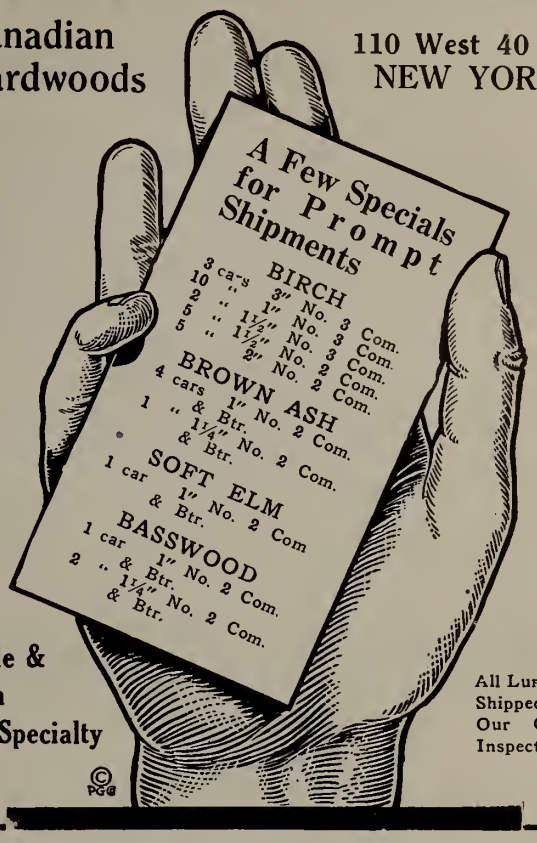
Oak - Gum - Cottonwood
Cypress and Tupelo

WAYNE LUMBER CO.

Manufacturers and Wholesalers

Canadian Hardwoods

110 West 40 St.
NEW YORK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Amended Sales and Luxury Tax

Extended reference was made in the June "Canadian Woodworker" to the sales and luxury taxes. Since that issue was published amendments, which alter these taxes in their application to certain branches of the woodworking industry, have been incorporated in the budget.

Under the new changes furniture as described below, is subject to a tax of 15 per cent., this tax to be collected by the vendor, who in this case is the retailer, at the time of sale or delivery. All antique furniture of walnut, mahogany, rosewood, ebony, prima-vera or oak. Carved ebony or teakwood or lacquered furniture. All tables made specially for cards, checkers, chess and other games. All furniture finished in gold leaf, verni martin or with ornamental and expensive inlays such as mother of pearl or with handpainted decorations. All liquor cabinets, smoker cabinets, tea wagons, sewing cabinets, work tables, piano lamps or stands, table lamps or stands, ferneries, jardinieres, pedestals and bric-a-bac when made of rosewood, prima vera, solid mahogany or ebony or lacquered or decorated.

That means as far as the last-mentioned list of furniture is concerned the tax applies only when the pieces listed are made in the woods or finishes mentioned. The term "antique furniture" refers to the age of the piece and not to the period or design.

Musical instruments are taxes as follows: 5 per cent. on pianos not exceeding $450.00 in value and organs not exceeding $150.00. 15 per cent. on pianos exceeding $450.00 in value and on all organs over $150.00. 15 per cent. on mechanical player pianos, phonographs, music boxes and the necessary records. This tax is to be collected by the manufacturer at the time of the sale or delivery to the dealer.

Protection has been given the wholesaler and jobber by an additional 1 per cent. sales tax on sales made by the manufacturer direct to the retailer or consumer or on importations by the retailer or consumers. Thus a manufacturer, if selling another manufacturer, wholesaler or jobber must invoice and collect the 1 per cent. tax. On sales made by a manufacturer direct to a retailer or consumer, he must invoice and collect 2 per cent. sales tax.

A recent ruling of the authorities at Ottawa is to the effect that the department holds manufacturers responsible for the 2 per cent. sales tax on sales to concerns doing a wholesale and retail business unless the wholesale and retail branches are entirely segregated. A retailer is defined as a person, firm or corporation selling exclusively to the consumer.

Operators of planing mills or sash and door factories, whether conducted separately or in connection with some other business, are classed as "manufacturers," and must collect the sales tax on all sales. Contractors or sub-contractors are regarded as retailers and all sales by manufacturers to them must carry the 2 per cent. tax. If a contractor or sub-contractor manufactures some of his own material, such as sash, doors, mouldings, etc., he must charge and collect the 2 per cent. tax on the cost of such material. The planing mill or sash and door factories only collect 1 per cent. on sales to the wholesalers or jobbers.

Present no Time for Timidity

The present is not a time for a "ca' canny" attitude as far as lumber buying is concerned. True the lumber industry is in an unsettled condition and slight reductions have been made on certain stocks, yet it is probematical which way the market will go. Lumber stocks are still less than normal, with a large potential demand ahead. Should any part of this demand materialize, in the near future, values are bound to stiffen and perhaps increase.

Another point to bear in mind is that the lumber manufacturers, wholesale yards and wood users are carrying reduced stocks with a tendency to allow them to dwindle still further. Thus the woodworkers are working on a very narrow margin of safety. While the present may not be a good time to stock up to any extent yet all manufacturers should watch their lumber piles closely and see that they do not get too low in any particular line. The transportation situation and the proposed increase in freight rates should also be kept in mind.

With the majority of wood users operating with low stocks, there is the possibility that a considerable number may run short and come into the market about the same time. In that event there is chance that there may not be sufficient assortment to satisfy this demand. Several instances have occurred recently where manufacturers have run out of certain important items and have been forced to pay top notch prices to secure immediate delivery of the required material. This does not look like good management. Play safe by all means but play safe both ways.

The Design and Application of Panelling

Has Six Distinct Period Expressions—Wide Variety of Applications Possible—Oblong More Pleasing Than Square—May be Adapted to Any Class of Home

By W. H. Shaw

One of the most effective ways of relieving the uninteresting monotony of plain walls and ceilings is by panelling. Because of the structural character of the material and the natural beauty, whether carved or plain, panels are unusually attractive; they give the impression of permanence and stability which being in the walls themselves is transferred to the occupants —and what family objects to such implied virtues.

Panelling has practically always been in favor. Earliest architects have used it and each age has added traditions and insignia of the times. Though perhaps during the times between the late Georgian and early Victoria days the pleasing mode of interior decoration was temporarily forgotten, it soon again won favor—and why not?

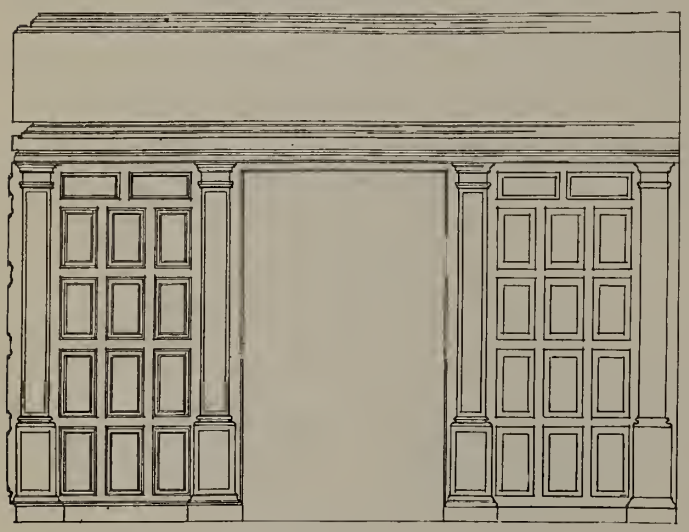


Fig. 1. The Elizabethan style of panel

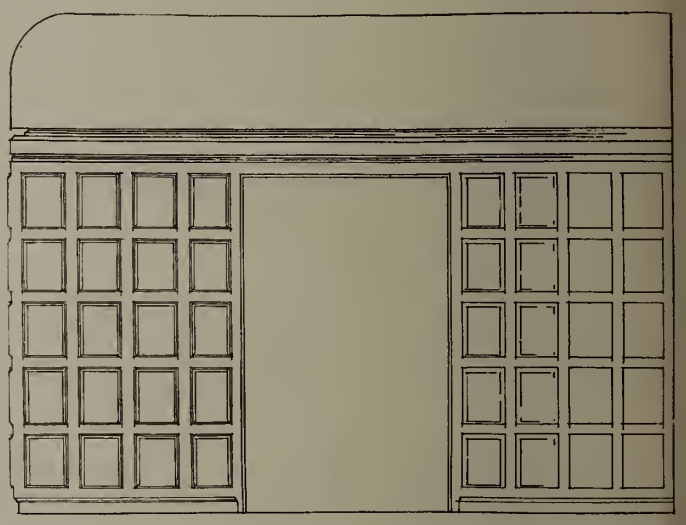


Fig. 2. Panelling from the Jacobean period

English panelling is generously divided into six period expressions: Elizabethan, Jacobean, William and Mary, Queen Anne, Georgian and Adam. The outlines and general features of each are pictured here, taking the problem of a doorway and its panels in each period.

Lend Size and Dignity to Rooms

Many will complain that panels seem to limit and bind the walls, giving the impression that the room is strapped or tied. It may be argued that as many ships make a harbor seem larger and as many trees against a sky make a horizon appear farther away, so panels, correctly used, give an impression of size and perspective to rooms properly treated. Such a treatment will beautify otherwise uninteresting walls. As soon as the room is panelled, becomes distinctive, and takes upon itself a certain individuality not possible with patterned decorations.

It is easy to make such rooms all different, no matter how large the house to be decorated. In the first place, in addition to the six styles of English panelling mentioned, many other styles of panelling are available. The possibilities are endless. Each room has its wall spaces and accordingly its opportunities. Each room has its outside and inside exposure, its relation to other parts of the house, and its place in the general decorative scheme of the entire house. Each room has its woodwork and its chief feature, a window, a mirror, or a cabinet. There is nothing monotonous about panelling if it is carried out correctly.

The Elizabethan Style

In detail 1 is shown the Elizabethan style. In this particular class of panelling, oak was generally used and the panels were small, being separated by broad stiles and rails. Not infrequently the top row of panels had a different shape and proportion from the others. In many instances the panelling ran only to the wainscot height with the plastered wall above. At the top of the panelling was often a carved or moulded frieze. The ceilings were either beamed or moulded in geometrical patterns. Door frames and pilasters were carved in low relief. Doorways and fireplaces were often objects of rich ornamentation, in the shape of pilasters, and at the top, elaborate carvings and mouldings. The window openings were usually large.

The Jacobean Period

The Jacobean, shown in the second sketch, followed the Elizabethan. It covered the years 1603 to 1688. It consisted of rows of small panels surmounted by cap mouldings. The feature of the detail is the bevel moulding at the bottom of the panel and the moulding of the side and top of panel stopping against the bevel section. In low studded rooms the panels were carried to the ceiling, but sometimes, as shown a cove surface connected the ceiling and wall freize into one, giving a low ceiling effect. In the freize and cap mouldings there was often some crude carving. While oak was principally used in this class of work, pine deal, Scotch fir and sometimes cedar were employed.

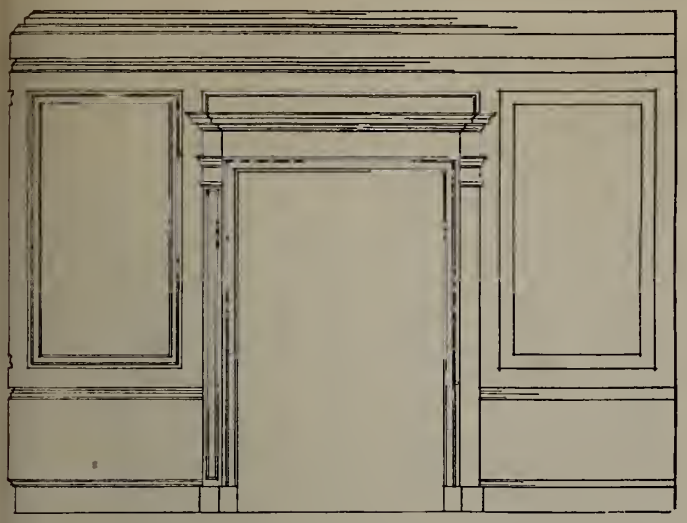


Fig. 3. Final development of Adam interior decoration

Fig. 4. Large panels and vigorous mouldings mark William and Mary design

The study of both the Elizabethan and Jacobean styles brings up the question of the shape of the panels. Builders and millmen should remember that, for some psychological reason, square panels are not pleasing. The oblong, on the other hand, is always restful and make possible all sorts of combinations of lines. The oblong combined with the square, also gives remarkable opportunities. It might be suggested in this connection that when it becomes desirable to make three panels of equal size and shape, the centre one should be in reality a little larger if possible, otherwise it may look smaller. This rule, however, applies primarily when particularly wide styles are used and when the room is large enough to be received at long perspective.

Adam Style Made Deep Impression

The third design created by R. & J. Adams produced a deep impression on English interior decoration. It might be said to be the final development. The proportions of the panelling, the details of the moulding and carved ornaments are always refined. Among the distinguishing features is the elimination of wood wainscot and styles. The wood moulding was applied directly to the plaster, no panels were shown below the chair rail. Although seemingly wide, mouldings are low in relief and consequently do not appear heavy. The door surroundings take various forms, always markedly architectural in character.

The William and Mary style, 4, is generally classed as the third in the development of English panelling. It is a simple arrangement of one large panel above a low wainscot. The feature of the detail is the fact that the moulding forming the panel is so shaped that the line of the panel is considerably in front of the line of the stile. The main emphasis of this period is placed on large panels, mouldings of bold vigorous profile, and rich carvings. The architectural influence of the walls on furniture design began to be pronounced in the William and Mary contours. This relation between architecture and furniture is a real basis for successful decoration. Designs even so simple as William and Mary are better for being placed against walls of their own period.

Introduction of Painted Panels

Carved and panelled woodwork was a highly important item in the decoration of early Georgian rooms, illustration five. This fifth stage in English panel development witnessed the passing of oak and the substitution of painted pine and deal. The colors used were white, grey, grey green, and sometimes blue, brown or yellow. The general proportions are bold, and the details of the mouldings, while bold are simple. A moulded chair rail often separates the base panels from the upper panelling. The door surroundings were frequently graced by superimposed pediments,

(Continued on page 51)

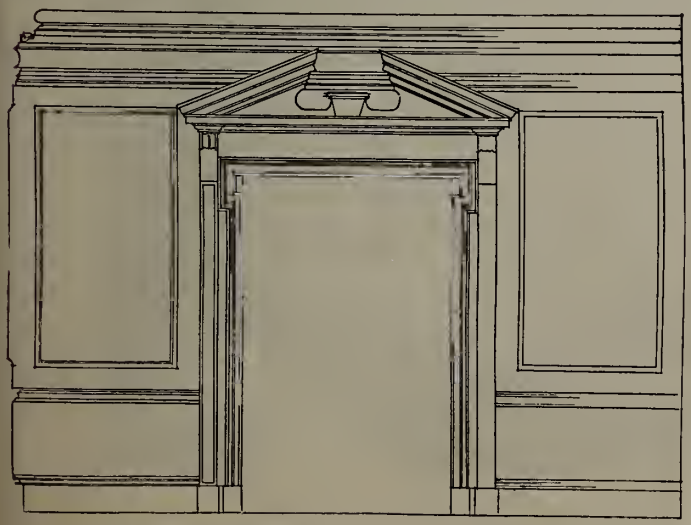


Fig. 5. Georgian period witnessed introduction of painted pine panel work

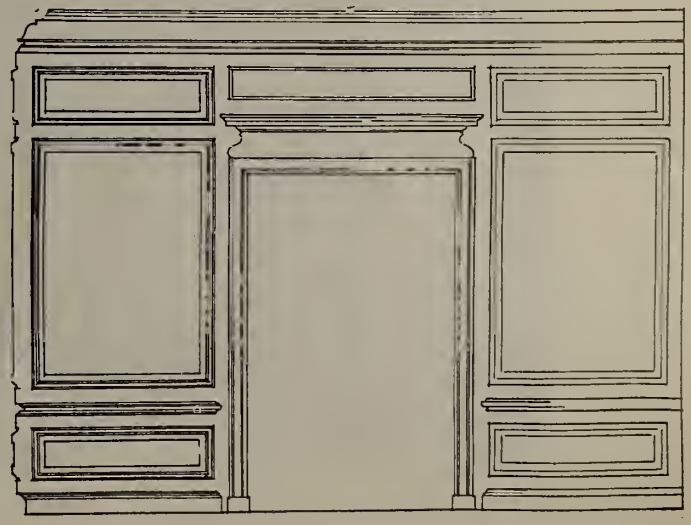


Fig. 6. This design was popular during the Queen Anne period.

Economical Features in Home Construction

Planning to Eliminate Unnecessary Expenditures Practical Necessity—Saving Effected Without Sacrificing Comfort, Convenience or Appearance —Suggestions that Tend to Lower Costs

One hears many statements to the effect that building costs have reached their peak and that lower costs are imminent. In spite of all that has been said and the various predictions made, the values of building material seem to rise from week to week and construction costs keep pace. Regardless of the large amount of money involved, the shortage of homes and the increasingly high rents have, perhaps, not forced, but, at least, made it advisable that many people undertake the construction of their own homes. Thus building goes on apace much to the dismay of those who have adopted the watchful waiting attitude.

The present high costs have had one beneficial effect, namely, that of forcing the prospective home-builder to practice economy and scrutinize every item and detail of his new house. Thus, this might be termed an era of sane building, as most of the homes that are going up today are simple, yet attractive and designed to provide both comfort and convenience.

The accompanying illustrations were taken from a plan sheet prepared by the Long-Bell Lumber Co., of Kansis City, Mo. The plan is of a cosy, five-roomed bungalow, that, while designed for economical construction, embodies many inexpensive touches that add to its simple beauty and give it an air of cosy hominess. The layout is such that practically all waste space is eliminated. The screened-in porch, which is so desirable during the warm summer evenings, opens into an attractive living room provided with a cheery fireplace. The dining room is well lighted and a built-in buffet lends an air of convenience, as well as adding to the appearance of the room.

A window provides an abundance of light in the pantry so that all the mixing and preparing of food may be done at the built-in cupboard, where everything would be handy. The large closet off the kitchen provides ample storage room for linens, bedding, etc., and should save many steps in the course of a week or month. The screened porch at the back would make a very cheerful breakfast alcove or even dining room during the warm weather. Ample closet room is provided for in both bedrooms. It is good to see a house with so many windows as there is nothing like an abundance of light and fresh air. It is difficult to be blue or discontented when the surroundings are bright and cheerful.

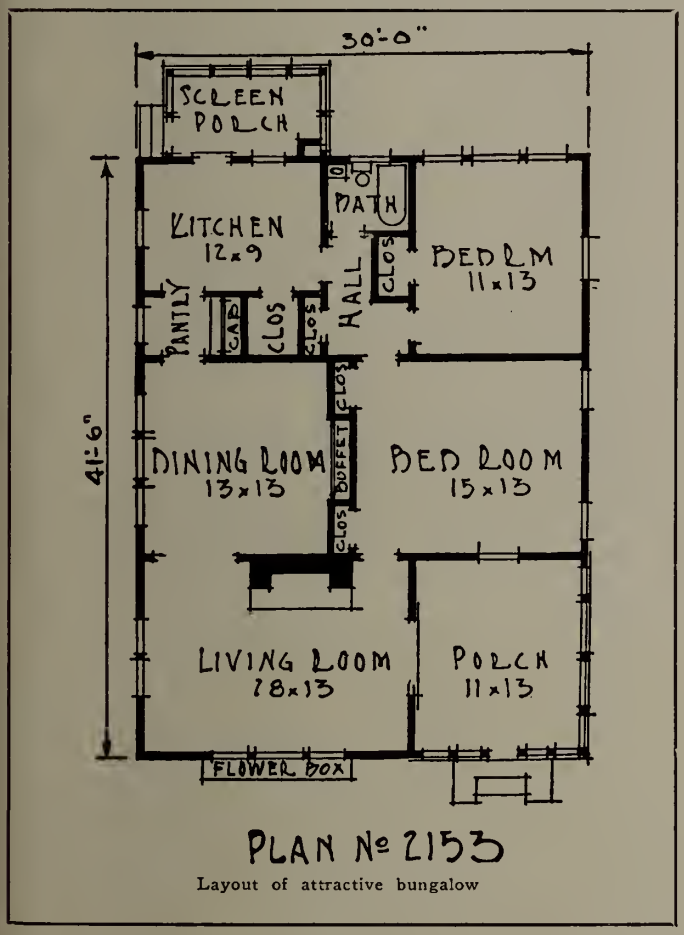
If one were building a more pretentious residence in all probability an architect or other expert would be consulted. The design and construction of the smaller dwelling embodies problems all its own as it

An attractive inexpensive home

is the problems of the large house intensified. One must provide the same living conditions in a more restricted area. The room sizes should have careful consideration and be worked out so that stock lengths of joists may be employed without further cutting. A twelve-foot joist, allowing for a bearing at each end, will give a room eleven feet two inches wide.

For the ordinary sized home a two by ten or two by twelve joist is sufficient provided it is bridged. The bridging consists of pieces of wood nailed diagonally between the joists, at least once in every span, to stiffen them. The depth of the joists whether 8 in., 10 in., 12 in. or 14 in., depends on the length of the span and the stock available.

Combining the outside and inside basement stairs is a very economical and convenient arrangement. This is usually effected from a grade entrance by having a few steps leading down from the kitchen. When this form of construction is possible it saves the expense of one set of stairs.



PLAN Nº 2153

Layout of attractive bungalow

As far as possible special designs in mouldings and interior trim should be avoided as a considerable saving can be effected by using stock designs. The same applies to special details of construction, stock doors, sash and frames all tend for economical construction. When special work is called for, the bill is sure to be high for it is costly to set machines up for short runs. In addition, a long wait may ensue while the special features are being made.

A number of inexpensive variations may be embodied in trimming the interior. As a rule ,a wide choice of stock designs of trim are available. Excellent effects are often secured by using plain trim with square head instead of miters and the expense of making the miters eliminated.

The designing and planning of a home has resolved itself into a case of using the head to save the pocket book, and it is surprising the unnecessary expenditure that may be avoided by a little thoughtful planning.

Application and Design of Panelling

(Continued from page 49)

either straight or interrupted by a central urn or bust, the same motive often being echoed in the chimney piece. Base, surface, panels and cornice were often enriched with ornaments.

The Queen Anne, detail 6, a small panel is placed above the large panel, about the same size as the small one in the wainscot. The detail of the mouldings is soft and round, with a raised member in the centre of each moulding. The carvings were rich, as in the William and Mary times, the doorway and mantlepieces receiving the especial enrichment of carved and moulded ornamentation.

Feature of Any Home

As mentioned before many other styles of panelling are at ones disposal, and today what was once possible only for the rich, can now be secured in the homes of the blessed middle class. Even with papered walls, "stripping" or latticing to obtain panels is a steadily growing practice and more or less elaborate decorative strips or styles are used.

In panelling, the panel is the thing and the style or strip which makes the panelling is suborinate to it. Therefore, a wall simply cut in two is not advisable, as it makes the stile the figure. Stiles should on the whole, be broad. The broad panel strip, lattice, or batten is desirable because it gives not only the suggestion of richness but of permanence and adds to the impression that the panels have been especially prepared for and built into the wall. Panel strips may be enamelled or stained to harmonize with the general treatment of the room and with its woodwork, but, however, finished, they should offer substantial lines, particularly if the contrast in color between the panel and strips is striking. A dark wall panelled with narrow white stiles, or light walls panelled with narrow dark stiles, are not pleasing. However, if both the stiles and panel are of similar tones the narrow stile may be permitted. Narrow strips may be used with narrow panels.

Panelling, in the modern sense, has very practical reason for being. It is not only logical and therefore, beautiful but it offers certain indisputable advantages, it is easy to decorate, it is wholesome, durable and permanent, and most of all, suited to the strain of wear and time.

Catalogs and Publications

Saw Fitting is the name of a small booklet recently issued by Wm. B. Mershon & Co., Saginaw, Mich. In addition to describing some of the saw fitting tools manufactured by the Mershon Co., practical suggestions are given on the care and upkeep of band resaw blades. A copy may be had on application to the above mentioned firm.

The Canadian Blower & Forge Co., Limited, Kitchener. Ont., have issued a Catalog describing their system of factory ventilation. This system is adapted, primarily, to removing the excess moisture and fog which is found in dyehouses and bleacheries. The system can be applied to any plant that is troubled with heavy moisture condensation in any department.

Spreading Gospel of Better Furnished Homes

Increasing the Demand for Quality Furniture—Educational Scheme on Comprehensive Scale—Will Manufacturers Adopt New Sales Policy?

By R. W. Wells

The scheme of maintaining and enlarging the market for their products through a broad, far-reaching publicity campaign and closer co-operation with the retailer, as adopted by the furniture manufacturers, through the Furniture Manufacturers' Association, is a progressive, commendable move, and one that should have far-reaching, beneficial results. Under the new order of things, when the education campaign is in full swing, the representatives of the manufacturers will cease to be salesmen and order takers and will rise to the status of missionaries or ambassadors of better-furnished homes.

The new duties of a furniture salesman will be to sell the retail dealer the idea of warm, cosy living rooms, stately, dignified dining rooms and tastily furnished homes rather than dispose of individual pieces of furniture. He should also know how his goods are manufactured, the different operations performed, the various woods and finishes employed, the details of the different styles which are so popular and which are so instrumental in raising the status of the furnished home. Armed with this information, the salesman will be able to instruct the retailer as to the fine points of the different pieces, point out the details of their construction, style and finish, and instruct him as to the different woods so that he will be able to talk intelligently on them and distinguish the genuine from the imitation.

Considerable misunderstanding exists in the minds of the retail furniture dealer, his employees and the buying public as to the value and merits of veneered stock. Many think that veneering is resorted to, to cheapen the construction of furniture and that it is far inferior to solid material. This is not so and it should devolve upon the representative of the furniture manufacturer to combat this false impression. If he knows the different operations performed in making veneered stock, together with the arguments and facts in favor of veneered or built-up material, he should be able to convince the dealer that a veneered article is better than one made of solid wood, that it is stronger, lighter (less freight) and more lasting. When veneered work fails it means that the article was not handled properly, that it was exposed to dampness or moisture or that the manufacturer did not do his part as carefully and thoroughly as he should have done. When the dealer is convinced of these facts he will be able to talk convincingly on veneered furniture and help overcome the prejudice which exists against this line of furniture. Armed with this knowledge he will know good veneered work from bad, with the result that veneered furniture will not be condemned because of faulty workmanship and the quality of veneered furniture put on the market will necessarily be raised.

Perhaps a change in selling methods will take place. Instead of arming his representatives with blocked-out photos, showing individual pieces of furniture, the manufacturer will provide the salesman with handsome photographs of attractively furnished interiors, in which each suite and each individual piece is displayer to the very best advantage. Such photos should enable the buyer to visualize the furniture in the home. This is a very important step in the campaign for tastily furnished homes.

The same suggestion could be carried out in all catalog work, retail and newspaper advertising. If followed, it should lead to larger orders being placed and the market for furniture being extended. The tendency, both on the part of the furniture buyer and on the part of the buying public, would be to purchase the complete suite or even all the furniture shown in the picture, instead of picking out and ordering the individual pieces.

This is salesmanship of a high order and is what is needed to put furniture and attractively-furnished homes across in a big way. Every one in the chain of distribution, the manufacturer, his representative, the retailer and his sales force and the ultimate buyer must be able to visualize the furniture in the home. Talk, no matter how convincing, cannot bring this about to as good advantage as attractive illustrations.

Educating and selling the idea to the traveller on a comprehensive scale falls upon the furniture manufacturer, either as an individual or working together in groups or as a whole. It is not too early to start this course of training. The campaign will soon be under way and the salesmen should be in a position to jump in and put their shoulder to the wheel and boost and talk the idea for all they are worth. The salesman is the representative of the manufacturer. It is he who gives the personal touch and makes the personal contact between the manufacturer and dealer. Therefore his attitude and his enthusiasm or lack of enthusiasm can do a lot to increase or nullify the value of the publicity campaign which is to be carried on through trade journals, newspapers, and by the aid of attractive circulars and dealers' advertising service.

The scheme is a comprehensive one and must be carried out in a large way if the furniture industry is to reap the fullest benefits from the efforts expended.

Manufacturing Hockey Sticks

The Hespeler Wood Specialty Co., Limited, Hespeler, Ont., who were recently incorporated to manufacture and deal in hockey sticks, bent wood and specialties, have a very complete plant. It is the intention of this firm to specialize in a high-grade line of hockey sticks, and with the equipment installed, they are in a position to produce these at the rate of from 75 to 100 dozen per day. The machines installed include a C.M.C. power feed rip saw, Cowan rip saw, 36 in. C.M.C. band saw, 30 in. Cowan band saw, Cowan buzz planer, 24 in. surface planer, and the necessary steam retorts, benders, sandpapering wheels and other small equipment. Power is derived from a 100 horse power engine. The plant is heated by a fine heating system. An up-to-date dry kiln is also operated in connection.

Quantity Production Applied to Chairs

Parts Standardized to Increase Output—Electric Stacker Assists in Yard—Parts Sent to Finished Stock Room—Contract Piece Work Basis Used

By Lloyd P. Robinson

It is a far cry from Thomas Chippendale. cabinet maker par excellence, laboriously turning out chairs with knife, chisel and hand lathe, to Heywood Brothers & Wakefield Company, with their great factory in Chicago, embracing 620,000 feet of floor space and producing approximately 600,000 chairs annually, largely by the swift processes of machinery. Two centuries of amazing electrical and mechanical development, together with industrial organization experience, lie between the two. In this plant one discovers a perfect development of the modern American system of quantity production by standardization of patterns and minute division of labor, which Henry Ford first made famous. This standardization method effects a remarkable economy in the production of chairs. About 1,000 men some 200 women and girls are employed at the Chicago plant, and these workers produce 600,000 chairs, besides a tremendous quantity of rattan furniture, baby carriages, sun parlor and breakfast room tables each year.

Let us start with the lumber on the sticks in the chair factory's yard. In this yard, which covers approximately 136,000 square feet, one will see piled in soldierly lanes, 6,000,000 to 7,000,000 feet of hardwood lumber, about a year's supply. Most of these piles will be found to tower upward 45 feet. Here and there about the yard men are discovered erecting new piles of lumber to take the place of those that are continually being torn down to go into the dry kilns. The builders of these piles are aided by an electrically operated stacker, which stands by the growing pile and raises the boards up one by one on a continuous belt to the men doing the laying out on the top of the pile.

Many Woods Used

The stock in the piles consists chiefly of No. 1 common stock in quartered and plain oak, plain and quartered red gum, maple, birch, soft and rock elm. with a comparatively small quantity of mahogany. It will be noticed that no FAS stock is mentioned. This is because virtually none of the cuttings required in the factory must be over 40 inches and plenty of clear stock of these lengths can be secured out of No. 1 or No. 2 common grade stuff. The longest cuttings which the plant requires are for the making of table tops.

A great deal more birch will be used this year than last, because the plant is turning out better quality chairs than formerly. Considerable more red gum will also be used, as it has been found that this takes a walnut stain, and matches up with walnut parts in the construction of walnut-stained chairs, much better than birch or maple. The birch serves best in the making of mahogany-stained chairs.

Abutting the yard is a long building housing 20 dry kilns, each with a capacity of from 12,000 to 15,000 feet of lumber, depending upon the size of the stock. Fifteen of the kilns represent the cold water condensing system and five of them the natural draft system. These kilns generally have around 200,000 feet of lumber drying in them all the time, the stock remaining in the kilns on an average of 20 days. When this drying has been effected the stock is ready to pass into the great factory building across the street.

Stock Cutter of Added Importance

The lumber goes first to the stock cutting room. In this department we find that the stock cutter has advanced in importance in the economics of chair making during the still present era of extraordinary hardwood lumber prices. He has a chance, by taking the trouble to exercise the gray substance in his cranium, to save much of the high-priced lumber that, under easier conditions, might be wasted. There are many ways in which a thoughtful cutter can save stock by taking a moment's time to figure the best way to take out a defect, but a "butcher" or "slasher" can waste a great deal of stock by just cutting ahead aimlessly along the board, according to the specified lengths. The extra time a stock cutter will have to take to estimate the most economical way to cut a particular board is worth while, for his time is not as costly as the lumber.

In the factory the saws, lathes, horses, planers, joiners and other tools are all driven by electricity, and there are even electrical sanding machines. Each department or group of machines and men has its particuar duty to perform in the building up of the finished product. One department may make the legs of a chair, another the seat, another the splats, another the arms and so on.

Each department gets the pattern of the part which it is to make and concentrates on that part. When its order for so many chair legs, or seats, or arms, as the case may be, has been filled, the finished stock is sent into the stock room, where the stock keeper records the receipt of the stock in his books. Finally, when each department has delivered over its part and all the parts of a chair are in the stock room, the stock keeper reports to the foreman of the assembling department and the latter takes out the stock and assembles the chairs.

Patterns Worked Out by Hand

The patterns originate in the office of the designer. He turns his designs over to the sample-making department, which consists of a few very high-class and skillful cabinet makers, who turn out the sample articles by hand, very much after the method of the ancient cabinet makers. It is from the sample hand creations of these men that the molds for the bending and the turning knives, etc., are set for the quantity production by machinery in the specialized departments.

The company has worked out a very satisfactory method for maintaining efficiency and keeping the production effort of its workers up to the proper pitch. Virtually all of the work is piece work, by contract. The foreman over each department or group of machines is given the contract to turn out a certain number of pieces at a specified price. He, in turn, pays the men who work under him. He himself works at a machine like his men do and receives pay for the pieces he produces. But in addition to this he receives what profit he can make out of the journey-

men under him. And you can bet there is no loafing on the job with this incentive to stimulate the foreman to rapid production. He sees that each worker does an honest day's work, for he knows that if the man doesn't he will be losing money.

Attitude of Workmen

An interesting sidelight on the operation of the factory was found in the department where dimensions of oak were being bent into chair rockers. Ordinarily the benders would take only two bendings, or four pieces out of the steaming retort at a time, but this workman was taking out eight, enough for four bendings. As a consequence he increased the risk of breaking the last two bendings, for before he could get to them they would begin to cool and dry. Before the critical scarcity of labor developed a bender would not have dared do this while an official of the plant was looking at him, but now he felt more sure of his job because it was hard to fill. Consequently, in order to save the time it would take to open the retort a second time, and increase the quantity of his own production, he took a chance on wasting his employer's stock.

All of the bending is done in molds, some of which are worked by hand and others by machinery. The lighter pieces, such as the parts for the bent wood Vienna chairs, can be bent in the hand molds. But curving chair backs, rockers and other heavy pieces, must be done with machinery. The moulds enclosing the bent pieces are put into drying apparatus and subjected to sufficient heat to dry them in 20 minutes to a half hour. When the stock has dried the molds can be taken off and the bend will remain permanently.

There is one department in the plant, however, where nearly 100 per cent. hand work is required to turn out the product. This is in the rattan furniture department. The weaving of the rattan chair, couches, tables, pedestal lamps, baby carriages and other articles must all be done by hand. Only the wood frames upon which the long strips of reed are woven are machine turned and machine bent. The rockers, of course, are cut out by machine and bent into molds by machinery.

A great deal of interest is taken in welfare work for the employees, and about two weeks ago installed a cafeteria, which is already proving its value. An employee can get a well-cooked, wholesome and savory lunch for from 25 to 35 cents. A wide variety of foods is offered each day and the cost of each is reduced to a minimum, no effort being made to make a profit. It is needless to say that all the food is first-class. The coffee costs but 5 cents a cup and two slices of bread with butter go free with each order.

The plant has its share of labor troubles, but in general there is a great deal of good fellowship between the workers of the more intelligent kind and the officials.—Hardwood Record.

Suggestions for Increasing Your Profits

Reducing Power and Heating Account—Keeping the Bench Hands Producing—Importance of Veneer Room Not Realized—Cutting Insurance Rates

By Furniture Manufacturer

Before continuing our walk through your machine room, which we commenced last month, we will, with your permission, take a look at your power plant.

Your engine is, of course, an up-to-date automatic cut-off engine, and I see that you have a system for using the exhaust steam for heating purposes. That vacuum pump has paid for itself many times, no doubt as it has enabled you, you say, to dry all your lumber and heat your factory in winter with exhaust steam from the engine. Some factories are now accomplishing the same thing without a vacuum pump and with an injector, but personally I have never had any experience with it and cannot say if it is an improvement on the Webster system, but will only say that if it is, it must be good.

Electric Motor to Reduce Power Bill

Have you ever tried using a motor, run by hydro-electric power for part of your equipment such as your shaving exhaust fan. Where there is a heavy machine taking a lot of power continuously such as a fan which runs whenever the plant is in operation, a motor is an economical way of furnishing power to it, and if you are so situated that you can count on a continuous supply of electric power, at reasonable rates, you should certainly look into the question of the comparative cost of steam and electric power on your fan or any other machines taking a steady supply of power to keep them in operation.

You say that you have a good deal of trouble with scale on your boilers. Why not put on skimmers that if blown off every hour or so, help to remove a great deal of the impurities from the water, and for some waters are invaluable in preventing scale. Perhaps also your compound is not suited to the water. It might pay you to have your feed-water analyzed and their experiment with different compounds until you get one that is suitable. Finally a regular inspection by the "boss" himself will sometimes nip this trouble in the bud,—which is the best place to nip it—and if it does you will be well repaid for your trouble, both in the saving of fuel and in prolonging the life of the boilers.

And now, after this cursory look through your power plant, let us take a look at a few of the machines on the second floor. The ordinary trim saws we will walk past and the square chisel mortiser, which we spoke about last month. The triple-drum sander is a good one, I used to have one of the same make and its capacity was phenomenal on rough work. As regards your belt sanders, you have several and no doubt they are well adapted to the work you have for them. When it comes to large flat surface work, such as veneered tops, there is, in my opinion, only one make of belt sander to be considered. We cannot mention manufacturers names here, but for flat surface work your belt sander should have a sliding shoe, the length of stroke of which can be regulated as well as the amount of pressure. It is so superior to anything else I have ever seen, that it is, in my opinion, the most economical and most essential piece of equipment in a woodworking factory making any large flat surfaces.

Let us take a quick glance through your cabinet-room. I notice that each bench hand has a good

light, a good bench and a glue pot with heating attachment at his bench. They seem to have plenty of room to pile their jobs behind them as they are made. Very Good. I Presume that "odd" man walking about among them, is there to wait on them and keep them supplied with material. I was in a shop recently, where each cabinet maker had to go and hunt his own material, and also had to carry a lot of his own work to a drum sander in the centre of the floor. The consequence was that there was a great waste of time. The proper place for a skilled bench hand is at the bench, and if an "odd man" of the necessary intelligence can be made to wait on, say, 6 or 8 cabinet makers and do their odd work for them, enabling them to keep at the more highly skilled part of the work, his wages should be well repaid to the employer. If you are not doing this, give it your consideration.

And now for your veneer room. There is so much to be said here that it might fill this whole issue of the "Canadian Woodworker" I shall skim over it by saying that in a shop the size of this, where you employ, as I see, 6 veneer men at least, you should have a machine for trimming the edges, another for taping You should have a good hydraulic press, use vegetable glue, and have a good spreader. Finally, and more important than all the rest put together, you must have a good headman in your veneer room, one who can match veneer well and who is careful and thorough in all details. Veneering is a business by itself and while there are many pitfalls for the unwary, you will, judging from my experience, get more satisfaction in making all your built-up stock in your own factory, if you are properly equipped and have a reliable veneer foreman, than you could possibly do by depending on some outside source of supply.

Veneer Room Most Important

Perhaps the above remarks are too "general" in character for you to get much benefit from them, but I believe there is no part of your factory which would better repay your careful thought and investigation, if you are trying to get along with anything but the best equipment.

And now your finishing room. I see at the first glance that you have three drying compartments, one for fillers and two for varnish. Quite right, these are indispensable now-a-days, and will save from a week to ten days at least in getting the goods through this room, and besides will do better work than the old fashioned method of "wait and see." You are putting your varnish on with a sprayer, of course. Those small rubbing machines, run by compressed air, are great labor savers. But, there is one machine that I do not see and which is of the greatest value for large flat surfaces, and that is the large "stroke rubbing machine" made by the same firm, by the way, that makes the stroke belt sander, referred to above. This machine, the "stroke rubber" as we will call it, will do more work than three of the small compressed-air rubbers on large surfaces, and if you have enough work for it you simply must get one at any cost. If you could save two rubbers you can easily figure what you could afford to pay for it, and it won't cost you a quarter of that.

By the way, I am surprised to see that your factory is not equipped with a sprinkler system. Is not this a pennywise policy? A few years ago, I equipped a factory with a sprinkler system and it paid over 12 per cent. on the investment in saving in insurance premiums alone, besides the added protection. Prices, of course, are very different now and insurance has not gone up in anything like the same proportion as piping, etc., but look into it and ask yourself if you can afford to pay 2½ per cent. premiums instead of .30 per cent. for your insurance.

I had intended to say something about your packing room, and your system of inspection and shipping, but you are probably tired of me by this time and as I don't want to be kicked out, I will go out, and if you are kind enough to grant permission may call again next month.

Not Much Room for Pessimism

The Royal Bank of Canada in their monthly business letter outline the recent decline in prices, and the prospect of lower prices as follows: The distinctive feature of the last two months has been the retail sales at reduced prices which have taken place through the United States and sections of this country. They have been given great publicity, with the probable net result of leaving in the minds of many people an exaggerated idea of their importance. The governing influence in the decline was the shortage of credit and this must continue to be an extremely important factor. It seems probable that continued restriction of credit will present a barrier to the wild upward movements of prices which have characterized the period since armistice, but belief in a permanently lower level in the near future is hard to justify. Declining prices in a world where almost every important article is in scant supply seem impossible. How long the shortage will continue is beyond prophesy. Unless labor conditions become more settled it will take some time to remedy. Production has seldom been so slow and expensive as it is at this moment in many industries. Strikes and lowered efficiency of labor, difficulty and delay in obtaining raw materials, all contribute to heavy costs of operation, and at the same time retard production. Even were the present effective demand filled, there would still be, in the stricken countries of Europe, an enormous potential demand, which may make itself felt on the market from time to time during the next few years, and in so doing give a fresh spin to the wheels of commerce all over the world.

The Matter With Canada

Too many diamonds, not enough alarm clocks.

Too many silk skirts, not enough blue flannel ones.

Too many pointed-toed shoes and not enough square-toed ones.

Too many serge suits and not enough overalls.

Too much decollete and not enough aprons.

Too many satin upholstered limousines and not enough cows.

Too many consumers and not enough producers.

Too much oil stock and not enough saving accounts.

Too much envy of the results of hard work and too little desire to emulate.

Too many desiring short cuts to wealth and too few willing to pay the price.

Too much of the spirit of "get while the getting is good," and not enough of the old-fashioned Christianity.

Too much discontent that vents itself in mere complaining and too little real effort to remedy conditions.

Too much class consciousness and too little common democracy and love of humanity.

Good example of mill construction. Type of building best adapted for furniture and woodworking plants

A Better Way to Build Your New Plant

Modern Industrial Buildings Planned with Definite Aim in View—Due Consideration to All Governing Factors—Efficient Design Reduces Costs and Increases Production

By Frank D. Chase*

The old-fashioned factory was often a shed of wood or brick, located without particular reference to anything—except perhaps the personal pleasure of some official of the company, or with the sold aim of serving a local market. The development of the modern industrial plant is a scientific process. It begins with the analysis of the entire problem and discusses a great many vital features before actual building operations begin. The old order of things has passed away, and industry today is at the threshold of a new era of world commerce and world competition, as well as keener competition for domestic trade developed by the urgent demands made upon her by the war. The plant which is not designed and operated to meet these changed conditions, is going to have a hard time to survive.

The labor situation is a difficult one and will continue so for many years. This means that labor economies must be provided for. Many a manufacturer is today facing the necessity of abandoning a plant which produces excellent goods, simply because of excessive labor costs. In many instances these men recognize the conditions and are already taking steps to perpetuate their business by securing a plant which will permit operating economies.

The average manufacturer is glad to scrap any amount of equipment if it can be proven that the investment in new equipment will be a good one, i.e., reduce labor costs and increase output. There is no investment a manufacturer can make today which will so reduce costs and increase output as the investment for an efficient plant, and the modern manufacturer appreciates this fully.

Most manufacturers can recall, through personal experience or observation, plants which have been built without a definite plan to attain operating efficiency. The operating results obtained in such plants do not compare favorably with those plants where the essential factors of location, design, construction and operation are pre-determined by careful study and logical analysis. The modern manufacturer must perforce, to a greater and greater degree, apply to his problem an analysis of these factors; and furthermore no longer rely on his own judgment, but retain for his assistance an industrial engineer, who by reasons of his experience and opportunity for wide observation of the best practice in the industrial field, covering a variety of expedients for economy, brings to bear upon the manufacturer's problems the practical viewpoint which develops the best plant to meet existing conditions. This service might be likened to that of an attorney retained by a client to advise him before taking steps in business ventures which have a legal status.

The development of a modern plant involves two primary elements; namely, organization and plant. Organization includes financing, the organization of executive, operating, purchasing, sales and other departments, in other words, the building of a human machine. This article treats only of the plant, or the physical machine, and although the two are closely related, and in most instances must be worked out simultaneously, our discussion will be confined to the latter.

Choosing the Location

Plant location is the first consideration. This location must be determined with reference to the following. Raw materials, transportation, fuel water and power, labor, market. A proper location means the geographical location, i.e., the proper province and city or town which best provides these requirements,

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and in which manufacturing can be conducted at a profit.

It goes without saying, of course, that it is not possible always to obtain raw materials in the place in which the goods are to be produced or marketed. The question, then, of freight rates and service on raw materials versus finished product must be considered. The same applies to the question of fuel and labor. It is frequently possible to import labor if none is to be had locally. It seems almost superfluous to emphasize the need of a ready market. But thousands of businesses have failed because of such a lack. Competition should always be considered, as it frequently destroys a market. The growth of a city or of a state is often governed by the development of a leading industry, and many minor industries are thereby affected.

Given the city or town in which location is found desirable, to obtain a site the process of elimination must be repeated, bearing in mind the following: railroad and teaming facilities, labor supply, transportation of labor, housing of labor, sufficient area for present and future needs, adequate water, sewage, light and power facilities, accessible market.

The railroad will handle the raw materials and finished product from their sources to the plant and from the plant to market. This means that the site must be located on the proper railroad or railroads. If teaming facilities only are required the site must be adjacent or accessible to well-paved streets, as the modern product must be handled by truck rather than by team, and the length and cost of hauling for both raw and finished product must be determined beforehand.

A successful plant must be adjacent to the kind of labor, as well as the quantity of labor which is necessary, and frequently different sections of the same city offer a wide difference in the availability of the necessary labor. An industrial concern is frequently put to large expense to provide transportation for employees, and many factories are at a disadvantage because employees will not walk or ride great distances to work. It is as important to transport labor satisfactorily as it is to transport materials. This point should not be overlooked.

The employer's responsibility for the moral and physical welfare of his employees no longer ends at the gate. Our government is of necessity recognizing this obligation for its employees in many branches of the service. Proper homes, schools, churches, amusements, playgrounds and parks should be provided for the worker, and due to the inability of the average city administration to provide these necessities, the employer must do so. It pays, too, as has been proven repeatedly.

Provision for Future Needs

The man who is content to build a plant which has no opportunity for expansion, is putting a limit on his output, on his own ability and that of his successors, which frequently become a very serious handicap. Many manufacturers are today up against the wall of reduced profits and limited production which results in an ultimate stagnation of business, due to inability to grow and expand and to thus care for growing accounts. Excess ground is necessary not only for the future, but as a provision which is daily becoming more important; i.e., for the storage of raw and finished materials. Formerly the freight car served as a storage yard for raw material, and frequently the finished product. This is no longer the case, owing to car shortage and increased charges for holding cars.

A most important asset of a plant is a good dumping ground for waste. Many a concern has made valuable land by filling up ravines or marshes, and so turned a loss into a profit. Some plants spend thousand of dollars in the cartage or shipping away of refuse. This amount would look a lot better on the other side of the ledger, and if capitalized, would go a long way toward a new plant.

Every industrial plant has adequate water, sewage, light and power facilities to provide for in various ways. Municipal and state regulations must be studied to see that adequate provision can be made without violation of ordinances or laws. An electrical steel furnace, for instance, should not be installed until rates for current are definitely ascertained.

A newspaper in order to get its edition on the streets and in depots to compete with other newspapers must have a plant so located that the time taken for

Steel trusses employed on top floor to provide clear manufacturing space.

distribution is a minimum. While time may not be a factor in the distribution of some products, the plant should be so located that cost of trucking and delivery is at a minimum, either for delivery to local plants or to railroad depots. This means a short haul and good roads.

Analyzing Plant Requirements

Given the site of the plant, which meets the requirements outlined above, the determination of, arrangement and the type of buildings is the next essential, and this resolves itself into an analysis of layout of buildings, types of buildings, mechanical equipment, proper handling of plant design and construction.

The layout of a plant as distinguished from its design, is a production problem. The plant is a part of the investment for manufacturing, and its layout must be considered primarily from the standpoint of manufacturing or production results. The first step, then, in the layout of a plant is the proper solution of this production problem. Sometime may be required to accomplish it, but the ultimate success of the plant, and that means low-cost production, depends on the correctness with which the analysis of what, how and how much the plant is to produce, is made.

The information and data gained in this study is frequently the means by which large economies are affected. This is true because when the manufacturing operations are properly planned and co-ordinated in advance of actual building design, and then the building is laid out to suit these operations, floor space can be greatly conserved. The study of layout also brings up the matter of proper equipment, and when the layout of equipment is intelligently considered, the floor space required for production is often still further reduced. This correspondingly reduces the investment for a plant necessary to turn out a given amount of product.

The process of making anything, from pills to gun carriages, should be a straight-line process from start to finish; in other words, there must be no back-tracking, and from the receipt of the raw materials to the delivery of the finished product, the shortest and most direct line of operation in sequence must be employed. Such an arrangement conserves time, reduces floor area required, cuts labor costs, and actually means, without qualification, the success or failure, from a financial standpoint, of the modern plant.

Various Types of Buildings

The buildings to house an industrial plant should be decided upon after the layout of each and every department and their inter-relationship is definitely settled upon. Only with this information at hand can a suitable building be designed, and in the design of this building all of the points which have been discussed above should receive most careful consideration. It is true that the statements above seem so simple and obvious that it is almost unnecessary to outline them, but the fact remains that these questions are not often considered carefully, and labor and money-saving features are not thought of.

There are in general three types of buildings which are applicable to industrial uses, namely, timber construction, structural steel, and reinforced concrete. Timber construction lends itself to a variety of occupancies, owing to its adaptability to various requirements. A heavy timber construction can be economically used for loads as high as two hundred and fifty pounds per square foot. "Mill construction" is a term used to designate timber construction where no small pieces are used; the minimum size having a cross-sectional area of approximately one hundred square inches. This reduces the liability to complete or rapid destruction by fire. Mill construction, strictly speaking, is seldom used, but it can be intelligently modified without materially increasing the fire hazard.

Timber construction has one handicap in that with heavy loads the spans are comparatively short. This necessitates a great many posts, which is usually an objectionable feature, as it interferes with economical machine occupancy and other layout. Timber construction has been developed in various parts of the country in a very interesting manner, to meet the requirements of local industry. In the eastern states, where the term originated, large cotton mills are built

Interior of mill construction type of building

of the so-called "standard mill construction." Structures of this type are seldom seen in the West, greater attention being paid here to larger window areas and better lighting, and to the introduction of steel in part, in the construction.

Shoe factories and tanneries throughout the middle eastern states are built with wooden siding, and are popular in spite of the extreme fire hazard and short life. In the central states buildings of modified mill construction are built with laminated floors. This is a solid floor construction of uniform thickness, entirely eliminating the use of joists by spanning the floor which is laid on edge, from one girder to another. This floor is popular in spite of the fact that it is subject to excessive vibration and frequently gives trouble through dry-rotting.

(Continued in August issue)

Ottawa Trouble Not Settled

There is a possibility of an early settlement to the strike of the Ottawa inside woodworkers. The woodworkers have been out for about six weeks without any settlement having been reached. The employers refuse, absolutely, to deal with the men as a union or with a union agent. If the men will return to work each employer will attempt to satisfy the demands of his own men. As a result of conferences held it is likely that the men will resume work and that a board of arbitration will be appointed to settle all differences. About 450 men are effected.

Never let a cutter become so dull that it burns the wood when the feed motion is stopped. You will lower the temper of the cutter, and it will require retempering before it will be up to its proper standard.

Wood Turners Gather at Niagara Falls

Second Annual Convention of National Association of Wood Turners Unqualified Success—Various Subjects of Vital Importance to Industry Dealt With—Many Stirring Addresses

The National Association of Wood Turners held a very successful and enthusiastic convention at Niagara Falls, Canada, on June 15, 16 and 17. About one hundred and fifty delegates were in attendance and many questions of vital interest to this industry were threshed out. J. W. Cameron of the Canadian Handle Co., Strathroy, Ont., gave a cordial address of welcome to the American manufacturers on behalf of their Canadian fellow-craftsmen. The spirit of good-fellowship which was the keynote of Mr. Cameron's address was very much appreciated and received an enthusiastic response.

The principal address of the afternoon, "The Job We Face," was given by the general secretary, W. A. Babbitt. This address was an admirable review of present conditions, pointing out that business is seeking a firm foundation and an increase of production of essentials by eliminating non-essentials. Special attention was called to the necessity of economy in manufacture. His address made it quite evident that the worst competitor is the stumbling and failing one and the big job of the Association is to take this competitor and make him a successful and intelligent competitor, one who knows what it costs to manufacture his product and where his markets can be found.

Wednesday morning was taken up by a discussion of the hardwood situation. Mr. J. W. Cameron, Canadian Handle Co, Strathroy, Ont., reviewed the Canadian lumber situation. In the absence of F. H. Thomas. F. H. Humes very ably covered the lumber situation in the North as well as in his own section, the East. Chas. L. Harrison, Himmelberger-Harrison Lumber Co., Cape Girardeau, Mo., addressed the meeting on the hardwood situation in the South and brought out that the production averaged only 27 per cent. of normal due largely to excessive rains. W. A. Thomas. Northern Wood Products Co., Glidden, Wis., discussed the hardwood situation in the West and reported about 60 per cent. of normal production of hardwoods in his section last winter, giving as a principal reason the heavy snows. He intimated that cost of getting logs out of the woods ran as high as $22.00 per M in different camps. Official view of the hardwood situation by R. G. Lewis representing the Canadian Forest Service and A. F. Hawes representing the United States Forest Service, concluded the program for the forenoon.

The first half of the afternoon session was in the form of sectional meetings as follows: Spool and Bobbin Manufacturers, who met for a short discussion and then joined the meeting of Novelty Manufacturers; Hickory Handles and Tool Handles; Dowel Manufacturers: Enameled Products. These meetings were followed by the discussion on labor conditions.

The Annual Banquet was the crowning success of a highly successful convention. A menu excellently prepared and served, a good orchestra, songs, pleasing banquet souvenirs, flowers, speeches by men who had real messages, and a splendid feeling of good-fellowship, will keep this banquet long in the memories of those present as being one of the most enjoyable and yet most profitable evenings ever spent.

The banquet started with the singing of "The Star Spangled Banner" and "God Save the King." The toasts were as follows: "Within the Law," by Hon. Geo. W. Alger, New York City; "The Job Ahead of Us," by Andrew H. Phelps, U.S. Chamber of Commerce, New York City, and "The Crisis of Democracy," by Dr. Charles A. Lippincott, South Bend, Ind. These speeches were excellent from every standpoint and very much to the point, or as several said, it was more than worth the expense of attending the convention just to hear those three talks.

Thursday morning was taken up by a business meeting of the Association. This included the Reports of the General Secretary, the Treasurer, and of committees, the election of officers, general business and the discussion of the program for our second year of activity as the National Association of Wood Turners, Incorporated. The program for the year was officially adopted as read, and the members demonstrated their complete faith in this program by raising a guarantee fund of nearly thirty thousand dollars to see it through.

The officers for the ensuing year are: L. C. Bump, Newton Thompson Mfg. Co., Brandon, Vt., President; Wm. Cook Rogers. Piqua Handle & Mfg. Co., Vice-president: L. A. Walker, Stephenson Mfg. Co., South Bend, Ind., Secretary-treasurer; Wm. A. Babbitt, South Bend, Ind., General Secretary.

The closing session was taken up by a discussion of "Dimension Stock and Its Relation to the Manufacture of Wood Products." General secretary W. A. Babbitt spoke on its relation to cost accounting and the stabilization of the wood turning industry. Mr. L. A. Walker, Stephenson Mfg. Co., South Bend, Ind., explained its relation to production speeds. Mr. C. L. Harrison, Himmelberger-Harris Lumber Co., Cape Girardeau, Mo., and Mr. C. E. Van Camp, American Hardwood Lumber Manufacturers' Association, Memphis, Tenn., presented the Dimension Stock Problem from the lumberman's viewpoint.

The following resolutions were adopted:

Whereas, we, the National Association of Wood Turners, Inc., in convention assembled at Niagara Falls, Ontario, June 15, 16, 17, 1920, desire to crystallize some of the deep impressions of this Convention,

Be it Resolved:

That we express our hearty appreciation of the welcome extended to us by our brethren, across the imaginary line of division three thousand miles long, without a ship or a gun, the wood turning fraternity of Canada, and solicit their co-operation and fellowship in our endeavor to establish improved conditions in our industry.

That we express our sense of obligation to Dr. Chas. A. Lippincott, Mr. Andrew H. Phelps, and Hon. Geo. W. Alger for their splendid addresses at the Banquet and to Mr. R. G. Lewis and Mr. A. F. Hawes for their very helpful and

practical reviews of Forestry problems in Canada and the United States.

That we have a keen sense of gratitude for the Providence that has granted us a General Secretary of such wonderful versatility and efficiency and high ideals as Mr. W. A. Babbitt, and that we wish to impress upon him our appreciation of his splendid services and our earnest desire that he continue that work which for two years he has prosecuted so successfully. That we realize the need of better understanding between employer and employees and desire to study, adapt, and apply the principles emphasized so impressively by Mr. W. A. Thomas and Dr. Lippincott for the mutual benefit of all interested in our industries.

That in view of the fact that our forests are being cut four times as rapidly as they are being grown, we urge our Representatives in Congress to a policy of generous support of the Forest Products Laboratory at Madison, Wis., and all legislation for the advance of practical forestry, and we pledge our support to all kindred legislation in our respective State Legislatures.

That we urge upon all branch associations the immediate establishment and prosecution of a systematic and adequate financial policy in support of the National Association.

That we extend our thanks to Wood Turning magazine for the splendid support given the Association and for supplying the appropriate convention badges, and to Schutz Bros, Inc., New York City, for the novel and appropriate Convention Banquet Souvenirs provided by them.

Production System for Woodworking Plants

Accurate Record of Material on Hand—Keeping Tab on the Lumber Yard—Shortages Eliminated by Efficient System—Jigs and Forms as an Aid to Production.

By L. F. Simpson*

Second Instalment

The raw materials used in woodworking plants are essentially of wood but in addition there are many items that are of equal importance: for instance, glue, screws, finishing material, and other hardware trimmings and fittings must be kept on hand for the construction and assembling of the work. Materials are purchased and materials are necessary for production; therefore a purchasing department is so closely related to the production department that best results can be obtained if the two departments are responsible to the one head, the factory manager, who will in consequence be kept well posted as to deliveries and the quality of the materials used. Lumber is the chief item of raw material entering into woodworking and should be carefully selected, bearing in mind that a few dollars saved on the purchasing price does not always work out to best advantage in the long run.

A complete record of all material should be kept from the time it is received until the finished product is complete. It is further, more difficult to keep an accurate record of the lumber used than of any other material. A simple method to keep the yard in order is to number each pile and then make a sketch or chart of all the piles in the yard, giving their exact location, and on this record the quantities put on and taken off each pile. This chart should be made in duplicate, one copy for the yard foreman, who is responsible for its accuracy and the other for the stock clerk. If this is entered up daily, a perpetual inventory is on file, which may be checked up at a moment's notice. A card file or record is also kept, for instance, for immediate reference, of all lumber passing through the kiln. In other words, the records kept should be so completed and so arranged that all materials can be readily located and checked at any time.

Keeping Track of Veneers

Veneer stocks are another source of trouble, as it is difficult to keep them in order and to avoid waste. The veneer stock room should contain a number of racks, varying in size to suit the dimensions of the panels kept in stock. Long racks two or three tiers high, that will take the flitches as received from the manufacturer, will be found convenient. Storing the veneers in racks will eliminate the greater part of the loss from breakages and will aid in sorting out the material when required for use. All ends or cuttings from the flitches should be cut to stock sizes and put in racks. If the production requirements of a plant are definitely worked out, they will constitute a basis from which definite quantities of the various sizes and materials required may be computed.

Shortages of materials are the cause of many vexing delays and it is, therefore, very essential to have some means of avoiding or eliminating such delays. By having an efficient stock room system and knowing the stock requirements well in advance, considerable time and labor may be saved. Any simple filing system may be used in this stock room that will give definite quantities, location and a perpetual inventory. Bins and racks suitably arranged for the stock and labelled with part numbers, names and quantities of the various items, clearly marked, will aid the stock clerk in locating the various materials required and thus shorten the time the workmen may spend at the wicket waiting for material.

Bill of Material as Basis

In the production department a bill of material is made up covering every detail and the various parts are given numbers. From this bill of material the shop orders are made out for the parts to be manufactured in the plant and requisitions for the purchasing department for items to be obtained from outside sources. Records are kept of each part, by the production department, on a 4 x 5 card file. One card is made out for each item, showing the number required for the particular quantity of cabinets to be made, 500 or 1,000 whatever it may be. When parts are received into the stock room ready for use, a copy of a receiving report is sent to the production department. The quantities received are recorded on the above-mentioned card and the balance still to come is also noted. The quantity of each individual part required for the output each day for a week or as far ahead as it is required to make or obtain each particular part is noted on the top of each card.

In the stock department a minimum quantity of every part is recorded on the bin or rack card. This minimum is based on the production for one or two weeks ahead or longer, if it is thought advisable. A longer period would be allowed where the material is

*General Machinery Co., Toronto.

shipped in from outside sources. Each day the stock clerk notes the quantities in each bin or rack, and if the inventory of any part is nearing the minimum allowance, a low stock report is made out by the stock clerk and sent to the production department. This department immediately takes steps to replenish the supply either through the purchasing department or, if it is a manufactured part, a shop order is issued to the mill or whatever department is concerned. In this way a close check can be kept on all material and delays avoided.

Methods of Operation

Under this heading we will outline the various operations and departments through which the component parts and the work itself must pass in the course of its construction. From the yard and kiln departments the raw lumber passes into the mill-room and then on through the veneering, cabinet, varnishing, rubbing, trimming, burning-in or touching-up, inspection and finally to the packing and shipping departments.

The mill-room or machinery department is where the raw lumber is cut and dimensioned and worked into the component parts of the article produced. From the breaking-out saw the materials should be kept on record, so that at any minute the time required to get delivery of a certain part may be obtained and figured on by the production department. As we all know, hand-work is expensive, so that all the work possible is done by machines and production increased through the aid of jigs and time-saving devices. Many short cuts can be made that will materially increase the production of this department. As this article deals with production from the standpoint of the manufacture of phonographs, we will intimate how time may be reduced on turning out this product. Special jigs may be designed that will effectively aid in making the horns, boring the doors, rails, slotting doors for hinges, splice cuts on top moulding rails and rail posts. A good plan is to secure the co-operation of the employees and try and have them make suggestions that will ease the work and tend to increase production. Many good ideas may be secured from this source if a little encouragement is given. Some firms make a practice of paying small amounts in cash for all ideas sent in and adopted. Other manufacturers have secured the co-operation of their employees by adopting the group bonus system, where each group of men benefit by any increase in production from their particular department. Thus they not only take a greater interest in their work but are encouraged to work out labor-saving ideas and methods.

The core stock for panels is completed in the mill-room and then sent to the veneer department where the necessary veneers and cross-bandings are laid and the stock seasoned. After the built-up panel has dried out thoroughly it is returned to the machine shop for the final trimming and sanding. All work is sent from the machine department to the stock room where it is issued out for assembling or for further operations on the presentation of signed stock requisitions.

Canada Has Many Fine Woods

Could be Used to Good Advantage for Interior Work—Birch an Ideal Wood for Enamel Finish—Keep Finished Samples of Different Woods to Show Customers.

By J. J. Webb

The article in the June "Canadian Woodworker," published under the heading "Why Not Use Canadian Woods," was, to my mind, timely, and written along the right lines. More publicity of a similar nature should result in stimulating a greater interest in our native woods. We have many fine woods in Canada, and it seems a pity to see them shipped out of the country by the carload, or if used locally, disguised, and sold as an imitation of some other wood. Such woods as birch, maple and ash do not need to be misrepresented, as they have qualities which should enable them to command a good volume of business if disposed of, in the open market, solely upon their merits. The author of the above-mentioned article did not go into the subject as thoroughly as he might have. He dealt with native woods solely from the standpoint of the manufacture of furniture. A considerable amount of hardwood lumber is used annually for floors and trimmings in the numerous homes, banks and office buildings that are being erected on every side. The hardwoods commonly used for this purpose are nearly all imported and consist of such woods as oak, chestnut and a certain amount of poplar.

Educate the Canadian Home Owner

There does not seem to be any logical reason why these particular woods are in demand for interior work other than that they seem to be in popular favor. The public is supposedly fickle and their tastes can be educated or influenced along any desired lines, so why should not the woodworkers engaged in manufacturing and handling building material and interior trim sell the idea of local woods rather than push the sales of any other variety.

Many woodworkers seem to be of the opinion that with the exception of birch, native woods are not to be had in sufficient quantities to make it worth while dealing in them. This is not according to facts and figures. True, Canadian-grown chestnut and oak are not any too plentiful, though if one were looking for these woods, he would be able to secure a few carloads from time to time. Such stock as maple, birch, ash and elm are more abundant and a dependable supply is available to cover any anticipated demand. Birch is to be had in large quantities and is exported to the United States by the millions of feet. The statement has been made that fully 75 per cent. of the hardwoods cut in Canada are shipped out of the country. This is partly due to the apathy displaced by Canadian manufacturers toward native material.

Let us consider birch for a moment. The many qualities of this wood are too well known to need any commendation. It is plentiful, may be had in any desired grade, seasons readily and takes a fine finish when machined. When finished properly it has a beautiful grain and takes an excellent finish—it must when it can be passed off as an imitation mahogany.

If this wood were to come into general favor for interior work, just think of the pleasing variety of effects that could be secured through its use. First,

Showing beautiful, wavy figure of curly grain birch

we have the white birch. This, when finished in natural shades, would make an ideal trim both in color and beauty and dignity of figure for the bedrooms, upper hall and the lighter rooms of the house. For the more pretentious quarters where the heavier furniture is installed, darker red birch trim could be employed. The color of red birch, if finished in natural, is one that works in and blends readily with the majority of color schemes. This is a feature that should be considered in choosing the material with which to trim a high-class house. Both red and white birch have a beautiful grain, one that gives a variety of figure and a pleasing contrast in a quiet, dignified way. It is neither bizarre nor loud and its introduction into any home signifies good taste on the part of the person responsible for the choice.

Another beautiful species of birch, though, perhaps not so plentiful, is the curly-grained variety. The accompanying illustration shows the wavy figure of this wood. Curly-grained birch may not be available in large quantities, but one can usually secure enough for some select job where something unusually attractive is desired or for some choice line of cabinet work. One hears many laudatory remarks concerning the beautiful trim and panel work and the attractive effects secured in the Hotel Manhattan, New York. This hotel is finished throughout in curly-grained birch.

More Ash Could be Used

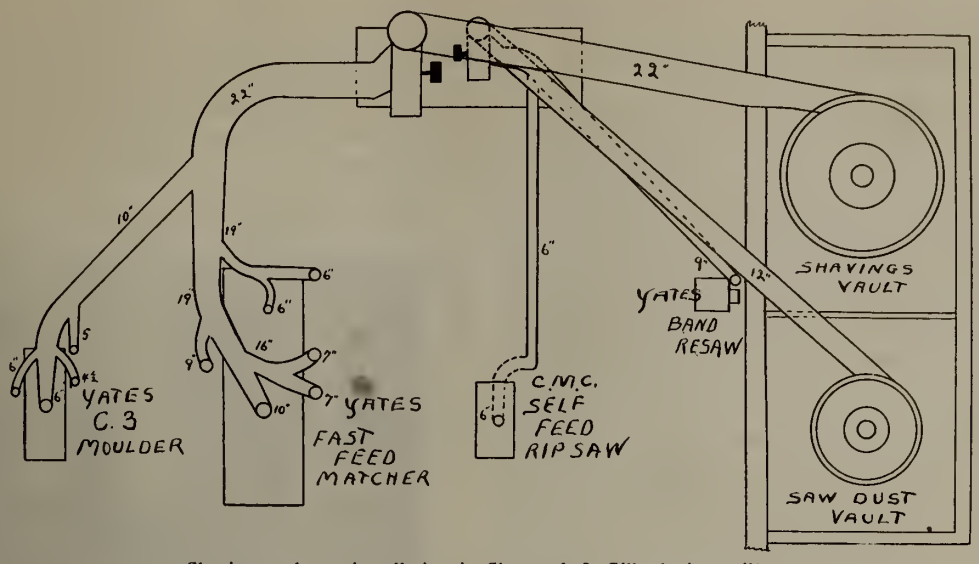
Ash has a fine, pleasing grain, and takes a good finish. It is used to a certain extent in interior work but should be more in general favor than it is. The American manufacturers of interior trim seem to realize the value of Canadian ash for house and office interiors, as many carloads of Canadian white ash are shipped annually to certain United States manufacturers. It would seem to be a case of where "A prophet is without honor in his own country." If there is sufficient ash available for export, surely there is enough to make it worth the Canadian manufacturers giving it their consideration.

An Attractive Softwood Trim

One wood that appears to be growing in popular demand for house finish is British Columbia fir. It is found installed in many of our medium and better-class homes. The finish usually applied is a natural oil or varnish finish, though beautiful effects may be secured by using some warm brown stain and bringing out the high lights. This wood may be had in practically three grains, viz., edge, flat and curly grain and in any desired quantity. This latter grain gives a very pleasing wavy effect.

When the interior is to be painted or enamelled there are many woods that might be used. For high-class enamel work birch has proved itself to be the superior of any other wood. Its fine, even texture and absence of gums particularly adapt it for a smooth, permanent enamel finish. Basswood, pine and fir are also used for enamel and paint work. With the more resinous woods difficulty is often experienced in preventing the rosin and gum penetrating through the paint or enamel. This can be overcome to a certain extent by coating all knots and any gum spots with a good, heavy shellac.

Finish up a few, short pieces of birch, ash, basswood and fir and the next time a customer asks for interior trim, show him these finished samples and point out the beauties and desirable features of the different woods. It may surprise you what a demand might be worked up for material in native woods by a little consistent, thoughtful effort.



Shavings exhaust installation in Sheppard & Gill planing mill

Does Your Exhaust Fan Take Much Power?

Inadequate or Antiquated Shavings Exhaust System Actually Increases Overhead and Retards Production—Power Consumption Important Item—System Designed for Requirements of Each Individual Plant

By J. C. Heath

An efficient shavings exhaust system is a real necessity in the modern woodworking plant. There are many reasons why this is so, such as keeping the air free from dust and shavings tends for more healthy workmen, better working conditions, reduces the fire hazards, lengthens the life of the various machines, increases production and decreases the overhead and manufacturing expenses.

The statement that a dust-collecting system lengthens the life of the equipment may seem far-fetched, but when one stops to consider that dust is the great destroyer of bearings and that nothing causes a bearing to wear so quickly as a constant supply of dust, it stands to reason that if this were eliminated, the bearings of the machines would not require the same amount of attention and would not need to be replaced so often.

One still finds plants that have not been provided with some form of dust-collecting system, but happily these are few and far between. Among the factories which operate a system of this kind, it is doubtful if the terms "efficient" or "economical" could be applied to all the installation and methods employed.

Designed to Industrial Requirements

There is more to a dust-collecting system than a few pipes, a fan and some form of collector. To be successful and economical in operation, it should be designed and built to suit the peculiar requirements of each individual plant. The subject is too large and too complex to enable any hard and fast rules to be laid down for designing and installing a dust-collecting equipment. It is work which calls for the services of an experienced engineer, one who has made the study of dust-collecting methods and who has designed and supervised numerous installations. It calls for judgment of a high order, for in most cases the success of the installation depends largely on the ability of the man in charge to apply his experiences to the peculiar problems encountered in your plant.

Formerly when power was comparatively cheap and seldom considered, the horse power required to drive the fan was considered of little moment. This is all changed and to-day one of the prime requisites of a successful installation is that it will operate with a minimum amount of power and incidentally expense. This means that if a large capacity system is installed, with pipes and connections larger than are actually needed for the various machines, the power bill will be high. It stands to reason that it would require a large fan to keep the larger volume of air moving at a rate that would carry shavings and sawdust to the collector. A large fan means more power; therefore in working out a system, while as far as possible provision should be made for any machines that may be installed, yet the main idea should be to adapt the whole installation as nearly as possible to the present requirements of the plant.

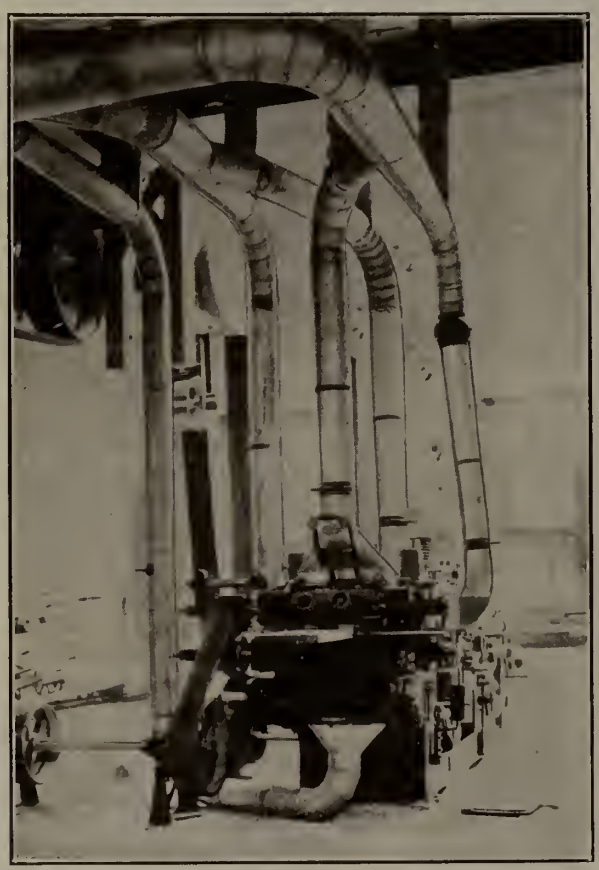
As An Aid to Production

On the other hand if the pipes used are on the small size, they will not be able to handle the amount of refuse thrown off by the different machines, and would likely clog, give trouble and retard production. These latter remarks apply to the system as a whole or to its application to any individual machine or even cutterhead. It has often been found when new equipment had been put in, particularly fast speed production machines, that the dust-collecting system in the plant was not adequate to meet the increased volume of shavings which had to be removed. As a consequence the new machines could not be operated to capacity but only to about half speed, and thus production was seriously retarded. Overloading the system would have its effect on all machines connected up, for it could not handle all the dust and shavings made.

Many factory owners have found that making a few changes to their shavings exhaust system has been the means of speeding up production throughout the plant.

Increasing the speed of the fan is often adopted as a means of increasing the capacity of the dust-collecting system. This may have the desired effect but at a high cost in power consumed. The increase in speed is not directly proportionable to the increased power consumption for doubling the speed of a fan, means that just four times as much power is required to bring it up to the new speed. The better and logical way is to change the system so that it will be able to handle the new demands which are made upon it.

The adoption of the electric drive has focused the attention of many manufacturers on the amount of power used in driving the fans of the dust-collecting systems. In the old days it did not seem to matter if 20 or 25 horse power, perhaps about one-third of the total power used, was consumed by the fan. Today when many power companies base their charges on the maximum demand basis, a few extra horse power affects the rate on the whole plant. This has led, in many cases, to the installation of smaller units or systems to serve small groups of machines. While the initial installation costs may be higher where the group system is employed, the savings effected through a lower power consumption and consequently a lower power rate, should pay a nice dividend on the additional investment. Another feature is that if for any reason a certain group of machines is idle, the fan on that particular system may be stopped, with a further saving in power.



American hardwood flooring machine fitted with shavings exhaust piping

Some firms have carried this idea to the extreme limit and have installed individual fans, driven in many cases by individual motors of from one to three horse power, on each machine. This would be a very expensive installation, and while it would result in low power consumption, it is doubtful if the saving would justify the extra expense. It is a good idea, however, to have at least one system for the shavings and another for the sawdust. By keeping these two items separate, it is easier to find a market for this refuse.

The accompanying illustration show some installations made by the Toronto Blower Co. of Toronto. The sketch shows the layout of the shavings and sawdust exhaust systems in the plant of Sheppard & Gill, Toronto. It will be noticed that two fans are provided, one for the shavings and the other to carry off the sawdust.

Piping installation on Yates fast feed matcher and moulder

The fans used are by-pass which were designed specially for this kind of work. With this type of fan, the refuse does not go through the blades and consequently if damp stock is being worked, the dust and shavings do not adhere to the blades of the fan and reduce the efficiency of the system, as well as necessitating the stopping of the fan to clean the blades. In this particular instance these fans are driven by a motor which is connected to a jack-shift and then belted to each fan.

The shavings and sawdust vaults are constructed with hopper bottoms and are kept well above the ground. Thus a team may drive in under the vaults and take away a load of shavings or sawdust simply by opening a small slide in the bottom of the vaults. This type of vault also makes it easy to bag or bale this material for any market that may be available.

Preparing Belt Ends for Splicing

Where the ends of a belt are being trimmed—that is, cut down to a wedge end for an endless splice—a broad wood chisel, the cutting end of which has been ground to a convex shape, is a convenient tool for the roughing stage of the process. After the roughing has been done the belt ends can be finished off with a sharp carpenter's block plane and then scraped to a smooth surface with the edge of a piece of glass. The cement or other adhesive is applied and after a sufficient time has elapsed the ends are brought together and clamped.

Diverse Products of Woodenware Plant

Business has Grown from Small Beginning—Manufacturing Many Lines of Both Domestic and Export Trade—Ball Bearing Transmission Equipment Installed

The manufacture of woodenware, with its multiplicity of lines, is always a very interesting branch of the woodworking industry. and the plant of the McMarlane Manufacturing Co. did not prove an exception to this rule. This progressive business was founded in Toronto about the year 1875 by the late Geo. McFarlane.

It originally occupied a small shop on King St. Later, about 1909, a larger plant was secured on River

A Cowan automatic knife grinder in Toronto factory

St., and the equipment installed there. As the business grew and new lines were taken on, it was found necessary on several occasion to make additions and extensions. Early this year the York Mills property on Main St. was purchased and plant moved to these more commodious buildings. The present buildings provide ample storage and manufacturing space and the site is of sufficient size to give storage room for the lumber piles and to take care of the growth of the business for many years to come. The present proprietors are Vincent and Percy McFarlane, sons of the original founder of the business.

Variety of Lines Produced

About seventy hands are employed, at present, producing such lines as extension ladders, step ladders, wash boards in zinc, glass and enamel, clothes horses, folding iron boards, bake boards, pantry stools, adjustable porch gates, folding veranda chairs, lawn settees, folding stools. children's sleighs, painters' ladders, trestles and extension planks. This list gives a fair idea of the extent of the operations, but other smaller articles are manufactured as well.

Many of these items are produced in large quantities. The firm does a large business in Canada and has many export connections. Wash boards are exported in carload lots to both Great Britain and South Africa. In addition an export business is gradually being built up in folding chairs, extension and step ladders. The new location enjoys excellent trackage facilities so that car orders are handled with despatch.

A large part of the material used is purchased partially manufactured. This applies to such stock as the material for sides and steps of the step ladders and the sides of the wash boards. The material is all dressed and moulded ready for cutting. When one considers that the fir, which is the wood chiefly used in the ladders, comes all the way from British Columbia, the saving in freight due to shipping the lighter dressed lumber, would almost pay for the cost of the milling.

The plant consists of the usual equipment of saws, double and single cut-offs, multiple spindle boring machines, planer, jointer, Fay & Egan straight edging and ripping saw and a few specially built production machines for doing certain of the operations. The metal pieces used are stamped out on a large press.

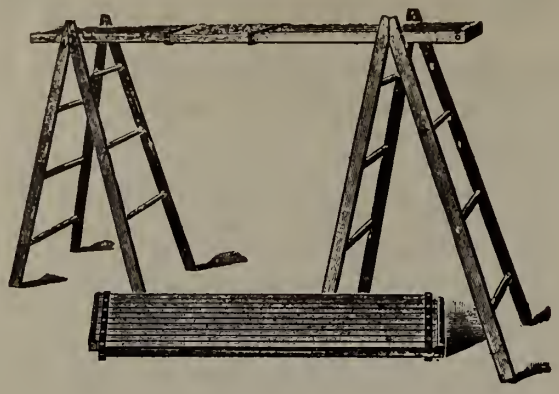
Ball Bearing Hangers and Pulleys

The transmission is equipped withChapman double ball bearing hangers and many of the loose pulleys run on ball bearings. While a complete steam plant consisting of two boilers and an engine is installed,

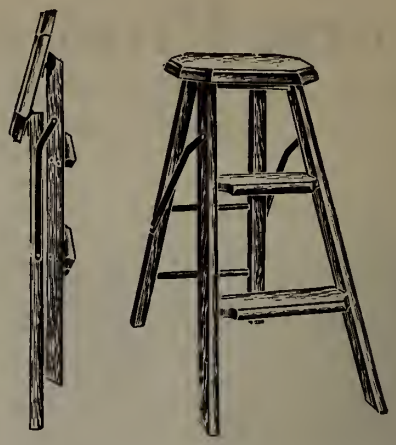
Jointing and ripping saw, Fay & Egan, in McFarlane plant

electric energy is the motive power used. Two large motors, one 40 H.P. and the other 25 H.P., together with several small individual installations, drive all the machines.

The assembling of the different lines is at present being done by hand. Plans are under way for the construction of several special machines to aid this end of the work. All articles requiring staining or varnishing, are dipped, usually as a final operation. The dipping could be speeded up by installing an overhead carrier system and arranging it so that the art-



Painter's trestle with adjustable plank



Folding pantry stool and step ladder

icles could be hung from racks. run over the dipping tank, lowered in the liquid, then moved so that they would drip on the drainage board and then out into a drying room. Some such method, which is under discussion, would reduce the handling in this department to a minimum.

Pantry Stool Ingenious Article

Two of the most interesting articles, probably because they are unusual, are the pantry stool and the adjustable verandah gate. The former is in reality a short step ladder, about 30 in. high, with a large stool top. It folds compactly and may be stood out of the way. It can be used as an ordinary stool, and when needed, comes in very handy for securing articles from high shelves or doing other overhead work. The verandah gate is often seen where children are and is used to keep the young folks off the street. It consists of a number of pieces rivetted together, lattice fashion, and is adjustable, by extending out, to fit any width verandah opening.

The extension ladders may be furnished in any lengths from 12 to 100 feet. They consists of roped ladders which may be adjusted to any height by means of a rope and small blocks or sectional ladders where one section pushes up and hooks to the rungs of the under one. These are usually made of B. C. fir or clear Sitka or aeroplane spruce.

The lines are all well made and give general satisfaction wherever purchased.

Indian Government to Employ Dry Kiln Experts

The United States Forest Products Laboratory at Madison announces that two of its experts in kiln drying have resigned to accept positions in foreign countries. Mr. C. V. Sweet and Mr. L. V. Teesdale, who have been with the laboratory for nearly two and a half years, will enter the forest service of the Indian Government. Mr. Sweet will have his headquarters at Dehra Dun, India, in the foothills of the Himalaya Mountains. Mr. Teesdale will be located at Rangoon, Burma, which is situated in the lowlands bordering the Sea of Bengal.

Both men will be engaged in the investigation of commercial methods of seasoning timber. Their work will differ only as geographical conditions affect the character and availablity of the timber, and will involve travel and exploration into all accessible parts of the provinces as well as laboratory research at the institutions already established.

India and Burma are heavily forested with exceedingly valuable woods, which, like all the other natural resources, are the property of the government. In the art of silviculture and its development the East leads the West, but in commercial processes of utilization of the wood products the East has much to learn from Western countries, especially America. The availability of the wood products for commercial use depends largely on proper methods of kiln drying, and it is as technical experts in this subject that Mr. Sweet and Mr. Teesdale enter the far Eastern service.

Furniture Industry in Strong Position

A questionaire was recently sent out to representative furniture manufacturers and retailers by an American furniture journal. The replies to the different questions furnish an interesting insight into conditions as viewed by the trade and their belief in the future prosperity of the industry.

The furniture monufacturers were asked "How far are you behind with orders ?" "How far ahead are you protected on raw materials ?" "What do you think of the lumber situation, and are signed non-cancellable orders advisable?" Fourteen manufacturers stated they were from one to three months behind with orders, fourteen. from four to eight months behind, and four stated they had twelve months' business on their books. Twelve were not protected on raw materials but were buying on the open market, fourteen had from one to three months' protection, nine from four to six months' and one was protected for seven months.

The manufatcurers replying were a unit in declaring that lumber was scarce. Nine thought lumber would go higher, nine lower, eight looked for conditions to remain stationary, while four looked for an improvement in the lumber situation. Twenty-three favored the signed non-cancellable order and thirteen were against it.

Of the dealers replying, seventeen thought that the future of the furniture business looked very bright, while thirteen were doubtful as to whether the demand would keep up or not. Most of the dealers reported a fair stock on hand and the majority were in favor of a signed order.

Is Your Band Resaw Giving Trouble?

Resaw Blades and Mill Require Special Attention—Amount of Tension Should Vary for Different Woods—Eliminating Cracks and Fractures

By P. E. Poole

Of course the first requisite in band resawing is to have a well-constructed and well-designed machine. The wheels should be nicely balanced, run perfectly true on their spindles without jar or tremble, and thus the saw while in motion, if properly tensioned and fitted, will run without vibration. This is very important. The wheels should be of such form as to give the requisite strain to the different portions of the saw blade, and the tension device for straining the saw be such as to exert a constant, even force at all times. A machine constructed faultily in either of the above particulars will cause breakage of saws, either from over-strain or from vibration.

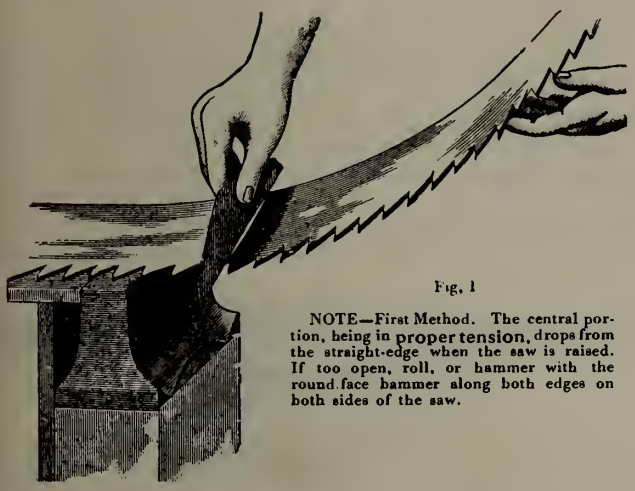


Fig. 1

NOTE—First Method. The central portion, being in **proper tension**, drops from the straight-edge when the saw is raised. If too open, roll, or hammer with the round face hammer along both edges on both sides of the saw.

Various authorities differ as to the exact form to which the face of the wheels should be ground. They should be as nearly flat as possible and still retain the saw blade in proper position, rendering it capable of withstanding the back-thrust brought against it when resawing wide stock or working at a fast speed.

Another no less important matter is a suitable place for fitting the saw blades, and the proper tools with which to work. The best resawing machine will prove a dismal failure unless the saws are properly fitted and we wish to emphasize the necessity of providing a light, roomy filing room, suitably heated and equipped with modern tools. While saws may be successfully filed and sprung-set by hand, it is not profitable to economize too much in the saw-fitter's equipment. The following equipment is listed as being about the equipment required by the ordinary small plant: Automatic saw sharpener, anvil, hammer, straight-edge and tension level, swage, pressure side-dresser, brazing table and saw vice.

Putting In Tension

As the toothed edge of the saw does the guiding, this edge should have the greatest strain, the back edge nearly as much, and the central portions expanded just enough to insure the saw blade doing good work. This is ascertained by actual practice. It is found that when resawing hardwood more tension is required than when resawing soft, straight-grained timber, as the more difficult the wood is to cut, necessarily the more inclined the saw blade is to dodge, and thus friction is brought against a certain portion of the saw blade, more especially near the teeth or cutting edge. This heats the blade, expands it, and leaves the cutting edge of the saw slack, so that it will dodge and do poor work.

To provide as much as possible against this occurrence it is found advisable in some cases to leave the back edge of the saw a little longer than the front, and thus, as the saw heats, the upper wheel is free to rise and the cutting edge of the saw will remain taut, while should the back edge of the saw be the same length as the front this would prevent its so doing; hence it will be seen that in resawing wide hardwood the saw blade must be fitted somewhat differently from that required when resawing soft-grained material. When the saw blade is in proper tension the central portion of the blade is expanded or opened up, so that when the saw blade is raised the middle will drop away from the straight-edge (Fig. 1). The usual mode of testing for tension is that shown in Fig. 1 and 2.

Preventing Cracks or Fractures

Still, some maintain that it is better to reverse this method, and press the saw down, as in Fig. 3 and 4. The former method is usual and most convenient, and in that case the loose places in the saw blade will drop away from the short straight-edge, and the first places will be drawn to it. With band resaws the width of the saw blade varies so much, also the material sawn, that it is difficult to state the exact amount of tension required. The tension should be as uniform as possible throughout the entire length of the saw blade. A fast place may cause fracture from undue strain at that point, a loose place from excessive vibration. The tension should be so adjusted that the saw will bear firmly upon the face of the wheel, the principal strain being near the edges of the saw.

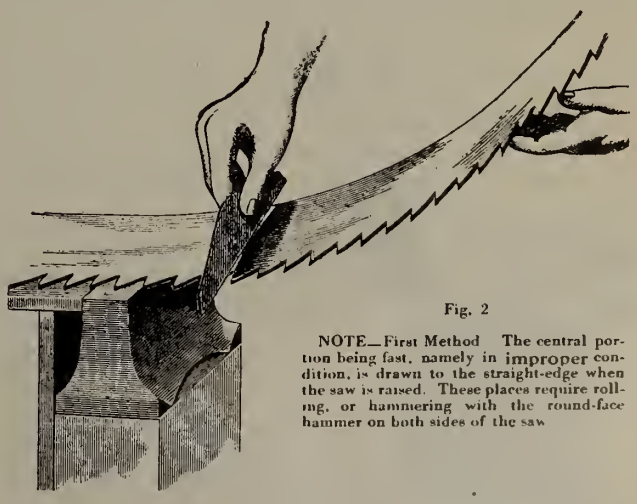


Fig. 2

NOTE—First Method. The central portion being fast, namely in **improper** condition, is drawn to the straight-edge when the saw is raised. These places require rolling, or hammering with the round-face hammer on both sides of the saw.

To adjust the tension, use only the hammer having a perfectly round face where it comes in contact with the saw and so nearly flat that it will not indent the saw with the blow you desire to use. Rolls, when

available, may be used for tensioning. If the face of the hammer is not perfectly round, using it will put a twist in the saw.

If the saw is too open—that is, if the central parts drop away too much from the level—hammer, or roll, the saw with the round-face along the edges lightly and equally on both sides until the proper adjustment is effected. If, on the contrary, the saw does not drop

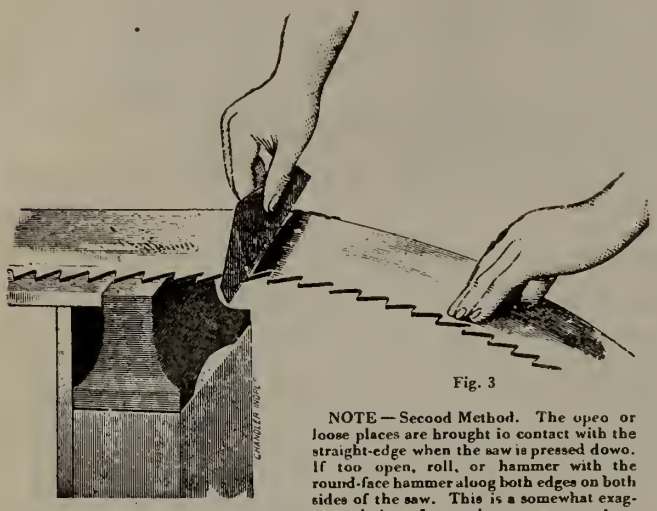


Fig. 3

NOTE—Secood Method. The opeo or loose places are brought io contact with the straight-edge when the saw is pressed dowo. If too open, roll, or hammer with the round-face hammer aloog both edges on both sides of the saw. This is a somewhat exaggerated view of a saw in proper tension.

away enough from the straight-edge in its central parts, use the round-face hammer or rolls over the central portions lightly and equally on both sides of the saw until the proper tension is obtained. Different portions of the saw will require different treatment, the result to be obtained being uniformity of tension the entire length of the saw blade, and in degree to suit the surface or crown of the wheels.

A trial of the saw with the small straight-edge or tension level, from time to time, during the process of hammering, with a final test upon the mill, will enable the operator to determine the degree of expansion of parts required. It is well to examine a new saw in this manner in order to obtain a proper stan-

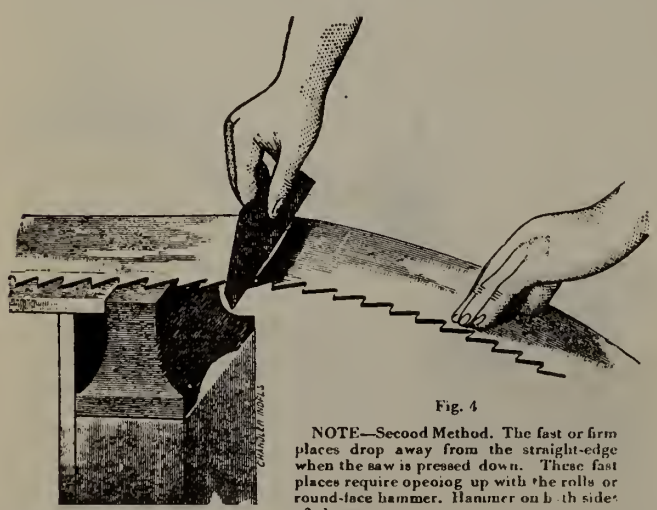


Fig. 4

NOTE—Secood Method. The fast or firm places drop away from the straight-edge when the saw is pressed down. These fast places require opeoiog up with the rolls or round-face hammer. Hammer on both sides of the saw.

dard, which, if the saw works well, may be adopted in practice.

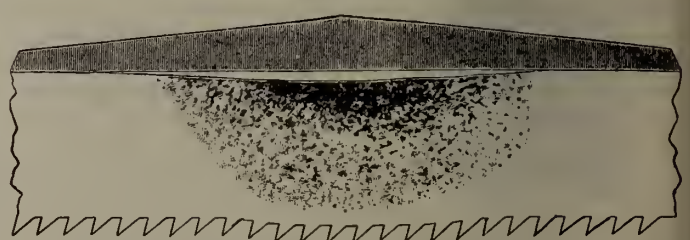
The pein hammer is to be used only in leveling, straightening and taking out twists. The faces of the hammer should be nearly flat, and the blow light, so as not to indent the surface of the saw. Heavy blows or a sharp hammer will crystallize the steel at the point of contact, and eventually cause fracture. The saw should not show marks of the hammer after hammering.

Lay the saw upon the anvil and leveling table; examine the portion of the saw which lies upon the leveling table by passing the short straight-edge over it at various angles. Whenever ridges appear, trace their direction or the angle at which they cross the saw with a piece of chalk, draw the part over the anvil and hammer down the ridges with the pein hammer. In hammering down the ridges the pein should always run in the direction of the ridge.

Crowning the Back Edge

Curves upon the back or toother edge of the saw are shown by placing the long straight-edge against the back edge of the saw on the leveling table. Mark the extent of the curve and its direction with the chalk.

The back of the saw can be drawn to a true line (see Fig. 5) by using the round-face hammer upon the hollow edge at the point of curvature, carrying the blows into the central portion of the saw sufficiently to prevent unequal expansion, and leaving the centre open as directed previously. The shaded portion indicates the part to be hammered. Light blows should be used, and both sides hammered equally, care being taken not to give a heavy blow upon the



Dark portion indicates where to hammer to straighten blade

extreme edge, which promotes fracture. If the back edge is rounding, the hammering must be done upon the toothed edge.

The back edge of the saw should be kept straight or a little convex, not to exceed ⅛ inch convex in fifteen feet length. The greater the convexity the greater the strain on the toothed edge. In straightening the back edge, be careful to maintain the tension. Examine the back edge frequently.

Owen Sound Strike is Settled

The Owen Sound woodworkers, who have been on strike for some weeks, have all returned to work. The employees of the National Table Co., Ltd., were the first to resume their duties. They were quickly followed by the employees of the other firms. The increases made average about ten per cent. The terms accepted were virtually the same as those that were offered before the men went out, so it is difficult to see what the men gained to compensate for the pay lost during their three weeks of idleness. It seems too bad that disputes of this kind cannot be settled amicably. When a strike occurs both sides lose. In many cases it is doubtful if the men even make up the losses entailed.

Speaking after the men had returned to work the president of the National Table Co., Limited, said he regretted very much that the strike had occurred and expressed the opinion that the same results could have been obtained without a strike.

An Opening for Canadian Enterprise

Large Quantities of Small Turnings Imported by Piano Action Firms—A Nice Business Awaits Aggressive Action—Other Lines Probably in Demand

Importing manufactured wood products into Canada, from outside markets, is like "taking coal to Newcastle." One would think that Canada with its vast timber resources would be self-supporting as far as the ordinary run of wood products is concerned. That this is not the case, was instanced in an article appearing in a recent issue of the "Canadian Woodworker," outlining the market for spruce sounding boards for pianos. About thirty-five thousand of these boards are used annually. An enormous quantity of high-grade spruce is available in our native forests, yet in spite of this plentiful supply of raw material, as far as can be ascertained all the sounding boards used by the Canadian piano industry are imported from American manufacturers.

Another opening for some energetic firm is found in another branch of this same industry. Each piano made requires what is known as the "action." This consists of the keys, dampers, hammers, levers and other hammer actuating and controlling mechanism. The manufacture of these actions has developed into a highly specialized branch of the piano industry. There are a number of concerns who devote their whole attention to the production of keys, actions and player actions for both domestic and overseas trade.

Many Small Pieces Used

Each action consists of ,roughly, seventy-five hundred pieces of all shapes and sizes. This number may vary for different actions, but is given as a fair average. Many of these pieces are small wood turnings of various sizes and shapes. As far as can be learned these small turnings are all imported from American wood turning firms. There should be numerous automatic turning lathes in operation in Canada that could handle these items, and it is a wonder that some of the more aggressive firms have not made an attempt to secure this business. The runs would be of sufficient length to make them worth while. The volume of business which could be secured should keep the lathes going for many weeks.

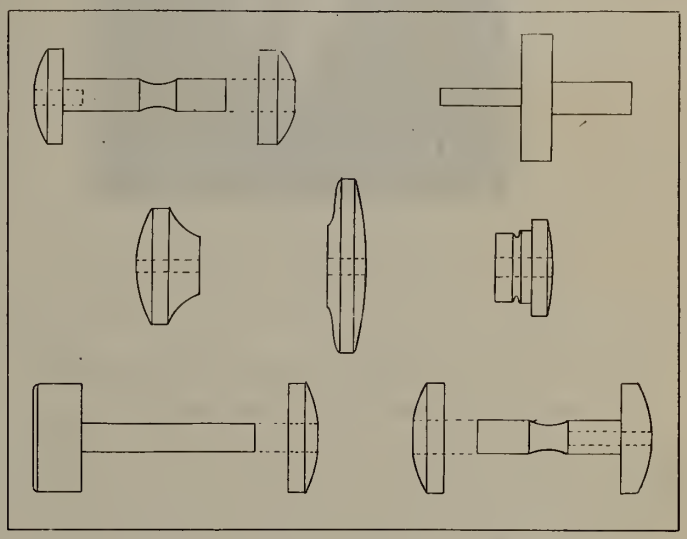
The accompanying sketches show some of the turned pieces required for action work. These are usually purchased in large quantities. One action manufacturing firm usually orders from two to five hundred thousand pieces of each individual item. There are three plants in Canada producing actions, and between them the number of turnings used each year must run into many millions.

The wood used is hardwood, such as birch and maple, but chiefly maple. It has been found that the Canadian hard maple is one of the best woods known for action work. The stock must be thoroughly seasoned and dried to a low moisture content so that the pieces will not shrink or check when finished. The stock used must be sound, free from all defects, and first grade in every respect.

Accurate Work Required

The turnings must be well finished and very accurate as to size. In fact, extreme accuracy is demanded for certain of the items, where the allowance, or limits of variation, is figured by thousands of an inch. Certain of the button-shaped pieces are assembled on the shanks of the longer parts. Here a snug fit is demanded. This calls for accurate boring as well as turning. Some of the longer pieces have a small hole indicated by the dotted lines, run part way through the centre.

If one were to look for opportunities of this kind there is no doubt that many other similar instances, where special turnings and other wooden articles were being imported, would be brought to light. It is



Samples of turnings used in piano actions

doubtful if wooden mixing bowls, mixing spoons and ladles, butter spades and similar forms of woodenware are being manufactured in Canada though such articles are offered for sale practically in every hardware store and must consequently be in strong demand. If any of the readers of the "Canadian Woodworker" know of any wood importations being made, where the article or articles could be manufactured locally, their co-operation in sending such information to the publishers of this paper would be appreciated.

To Distinguish Mahogany and Walnut from Red Gum

In the manufacture of furniture and cabinets a great deal of red gum is used as an imitation of mahogany or Cirassian walnut. When red gum is properly finished it can be made to look so much like either of these woods that only by very careful observation can the true be distinguished from the substitute. There is a very distinct difference, however, between red gum and mahogany or walnut. This difference lies in the size of the pores.

In mahogany, Circassian walnut, and black walnut the pores are so large that they can be seen very distinctly on a smoothly-cut surface of the end grain, where they appear as minute openings smaller than pin holes, but visible without magnification. On surfaced faces the pores appear as fine grooves, running parallel with the grain. They are even visible through the varnish, appearing as dark lines.

In red gum the pores are much smaller and can be seen only with a magnifying glass.

J. H. Baetz
Baetz Bros. Co., Kitchener
Chairman, Kitchener and Waterloo Branch

H. M. Snyder
Snyder Bros. Upholstering Co., Waterloo
Vice-Chairman, of the new Branch

Furniture Men Head New Organization

At a meeting of Kitchener and Waterloo manufacturers, held in Kitchener, Ont., recently, it was decided to organize a Kitchener-Waterloo branch of the Canadian Manufacturers Association. J. H. Baetz, of Baetz Bros. Furniture Co., Limited, Kitchener, Ont., was elected chairman of the new section, and H. M. Snyder, of Snyder Bros. Upholstering Co., Limited, Waterloo, Ont., was elected vice chairman. The Kitchener and Waterloo Manufacturers' Association, which has been active for some time, is doing splendid work. but it was felt that the support of the larger Canadian Manufacturers' Association would be invaluable in furthering the work of the local Association.

Why Furniture Industry is Shorthanded

M. Wulpi

We have been interested in the results of our recent canvas to ascertain the number of employees and the wage scales of the different branches of the furniture industry. In this connection it will be of interest to note the following figures taken from other lines of endeavor:

		Employees		
	Plants	March, 1919	March, 1920	Per Cent.
Woolens	50	24,986	48,361	93.6*
Men's Clothes	49	23,666	36,770	55.4*
Cotton Finishing	16	8,758	12,808	46.2*
Automobiles	38	91,668	123,434	37.9*
Hosiery and Underwear.	65	28,495	34,302	20.4*
Cotton Manufacturing	52	45,973	53,318	16.0*
Paper	53	23,976	26,625	11.0*
Leather	33	15,793	17,486	10.7*
Silk	49	15,188	16,750	10.3*
Boots and Shoes	70	58,392	63,710	9.1*
Iron and Steel	111	160,467	170,963	6.5*
Cigars	56	18,233	16,746	8.2†
Car Building	51	55,501	48,835	12.6†
Total	693	571,096	670,108	34.8*

*Increase. †Decrease.

With an increase of 199,096 employees in 693 plants we should have materially increased production, but the reports indicate that "Labor does not produce."

The 31,766 hands that the auto industry added may explain where some furniture help went and why the latter went short.

The textile industry increase seems to be heaviest and may portend increased production and a reduction in price of clothing.

Large Sash and Door Factory in Edmonton

The Hayward Lumber Co., Limited, Edmonton, Alta., are constructing a new sash and door factory, 66 x 164, two storeys high. This concern was founded in 1906 by G. E. Hayward, with headquarters at Vermilion, Alta. In 1916 they moved to Edmonton and took over the sash and door factory and lumber yard conducted by the Northern Lumber Co. The new plant will be equipped with modern machinery, including machines manufactured by such well-known firms as P. B. Yates & Co., of Hamilton, American Woodworking Machinery Co., Rochester, N.Y., Cowan & Co., and Canada Machinery Corporation of Galt, Ont. A Grand Rapids vapor kiln is being installed. The equipment will be driven by electric motors and the power plant used for heating purposes only. About 100 men will be employed and such lines as windows, doors, interior finish, store fronts, store fixtures, etc., will be manufactured.

This firm operate about 20 retail yards throughout the west and a large proportion of the product of the new factory will be disposed of through these yards. The cost of the new buildings, not including equipment, is anticipated to run in the neighborhood of $100,000. G. E. Hayward is the president of this company and John Hening secretary-treasurer.

One of the things which riles a good workman more than his most difficult work is to lose an hour's pay because he was half a minute late.

Designing Boxes for Maximum Service

Details of Construction Depend Largely on Service Demanded—Value of Reinforcements

By Malcolm W. Hill*

At present when our foreign trade prospects are so bright, the subject of export boxes is most pertinent and their design and the materials used in them must be given more serious thought than ever before—unless we are to again get condemnation due our boxes failing in overseas service.

Box design has been defined as the development of definite details for constructing boxes which will deliver their contents to the purchaser in satisfactory conditions at minimum cost. This is a concise statement of fact—but contains a great many implications which are anything but easy to analyze.

Deciding Details of Box

First, what are those details of construction that will deliver 100 pounds of glassware to Chili in safety—what are they that will give a good box for 100 pounds of dried peaches going to Melbourne—each case presents some entirely different problem and the box manufacturer is expected to help in solving these various matters and to aid the buyer or the exporter in choosing the best boxes for the individual duty wanted. To do this he must have some idea of the conditions of transit and handling all along the route until the destination is reached. True, it is the duty of the buyer and packer to secure this information, but when they are in error if the boxmaker can add a suggestion to set them right, he may not only get their gratitude and goodwill, but will forestall the complaints and condemnation that is sure to follow an unsuitable case—when the blame will too often be placed on "the rotten lumber in the cases." Real cooperation is what is wanted all along the line and this will safeguard everyone.

The reason for factory made boxes are several—convenience, time savin, standard construction, etc.—boxes have some advantages over bales and bundles with many commodities where any slight change in shape will do permanent damage; also boxes are many times easier packed, marked and handled. They serve as receptacles in collecting the miscellaneous articles making up contents and their rigid form provides the protection that is a necessity for many kinds of shipments.

The exporter must select his boxes with great care and with constant thought as to the needs of each individual shipment and the hazards it will pass through before reaching its destination.

Medium Weight Case Best

In general we may say that the medium weight case gets less of the terrible racking blows due to falls than the very heavy or very light cases, the heavy ones get damaged owing to the fear of personal injury among freight handlers who "stand away and let her drop," while on the other hand the little or very light case gets abuse just because it can be tossed about so easily

Therefore the medium weight cases may be constructed with a smaller factor of safety than the very heavy or light ones.

The rules as adopted by the National Association of Box Manufacturers are with few exceptions accepted pretty generally as representative of good practice, as their box types have been chosen after a long and successful experience. The box manufacturer who thinks the boxes are perfect and cannot be improved upon, however, is going to get a shock some time in the future, as competition is keen and he must keep up research studies or the other container people will get the business.

The strongest arguments the wooden boxmaker has had in the past has been the ancient reputation of the wooden box for long and reliable service under most all conditions and the ease with which the wooden case is classified as freight. But it must be remembered that a large amount of credit for the honorable performance of the ancient boxes was due to their being made of carefully selected stock and with individual skill in assembly.

Other Containers Growing in Favor

High costs of labor and materials have prohibited much of the individual care in construction now and in some cases it would not be justifiable, but on the other hand in many export shipments it is justifiable and this point must be recognized and the care put into the export boxes that they require as a first and vital factor to the safe arrival of the shipment.

The collection of damage and loss data should be carefully carried on with the necessary corrective recommendations and this information placed promptly in the hands of the people interested.

A curve plotted which shows the demand for wooden and other type containers for the past few years shows a steady gain in the newer types over the wooden boxes and containers. The fibre board and corrugated containers have taken a very large place in domestic shipments and may also be improved so as to give satisfactory service for export shipments, but the cost of additional reinforcements and strip seals, etc., will add very materially to the price, as the gluing takes time and skillful manipulation to give a tight and permanent job.

The reasons for the substitution of other containers for wood are first of all lower cost, then greater convenience in handling and, due to lighter weight, less freight charges. Again less skill is required in packing them than to pack and fasten a wooden box. The relative worth of different containers is not at all well established and until it is the arguments of first cost will have undue influence. The manufacturer who gets exact performance data on his product and that of his competitor will get the jump on the rest of the fellows.

Enormous Amount of Material Used

No exact data of recent date is available that I know of, but the immense amount of material used annually in box shooks is little appreciated; even five years ago it totalled some 4,000,000,000 board feet for

*Address before N. C. Pine Box and Shook Manufacturers' Association, Baltimore, Md.

shooks and another billion for veneer boxes, the exact figures in square feet are hard to get at on account of the varying thicknesses used and the waste due many methods of milling. But the amount in square feet is probably nearer 10,000,000,000 feet.

The tremendous increase in price of lumber at mill and the costs due storage and drying have caused many factories to turn out green lumber boxes that have been a serious detriment to the wooden box industry; it is doubtful if the fibre box salesman can use any stronger argument than to take his clients around through any big terminal and show the many cases of boxes collapsing through use of lumber with an undue amount of moisture in it when nailed and strapped up.

The bulletins and leaflets which are published and issued broadcast by the box associations have made the types pretty well known and hence the packing and shipping departments of most of the box users must be fairly well posted on the main advantages of the common types of boxes. The discussion doubtless in most cases resolves itself into whether cleats are necessary or not, and if so, what kind and size.

Reinforcement of Value

Now some radical points were investigated by the army packing men during the past war and one of the most important was the undoubted value of outside bindings of various kinds in insuring the safety of the contents of a box. If the weight is not great it was found that an uncleated box with proper strapping got there safely at times, though the lumber was too trashy for the purpose. Here, of course, also the contents of the individual case has a great deal to do with the results—if contents are such as to reinforce the box from the inside and absorb part of the blows without damage—a much weaker box will suffice, but if the contents are such that the blows damage them, then to deliver the contents safely the box must be greatly increased in rigidity and strength.

For boxes over 75 pounds the choice of cleated or uncleated is a question of convenience and lumber stock in hand—if you have the thicker material and can make the stronger box without a consequent tax in freight and duty charges, all right; if not, of course conserve weight by the use of lighter material and add the desired strength by cleating and banding. Whether cleats are inside or outside is a matter often depending on the contents.

In canned goods, for instance, with round cans, the corners are not occupied and so the use of a triangular corner cleat is a feature for real space saving and yet adds the proper strength.

The most important subject for the wooden boxmakers to investigate, in my judgment, is the better balancing of wood with metal reinforcing material —to ascertain with definiteness the amount of lumber used and the amount of steel to get economies in first cost and then the relation of this initial expense to the necessary added cost of making this wood-steel box safe for any contingencies under export conditions.

Tests have showed conclusively that with a little more reinforcing on the outside, packages made of very thin and weak lumber will hold together until the contents are demolished without collapsing sufficiently to spill its contents.

(Continued in August issue)

Practical Course in Boxing and Crating

The economic loss in shipping in the United States due to poor packing, poor containers, unnecessary first cost, etc., is conservatively estimated at not less than $500,000 a day for all classes of domestic and foreign shipments. This loss can be materially reduced by the use of properly designed shipping containers.

Practical training courses have recently been conducted at the Forest Products Laboratory to make available to manufacturers and packers the principles that underlie proper box and crate construction. The boxing and crating course has proved so satisfactory, that as long as there is sufficient demand by shippers and others interested in good container construction, the course will be given monthly starting in July, 1920.

The course consists of one week's instruction in boxing and crating under a staff of competent specialists. To cover the cost of conducting the course, a co-operative fee of $75.00 per man is charged.

Brief Outline of the Course

Tests on various types of box construction to show characteristic failures.

Tests to demonstrate the necessity of adequate nailing.

Demonstration to show the effect of using one, two and three piece ends, sides, top and bottoms.

Relative holding power of different kinds of nails.

Effect of using wet lumber for boxes.

Strapping: Method of application and efficiency.

Influence of grade of lumber and location of defects on boxes and crates.

Solid and corrugated fibre board and wire-bound boxes.

Crate construction and tests.

Selection and identification of woods.

Especial attention will be given to the specific problems of the men enrolled.

Firms or individuals interested in enrolling representatives should communicate at once with the Director, Forest Products Laboratory, Madison, Wisconsin.

Purpose and Organization of the Laboratory

The Forest Products Laboratory is a government institution of industrial research conducted by the United States Forest Service at Madison, Wisconsin. The aim of the laboratory is to promote economy and efficiency in the utilization of wood and in the processes by which forest materials are converted into commercial products. The personnel consists of over 200 engineers, chemists, specialists and assistants.

The results of the researches of the laboratory are given to the industries and individuals concerned through personal contact, correspondence, government bulletins, articles in the trade press, mimeographed circulars, technical notes and practical instruction courses.

Some of these days some rare musical genius, with true poetry in his make-up, and his soul steeped in and saturated with "concord of sweet sounds," is going to set the song of the buzz-saw to music, and then we will have an opera that will rival the music of the spheres.

There are several belt dressings on the market which the makers claim can make a belt give excellent service even when it is run dead slack.

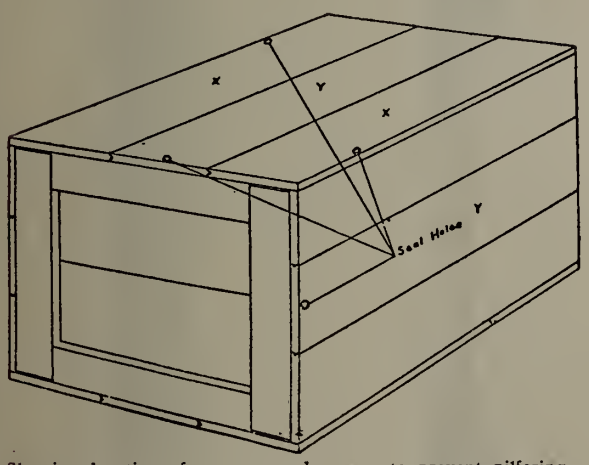
Box Designed to Prevent Pilfering

Proper Construction Discourages the Opening of Boxes During Shipment—Broken Seals Indicate that Boards Have Been Tampered with —Screws for Return Service

Many million dollars worth of goods are lost each year by pilfering both in domestic and export shipment. Of course, no wooden box can be made so strong that it cannot be broken open. A box can be so sealed, however, that it is difficult for a thief to get into it without a good deal of trouble and without it showing the effects of tampering. Well applied strapping assists greatly in preventing pilfering, although an experienced thief can often get into a strapper box and seal it up again so that it is difficult to see that it has been tampered with.

There are a number of patented safety clips on the market which are very efficient in preventing pilfering. One of the most efficient methods, however, is to use a tongue and grooved box and to seal the top, bottom and side boards of the box to the sides and ends by means of countersunk screws and sealing wax. Each separate board of the top and bottom and centre boards of the sides should be sealed, with seals located as shown in the accompanying sketch. The seal on the outside top or bottom boards "X" should be on alternate ends about 8 in. from the end of the board. The centre board "Y" should each have one seal at the end.

The seal is made as shown in the other illustration. A hole "H" is bored ¾ in. wide by 3/16 in. deep, care being taken that the hole does not break the edge of the board. A screw "S" of length equal to twice the thickness of the top, bottom or side boards of the box is then driven through the top bottom or side boards down the side or end of the box. After the screw has



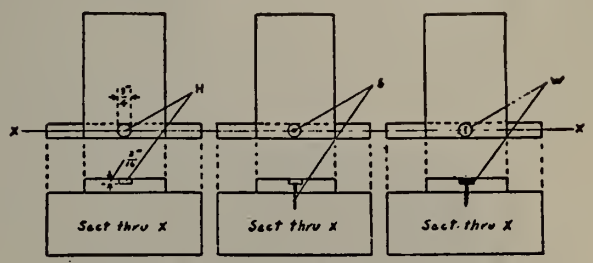
Showing location of wax covered screws to prevent pilfering

been tightly driven, hot sealing wax "W" is poured into the hole "H" so that it is about 2/3 full. While the wax is still hot it is stamped with the manufacturer's initials "I", trademark or other distinctive mark. Care should be taken not to pour the hole clear full of wax as the wax is then liable to be broken by other boxes sliding over it.

With a box sealed in this manner the top and bottom boards cannot be removed without breaking the wax seal to remove the screws after which the box would show the effects of tampering. This is the standard method of sealing used by the Munitions Board.

The Use of Screws

Where it is desired to use a box as a chest for several trips, screws are sometimes used in place of nails for attaching cleats to ends and for attaching sides, tops and bottoms to ends. To avoid splitting the first board through which the screw passes, it should al-



Showing method of drilling, sealing and waxing

ways be bored, the diameter of the hole being equal to the diameter of the shank of the screw. With the harder woods such as beech, birch and maple it is often necessary to drill the hole the full length of the screw, in which case the hole should be the same diameter as the diameter of the screw measured at the base of the thread.

The number of the gauge of the screw to be used in screwing cleats to box ends where cleats are not more than 1 inch in thickness should be No. 10, No. 11 or No. 12. The number of the gauge of screw to be used in screwing side, top and bottom boards to box ends or cleats depends upon the thickness of the material into which the screws are driven. It goes without saying that a heavy screw should never be driven into the edge of thin stock.

Apil Boxis

Vice-President Taylor, of the Multnomah Lumber & Box Co., Portland, received the following letter from a Columbia River fruit grower:

Mistur Tailour, Moult. Lum. Box. Co.

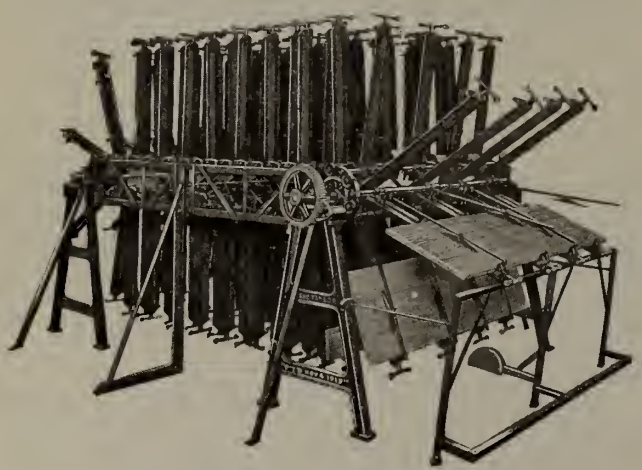
Dier Naybor: The apil boxis yu shiped me by o. w. last munth sum time ago cum duly recd. My god, is we souposed to give the o.w. feller the frait on em. When we bot them boxis for our spitzes apils yu riprecented to lie them doun to me, but they no lie, so now yu sent me quiker'n hell a receet for 4.11 monie to agint, paid him to kep apils from rotin. besides in countin boxis theys too short and my nabor says wer beet on the deel. Whars the printin on the boxis to tell whos apils they is. Does it cum extra in pacige at depo that looks two smaul and if pakige is pakige howdu yu put on the printin. Thares no nales to. hell, it takes mour monie fer hard waer stoer to put on tops with. How maney is safe in each box to keep top frum slipin off. wil shingul nales do or biger ones. Yrs. J. B.

P. Ess. When yu rite say if printin in pakige is red or blue. I like red as our apil trees don't rais blue ones.—Barrel & Box.

Machinery & Equipment

Convenient Clamp Carrier

The Taylor clamp carrier, shown in the accompanying illustration, was designed by an expert after an extended study of the requirements of equipment for edge gluing. The carrier requires very little space and accommodates more stock than can be piled in an equal floor space. A 40 section carrier with 160 to 240 clamps measures only 8 ft. 2½ in. between shaft centres and equipped with clamps opening 32 in. stands only 8 ft. high. There is plenty of room between section in use and succeeding one, so that joints can be inspected and hammered at extreme inside. The sections are far enough apart so that no



Efficient form of revolving clamp carrier

difficulty is experienced through glue dripping to the section below. No power is necessary as the carrier can easily be operated by hand.

Many advantages are provided in the clamp with which this carrier is equipped. It is composed of two pieces of angle steel placed sufficiently far apart to allow a draw bar to extend through the centre and this provides a 5 in. table which makes it possible to glue up short stock in one clamp. This feature allows the Taylor Carrier to handle double the amount of stock in a carrier, where two clamps are necessary for each piece of short stock. This clamp is exceptionally stiff and strong and draws the joints up tight. It is particularly well adapted to 3/8 in. and 1/2 in. stock, but can be used to just as good advantage on thicker stock.

Most manufacturers realize the obvious advantages to be gained by using a clamp carrier for edge gluing; there is no time lost picking up clamps and placing them in position; the motions of operators are simple and uniform. Then, too, it is a well-known fact that clamps are worn out more by abuse than by actual use. Having a clamp carrier abolishes this.

The Taylor clamp carrier has been on the market for some two or three years, but this year the company is marketing several kinds of new equipment to be used with the carrier. With this new equipment it is possible to apply veneer on the ends of stock as well as the sides at the same time and another attachment makes it possible to glue stock 6 in. thick in a clamp carrier. These articles are both very much in demand. Carrier and attachments manufactured by James L. Taylor Mfg. Co., Poughkeepsie, N. Y. A. R. Williams Machinery Co., Toronto, Canadian representatives.

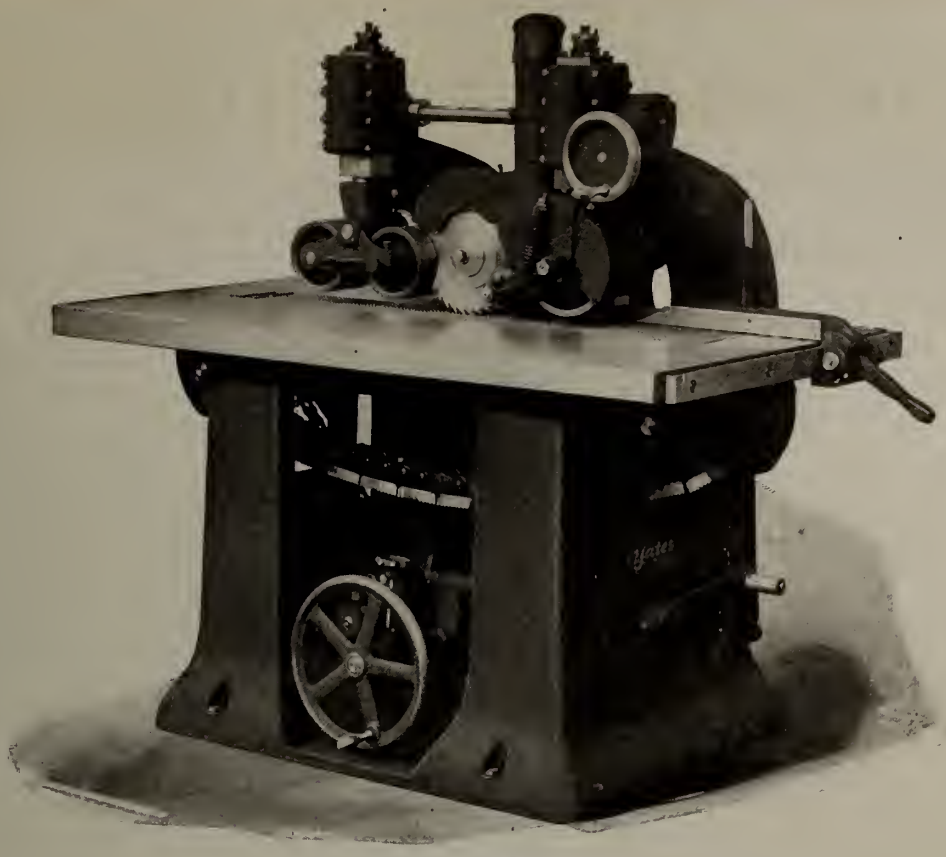
A Beltless Swing Saw

A self-contained motor driven swing saw is shown in the accompanying illustration. The motor is mounted on the lower end of column and directly connected to saw mandrel by a steel bevel gear, the saw mandrel is 1⅛ inch and is mounted in S. K. F. Ball Bearings. The steel bevel gear and the ball bearings operate in oil. The column is of channel steel, suspended from a rigid cast iron hanger of unified construction to insure rigid support and eliminate vibration. Each side arm of hanger maving a four-way adjustment, which makes for accurate alignment. The column is adjustable six inches in length to accommodate various sizes of saws.

A rocker coil spring is provided in place of the ordinary counter-balance weight to increase speed of

Motor driven beltless swing cut off saw

operation and is so designed. that as soon as the saw starts through the work, the spring is inoperative and the operator has only the resistance of the cut and the weight of machine to pull. To prevent the saw



Yates type G.2 edging and jointing saw

swinging forward too far, an automatic stop is provided.

The saw guard is of cast iron, extending completely over the top half of the saw. The handle is extra long and is so designed, in connection with the guard, that danger to the operator's hand is eliminated.

The elimination of belting and the use of ball bearings with the motor directly connected to the saw mandrel, insures increased production, accurate work, economy of operation, and safety to operator.

The machine is equipped with a 4-H. P. motor, of any voltage, 2 or 3 phase, 600 cycle current and one 16-inch circular saw. The motor speed is 3600 R.P.M. with the saw mandrel geared down to operate at a speed of 2200 R.P.M. Weight, complete, 350 pounds. Full particulars may be secured from R. O. Eaglesfield, Indianapolis, Ind.

Yates Edging and Jointing Saw

The Yates type G. 2 edging and jointing saw is shown in the accompanying illustration. Extremely accurate ripping may be done on this machine so accurate that if a smooth-cutting saw is employed the pieces may be glued up as they come from the saw without any further correction. This is accomplished by means of an endless bed which carries the stock beneath the rolls and saw. An efficient kick-back is provided in the shape of a steel bar which fits in the groove of the travelling bed and which is fastened securely at each end. This device prevents splinters and slivers falling into the groove of the moving bed, where they would likely be thrown back toward the operator. Four smooth face rolls, together with two small taper rolls, hold the stock firmly on the moving bed and prevent all swerving or side-motion. The small taper hold-down rolls are set with their axis at an angle, permitting the rolls to work very close to the saw. Sufficient motion is provided to take care of slight variations in thickness of stock, but a hand wheel, with dial, is provided to make quick adjustments for handling stock of different thicknesses. Provision is made for adjusting two halves of table to take care of wear on end of blocks. The arbor is of large diameter, 2 1/8 in., and is mounted in a yoke. Adjustments are provided so that the arbor may be kept in perfect alignment with the travelling bed. A vertical adjustment permits of different size saws being used. Three rates of feed are permitted, namely. 60, 90 and 130 feet a minute. The machine may be had for either belt or direct connected motor drive and may be changed from one to the other with very little trouble. An extension table may be had for the handling of wide stock. Another extra attachment is what is called a sizing attachment. This consists of a metal slat table which rolls back and forth on a two-rail track, attached by brackets to frame. When laying up wide stock, the pieces are laid in order on this travelling table until sufficient width has accumulated, then the whole width is sized by moving the work toward the saw as far as a screw bolt stop will allow, and sizing to width. Full particulars regarding this saw may be secured from the P. B. Yates Machine Co., Hamilton, Ont.

The electrician is employed to repair all wires and electrical equipment. If you attempt to do his work you take your life in your own hands.

When moving around the mill, always use the regular safe walkways. Short cuts are dangerous.

Upholstering and Trimming

Better Human Relations in Industry

By D. D. Fennell*

(Continued from the June number)

Mr. Gompers was somewhat displeased with the final report of the President's Industrial Conference, released to the public on March 21st, because it emphasizes the thought that employers and employees can develop most satisfactory production conditions and living conditions when the management deals directly with the men.

I wish to read to you the principal message that has come to us from that conference. This is in line with the best industrial relations practice of the day. "The guiding thought of the Conference has been that the right relationship between employer and employee can be best promoted by the deliberate organization of that relationship. That organization should begin within the plant itself. Its object should be to organize unity of interest and thus to diminish the area of conflict, and supply by organized co-operation between employers and employees the advantages of that human relationship that existed between them when industries were smallest. Such organization should provide for the joint action of managers and employees in dealing with their common interests. It should emphasize the responsibility of managers to know men at least as intimately as they know materials, and the right and duty of employees to have a knowledge of the industry, its processes and policies Employees need to understand their relation to the joint endeavor, so that they may once more have a creative interest in their work."

No modern plans for right industrial relations in a plant are possible when that plant is dominated by union leaders.

There is no particular plan for the cure of industrial ills that is applicable to all shops indiscriminately. Local conditions, character of product, past customs and habits and the personality of the management, have much to do with the determination as to how best to have maximum production under happy working and living conditions. . .

I am a great believer in the necessity for starting on the analysis of a plant by making careful study of working and wage arrangements with accurate determination of what is just to all parties concerned. The employer must ever consider that when he is receiving requests or demands from his men there are four interested factors that must receive consideration. These are Capital, Management, the Worker and the Community.

Unfortunately Labor today in its demands considers too little three of the factors and exaggerates out of all proportion the Labor factor.

Today the successful manufacturing plant is marked by business ability, wise organization, leadership that has vision and the spirit to attain it. In such a plant there is a deep-seated desire on the part of the management to bring about such loyal interest of employees in the organization that it should be to them a second home. The fullest measure of development physical, moral, mental and spiritual, of every individual in the organization through the use of the social function is the basic purpose of such management. The result:

1st. Working conditions and living conditions which make for happy and healthy workers.

2nd. A commensurate wage which is more than a living wage.

3rd. Determination to make brotherhood and fraternity a genuine realization by developing assured identity of interest throughout the plant.

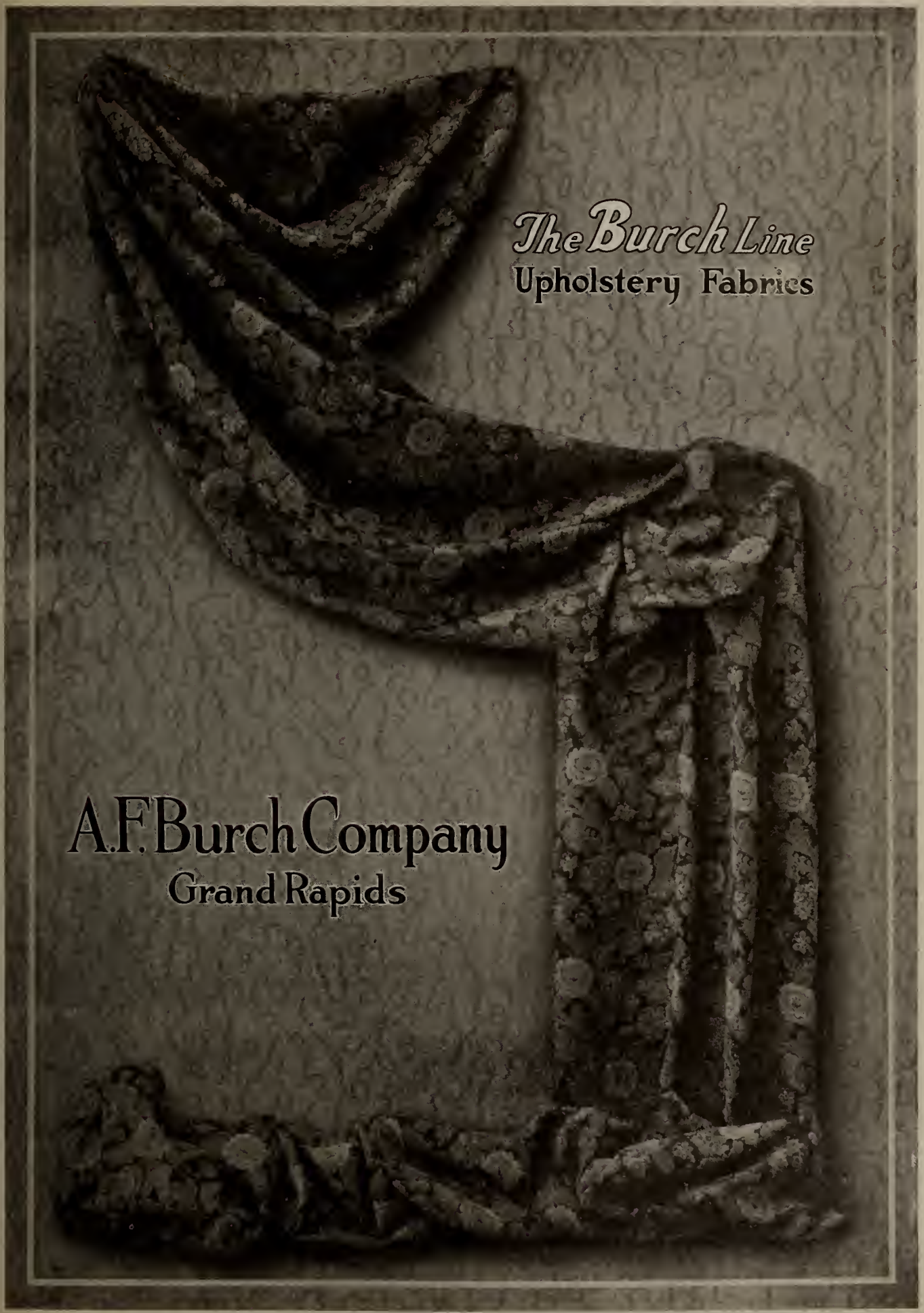
4th. Appreciation of the fact that leadership in management combined with the ability of the workers can develop a solution of most of our industrial difficulties by our platform.

This Association stands for the open shop. The open shop must needs supply all of the elements that are demanded by the workers. The union offers to the man that which satisfies his social instinct; so must we put emphasis upon fellowship clubs, sports, entertainments, dances and other recreative features that have an important place in the modern plant Then in case of illness, or accident, provisions of a substantial character should be made for the worker's family in addition to the usual legal compensation. A fellowship club with mutual benefit association features is a workable and commendatory means of bringing happiness and contentment to the workers. In such plants as the management has succeeded in selling the job to the man, boards of co-operation in the general handling of labor matters have been successful in many instances, and when adaptable can well be used.

Your workmen are not looking for "welfare" work. It is well that this word be not used in connection with industrial relations. Your American workman does not want anything that has any suggestion of charity attached to it. He wants to consider things from a profitable standpoint the same as do you. It has been my experience that quite as much as he desires adequate compensation, the workman desires recognition, and the opportunity to express himself. Among all workers we find this to be true; the young man is ever looking for a chance to advance himself, to attain an ambition that has perhaps lived with him for years, while your older workers want above everything the assurance of continued employment.

The thing to do is to make of every plant an industrial family; to give to every young man in your employ a chance to express himself; to eradicate dull monotony from any of your operations by changing the work for your men occasionally where possible. Give that uncontrollable urge, which when misdirected makes for trouble, a chance to function along constructive lines. Man is a mental creature. Encouragement of your men to think brings practical, help-

*Director Industrial Relations, National Association Upholstered Furniture Manufacturers.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Grand Rapids

ful results to you. We must open our shops. We must provide in our individual plants for the advancement of the young men. We must secure permanent employment for our older workers, and all through our organizations there must be the sort of happy conditions as will conduce to maximum production at the lowest possible cost. Let us have a genuine union of all of our own men within our own shops, and there will be little need for them to go outside for the sort of thing we can give to them within our own plants.

I desire to conclude this address by quoting to you the following paragraphs from a recent report of the Special Legislative Committee on Reconstruction of the Wisconsin Legislative:

"The heart of the world has been touched more deeply than it has ever been touched before in our time. The world is full of hope. The sentiment of the world is for better things. The social and economic reconstruction is an effort to satisfy this feeling and this longing of the world. It is a serious effort to make the world a better place to live in. These are some social facts which we have accepted as inevitable, which the new hope in the world cries out against with an insistent demand for immediate change.

"Any reconstruction movement should be based on the nineteen century old doctrine that 'men are brocation of the Christian ethics to social and economic policy. This is the road to sanity; that is the road to thers.' There must be a more thorough-going applisound reconstruction; that is progress."

Is Large Part of Lumber Wasted?

W. H. Gehm, of Indianapolis, gave a very interesting address on "Production in Furniture Factories" before the Extension Dining Tables Manufacturers' Association, in Chicago, recently. He likened a furniture factory to a twelve-storey building. The first floor was called lumber; second, glass; third, hardware and glues; fourth, finishing materials; fifth, factory labor; sixth, overhead; seventh. manufacturing; eighth, selling and administration; ninth, transportation; tenth, management; eleventh, selling value, and twelfth, profit.

In summarizing he stated that lumber stock is about 60 per cent. of normal, while values have increased about 300 per cent.; glass is very scarce and high in price; glues have advanced about 300 per cent.; the same increase holds good on finishing materials; labor costs have advanced 160 per cent; the increase in overhead amounts to 150 per cent. and the cost to manufacture has, on the whole, increased about 300 per cent. The selling value and profit are an effect of high manufacturing costs and not a cause. The first six items determine selling value of product and no decrease in furniture prices can be expected until there is a decrease in these items.

Mr. Gehm also made the startling statement that 80 per cent. of the lumber purchased is wasted in kiln drying and in process of manufacture. About half of this waste can be eliminated by proper drying and proper yard handling before going into the kiln. A large number of plants do not use up-to-date methods in their lumber yards. A saving can be effected by sticking the lumber in the yard the same as in the kiln. Until a manufacturer gets all possible out of his lumber he is not in a position to kick at lumber prices. He further stated: "I am a believer in physical culture. Most manufacturers disregard their physical development, on which depends their proper mental condition. You must be physically right for your mental need. You owe it to your self and your plant.

Marking Coverings to Advantage

The use of stencils in marking patterns on quantities of coverings for use on upholstered furniture, auto bodies and other articles requiring pieces cut to shape, will effect a saving in time and material and prove a great convenience as well.

These patterns are made on heavy brown paper, the width of material to be cut. The length of the pattern is determined by the length of the lay. The usual cardboard patterns are carefully arranged in the lay to cut with least possible waste and produce material in the number of pieces per unit or sets required. Time given to this arrangement of patterns is well spent, as there are instances in the automobile business of cutting with an average waste of only 3½ per cent and in some cases less than 1 per cent.

The patterns are drawn on the paper after the most economical arrangement has been worked out. The lines are then perforated. This perforation can best be accomplished by the use of a steel disc about 1½ inches in diameter with a saw tooth edge. The disc should revolve on an axle to which a handle has been attached. By rolling the disc over the lines on the pattern a suitable perforation can be secured.

After the lay has been built up, the stencilled pattern is placed on top, and powdered over the perforated lines with whiting or talc tied in a cloth that will permit the powder to sift through. Removal of the paper pattern will show a lay marked for cutting.

Chain Drives on Woodworking Machines

During recent years the use of the roller chain in connection with the driving elements of woodworking machinery has become immensely popular. and, perhaps, deservedly so. For one thing there is no opportunity afforded for slip when using a chain, the drive is positive, and modern made chains are the outcome of much scientific thought and experiment, hence wear is inappreciable, and the drive is a smooth and silent one.

But to minimize wear some little care needs to be exercised. If it is at all possible, a chain should be protected against flying dust and chips incidental to wood-working operations. It should also be periodically brushed, some mineral oil run into it in order to remove caked or glued-up grease, then some clean oil of good quality applied. A much better arrangement is, of course, the application of an oil bath to a running chain, or, failing this, some form of splash arrangement, or drip-feed lubricator; if the latter, then the feed should fall on the inside of the chain.

The best-designed chain drives are those that have provided some form of adjustment between the shaft centres, as with wear it becomes essential to take up superfluous slack, since an over-slack chain is apt to "whip" and this has the effect of destroying smoothness of running and strains the journals of the respective shafts.

The greatest success in chain driving is assured when the drive is as near horizontal as possible, but if an inclination of drive must be, it ought not to exceed 45 degrees. A vertical chain drive is seldom efficient for any great length of time. A drive should be as close to bearings as possible, the shafts must be parallel and lie in a horizontal plane, and all end play must be reduced to a minimum.

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Standard Paint & Varnish Co., Limited

Windsor, Ontario

THE FINISHING ROOM

Securing a Fine Finish on Hard Maple

Use Light Materials to Bring Out Natural Shades —Beautiful Wood When Properly Handled

By John N. Moore

We have nearly all heard the old story about painting the lily; "you really cannot improve it," and some of our standard finishes belong in the same realm of industrial art, having reached such a degree of perfection that it is practically impossible to make them any better. Is there really anything more beautiful than some of the wonderful wood finishes to be seen on the best furniture? Even the layman has come to detect the standard from the imitation,—the cheap and shoddy from the genuine. When it comes to wood finishing there is practically only one course to pursue, "use the best." Of course, there are some cheap grades of furniture whose market will not stand the better finishes, but even then the best for the purpose can be used.

The treatment of wood, whether hard or soft, is a very interesting subject, and the process has gone through a long and steady development that has brought it to its present seemingly final state. The subject, however, is so complicated that no finisher, no matter how skilled, finds himself totally without finishing troubles, for they come even to the most experienced.

White Shellac and Light Varnish

One of the most beautiful hard woods we have today is maple, very pale in color, sometimes almost white, which demands to be filled and finished in such a way that the natural beauty of grain and color will not be interfered with. This resolves itself into a simple matter, however, as a very pale white shellac should be used, and a varnish that is almost white is all that is required for the proper filling and finishing of this beautiful wood. Should linseed oil be used it will darken the work, as it will almost any of the light colored woods. The first thing to do is to apply a thin coat of white or bleached shellac varnish, first being sure that the surface is very smooth, clean and perfectly dry.

Some finishers prefer to cut, that is to prepare the gum themselves, thinking in this way to get a better varnish than they can secure elsewhere. To those in this class it is easily accomplished by procuring the gum shellac in white or bleached form, and dissolving it in denatured grain alcohol. Many varnish manufacturers use this word "cut" when speaking of making shellac varnish; it is produced by the cutting or dissolving of the gum by the alcohol, the other common way of cutting it being with alkali. Benzol, however, also dissolves the gum quite readily.

Thin Shellac Serves the Purpose

It is wonderful how thin shellac may be used and still have a good "fill" or finish. A thin coat is practically always preferred to a heavy one. Thin shellac when applied more evenly than the heavier is less apt to show brush marks and frequently dries with none at all. Two thin coats are always better than one heavy one. It is advisable to use a glue set brush for applying varnish always. Steel wool is also better than sandpaper for smoothing the shellaced surface. One should be advised against touching up any places that may have been missed when shellacing, the suggestion is to be careful not to miss them.

Should the shellac coat turn white you may be sure that it contained some water, which upon analyzing would have been found in the alcohol. Alcohol is greedy for water. The vessel containing this fluid should always be well corked, otherwise it drinks in moisture from the atmosphere, getting weaker and weaker all the time. When the shellac turns white the work is generally ruined. By white we mean that the bleached shellac loses its natural, pale color and when a brown shellac is used it turns a pale brown or perhaps a near white, streaky color.

Some consider it very important to add a little spirits of turpentine to the shellac varnish. It is also important that you have first quality shellac for finishing white or pale maple wood. This is why we have devoted quite a few paragraphs to the best selection of gums, liquids, etc.

To Obtain a Good Body

If you want first class work, four coats of white shellac are necessary. Each coating should be rubbed down with fine steel wool, finishing with one coat of very pale or white varnish. Maple as a rule looks best finished in the full gloss, although some prefer it in the dead finish.

We find some finishers who think it is best to fill and some who prefer merely a priming coat. Shellac, however, serves as a very fine surfacer and really not as a filler as the word is usually interpreted. Maple is a fine, hard grained wood and requires no filling aside from that offered by a liquid like shellac. When several coats of this are given the need of a filler entirely disappears. A filler ordinarily being a preparation used on an open grain wood like chestnut, oak, etc. With such woods as these it will take many coats of shellac to effect proper filling, therefore, the use of a regular filler is advised, but as we are speaking of maple the principal thing is to preserve the natural beauty both as regards color and grain, nothing could be better than a shellac varnish. Sufficient coats of this and a full flowing coat of pale varnish will give you a very fine finish.

Perfect Surface Essential

In the first place the surface should be made smooth by the woodworker, and then the finisher should see that it is perfect, and if not should make it so. All grease, dirt marks of any kind, etc., should be thoroughly removed, even to the smallest suspicion of dust.

The staining process of maple is quite easy, and some very fine effects are obtained, as for instance,

a fine green made with copperas water, but the staining of maple is not, however, as a rule resorted to.

You will find that shellac is rather more difficult to rub than varnish. It also is costly just now, and certainly where the work is of such a character that good prices can be demanded, shellac should not be replaced by any substitute. White shellac fills the wood and makes an ideal surface, preserves the natural color of the wood, and does not impart any additional color to it.

Plenty of Drying Time Allowed

Be sure that the varnish coats and the several coats of shellac be given plenty of time to dry between each coat. Failure always follows rushing the work. Damar varnish, while slow and quite white, will not do for maple. It will not stand rubbing or will not take a high polish. We believe this to be too soft a varnish. One or two coats of white or pale copal varnish will produce a very fine white finish, but should have three or four days allowed between coats. If extra good work is desired the second coat should have five days for drying, after which it may be rubbed with fine pumice stone powder, water and a bit of felt. After this, wash down well with clear water, rub with chamois skin or let the work stand for a day, then polish with pulverized rotten stone, water and felt.

Do not be deceived by the shellac varnish seeming to be dry a few minutes after it is put on. It must become thoroughly hard, however. In this case two coats may be put on during one day as far apart as possible, but when you wish to give it several coats it is best to let each coat have twenty-four hours in which to become thoroughly hard.

Securing a Fine Polished Finish

Goods to be polished should first be rubbed down smooth with water and medium coarse pumice stone, using felt as a rubbing block. Plenty of water should be kept on the work, otherwise the varnish will cake on the rubbing block, and will scratch and tear the surface. The "caking" of the varnish can be detected from the "feel" of the rubbing block. This caking is more liable to take place where the varnish is not quite hard.

Where the goods to be rubbed have had three or four coats of varnish, it is well to have two grades of pumice, one grade somewhat finer than the other to finish off with. It is impossible to get a good job with one application of pumice on work that has had three or four coats of varnish, unless the varnish has had ample time to dry thoroughly hard.

The felt used for rubbing with pumice is usually about 3/8 inch thick. It is made in various degrees of firmness. a medium hard felt being the best for this work. Some factories start to cut down heavy work with burlap until the job is about half rubbed, then use the rubbing felt and finish off with a piece of thin felt. While burlap will hold the pumice better and cut quicker than the felt, it does not produce such fine work.

The fine rubbing may follow right after the first rubbing providing the varnish is hard. If not, it should be allowed to stand from 12 hours up, to "sweat" out and take on a hard surface.

The object of the fine rubbing which is done with rottenstone and water is to prepare the surface for polishing by removing all the scratches made by the pumice in the course of rubbing. From 12 to 24 hours or even longer, if necessary, should always be allowed between the fine rubbing and the polishing to insure a durable polish.

The results obtained in polishing depend on the composition of the liquid used in the process. This polish is used in connection with rottenstone in the ordinary way with a pad of very soft cotton waste. Better results will be obtained if the work to be polished is sponged, immediately before polishing, with a piece of damp (not wet) cotton waste. Polishing is not done with circular motions, but with a straight stroke extending from one end of the surface to the other.

The greatest care must be exercised in cleaning off the polish, which should be done by rubbing over the surface very lightly in a circular motion with a soft cloth moistened with a small quantity of alcohol. This will remove all traces of grease. If there is too much alcohol on the cloth, it will destroy the polish. To avoid this, sprinkle a small quantity of the alcohol on the cloth and twist it to allow the liquid to spread throughout the whole cloth.

For a satin finsh the varnish is rubbed down with water and pumice and then oiled. A duller finish is produced by rubbing the varnish with oil and pumice. If goods are heavily coated, the large flat surfaces such as tops, fronts and other prominent parts should first be water rubbed and allowed to stand for a few hours before being oil rubbed. This will prevent "pulling out."—"Finishing Facts"

Making Wood Fire Resistant With Paint

Fire retardent paints are the most practical means so far discovered by the Forest Products Laboratory by which small amounts of wood can economically be made fire resistant. The only other known methods of decreasing the inflammability of wood are to keep it wet, or to inject into it certain chemicals under pressure. These methods, though more effective than painting, are usually either impratcicable or too expensive to be considered.

Ordinary calcimine or whitewash has proved in tests to be as fire resistant as any paint covering tried. It is cheap and convenient to use . Although it will not prevent the burning of wood exposed continuously to a high heat, a good coat of calcimine on wood will decrease the danger of a blaze spreading from burning cigarettes, sparks, matches, and similar small sources of fire. Calcimine is, of course, more effective for inside than for outside use.

For exterior use numerous patented fire retardent paints are available. An effective outdoor point which has been developed at the Forest Products Laboratory, consists of linseed oil, zinc borate, and chrome green. This paint has maintained its fire-resisting properties through more than three years of exposure to the weather.

Because the old man does not move so fast as the young one, it does not prove that he will do less work. Jumping around cannot be put on an invoice, only the amount of sawn or planed wood.

Most Important Operation in Finishing Room

Sanding Plays Very Important Part—All Sharp Edges Should be Removed—Eliminating Delays in Finishing Room—Removing Varnish and Shellac Runs

By Harold Sutton

Constant supervision is the price of well-finished work and this applies more particularly to the sanding operation than, perhaps, to any other individual operation in the finishing room. It matters little what wood is used or how skillful the finisher may be if the sanding has been slighted, the finish is sure to suffer.

Sometimes proper attention to the surface to be finished and a liberal use of sandpaper, both before and in process of finishing, will result in one or several coats being saved. This is an item worth considering. Needless to say, the goods to be finished should be smooth, and what is just as important, all sharp edges should be broken or slightly rounded. If this is not done in the cabinet shop, it will pay the finisher to give it his attention and make it his duty to see that all the sharp edges are knocked off. Rounding the sharp eges slightly before staining will tend to prevent the edges being cut through when sanding after each coat. This means that the time and material required to touch up the places that have been cut through, will be saved.

Keep Work Moving Along

The time that the work is in the finishing room, undergoing the different operations, is a big item in the manufacturing process, especially when the goods are in strong demand and "rush" is the order of the day. Considering this, the finisher would be well repaid for any effort expended that would tend to hurry the work along or at least prevent delay and hold-ups. The labor or time saved will go toward increasing the output of the department.

Let us suppose that a lot of birch dressers calling for mahogany finish are being put through. The water stain has been applied, also the first coat of shellac. In sanding the shellac, the sharp edges on several of the tops were sanded through. This is not an unusual occurrence, but should be if proper precautions had been taken. The stock has now been in the finishing room from 48 to 72 hours and for all practical purposes is not any further ahead than when it first came in. This is accounted for by the fact that the edges that were cut through must be touched up with stain and allowed to dry and then touched up with shellac and allowed to dry, then sanded or rubbed down smooth before the varnish or succeeding coats may be applied.

Delay Might Have Been Longer

If the finishing operations had proceeded further along before the edges were cut through, it would mean a longer delay. Sometimes this trouble is encountered in the rubbing operation. This necessitates considerable work, for the edges must be re-stained and "frenched" or re-coated with varnish and rubbed down again. Thus it will be seen what might be saved by the simple expedient of sanding the edges before proceding with the finishing operations.

If oil stain had been employed instead of water, more skill and time would have been required to touch up the edges successfully. In touching up oil stain the danger of leaving a blotchy surface is much greater. The oil stain, unless shellaced over, will bleed through the varnish or pull off, leaving the edges lighter than the body of the piece.

Particular Attention to Water Stain

When water stain is used it is absolutely necessary to sand all surface after the stain has had time to dry and the first coat of shellac has been applied. This sanding should never be done across the grain, but always in the same direction as the grain runs. If sanded across the grain, nasty scratches will result. It is well known that water stain raises the grain of the wood, and unless these raised fibres are sanded down smooth, they will be noticeable when the piece is finished. This, in spite of the fact that the work may be pumiced and rubbed down smooth. In addition, it would require several additional coats of varnish to cover the standing grain. This means extra work, extra material and increases costs.

If any dust or grit should fall and adhere to the varnished surfaces, it must be sanded out before applying succeeding coats of varnish. If this is not done the specks may come out when rubbing, leaving small pits or pinholes. Never varnish a surface before it has been dusted. If you do, you may be troubled with pinholes through the dust pulling out when rubbing.

Removing Varnish and Shellac Runs

It is hardly necessary to mention that all runs should be worked down smooth before any other coats are applied. When sanding down shellac runs it often helps to use a little benzine. Just dip the sandpaper in the benzine before sanding. If a varnish run is being removed, dipping the paper in a mixture of one-half rubbing oil and one-half benzine will assist in the work. The oil must be rubbed off clean before any more varnish is applied.

The best sandpaper is the cheapest in the long run. It pays to buy the best, has been the experience of many successful finishers. Good paper does better work, cuts cleaner and lasts longer, and these advantages more than compensate for any slight difference in price. For the finishing room, a stock of ½, 0, 2 and 3, double-faced garnet finishing paper, would about cover all requirements. Double-faced paper is preferable to a single-faced stock, for when it is split the backing is thinner and more pliable. A good sandpaper, when bent, will retain all grit, and if two pieces are rubbed together, the grit will not come off easily. Moistening the back of paper slightly with a wet sponge will tend to prevent scratching.

Careful attention to sanding should be the rule in all finishing rooms.

A boy's cap thrown down the exhaust pipe on a machine may break a vane off the blower. It will certainly spoil the cap.

Wood kept permanently dry will last longer than that exposed to climatic conditions.

Are Present Day Finishes Too Dark?

The modern tendency seems to be towards furniture finished in the darker shades, often so dark that the natural grain of the wood is obscured or covered up. Is this a good practice? Wouldn't it be far better if the manufacturer of fine furniture were to apply a lighter finish, one that would enhance the beauty of the grain rather than smother it? By bringing out the beauty of a wood instead of obscuring it, it is more than probable that furniture from high priced stock would be in greater demand; for most people, the average buyer, admires and desires furniture from fine woods, of even texture and fancy grains. True, there are a few who prefer the darker shades, but they are in the minority and their tastes should be corrected rather than catered to.

One real, valid objection to dark finishes is that they make it an easy matter to successfully imitate the higher class cabinet woods. It is extremely difficult for the average person to distinguish between a dresser made of gum and the same piece made of real mahogany if both pieces are finished in a very dark shade. Thus, the makers of high grade lines, by applying a dark finish and thus increasing the demand for such shades, lay themselves open to the competition of the manufacturers of medium grade goods, much to the dertiment of their volume of sales.

There is a marked difference in cost and thus in selling price between a genuine mahogany dresser and the same piece in gum. Place these two pieces on the floor of some retail store and if the finish applied were such as to obscure the grain of the wood, they would both appear to be made from the same material. What is more natural than for the customer to purchase the lower-priced article. If the dealer were unscrupulous enough to say that both pieces were mahogany, it is a foregone conclusion how the sale would go.

Then again, it is said to be inartistic and a display of bad taste to show a preference for the darker finishes. If that be true, the maker of fine furniture should not place anything on the market that shows poor taste or that would tend to cultivate what might be called inartistic tastes in others.

It looks as if for self protection, if not for any other reason, the makers of high grade, well-designed lines in mahogany and walnut should strive to keep their finishes of as light in shade as possible and try to bring out the beauty of the wood, and thus to a certain extent limit the competition from the lower grade furniture.

Waterproof Qualities of Wood Finishes

Experiments have recently been made with a view to ascertaining the waterproofing properties of wood-finishing preparations. Paraffin and beeswax, followed by varnishing, did not afford protection, and coating with metals by the spraying methods was also unsatisfactory. Good results, however, were obtained by filling the wood, varnishing, coating with the liquid used for making gold size, and then applying aluminium leaf. After drying, the surface is varnished with a highly waterproof varnish. Experiments were made by coating electrolytically with copper. This makes a good resistance, but the metal does not adhere well. Good results were obtained with hard rubber (about 3 mm. thick). Good spar varnish, especially when four coats are used, gives excellent results, which are markedly improved by adding enamel, which indicates the advisability of using such enamel paints instead of plain varnish in all constructions exposed much to moisture.

Drying Periods of Various Woods

Conservative figures to use in estimating the kiln output possible with various woods are given in the following table prepared by the Forest Products Laboratory. Drying time as here given is not limited by the type of kiln, but by the physical behavior of the wood. Any dry kiln in which the circulation is adequate and the temperature and humidity are properly controlled should produce in the time specified material of high quality, free from visible degrade, if not quite equal in strength properties to air seasoned stock.

Approximate time required to kiln dry, under mild conditions, one-inch plain sawed green and partially air dry stock to moisture content of six per cent., based on weight of dry wood.

Species	Days drying time: Green from the saw	Partially air dry (25 per cent moisture content)
Swamp oak	45 to 50	20 to 25
Northern oak	30 to 40	17 to 20
Walnut, Cherry	22 to 30	13 to 15
Mahogany, Beech	16 to 22	9 to 12
Tupelo, Gum	20 to 26	10 to 14
Birch, Ash, Sycamore	15 to 21	9 to 12
Poplar, Basswood, Chestnut, Butternut, Elm, Cherry	8 to 10	4 to 6
Maple, Hickory	17 to 23	9 to 13
Conifers		
Western larch	9 to 12	4 to 6
Cypress, Redwood	10 to 18	6 to 8
Douglas fir, Yellow pine, Incense Cedar, Spruce	4 to 6	3 to 4

For stock over 1 inch and not more than 3 inches thick the drying time is proportional to the thickness. For example, 3-inch stock requires 3 times as long to dry as 1-inch stock. Quarter-sawed stock requires from 25 to 35 per cent. more time to dry than plain sawed. Drying to 10 or 14 per cent. moisture content takes from one-fourth to one-third less time than drying to 6 per cent.

S. K. F. Elect New President

At a special meeting of the Board of Directors of S K F Industries, Inc., the resignation of Mr. B. G. Prytz, as President, was accepted; Mr. Prytz having been elected managing director of the parent company, with headquarters at Gothenburg, Sweden. At the same meeting Mr. F. B. Kirkbride, vice-president since the organization of the company, was elected president to succeed Mr. Prytz.

In New Piano Action Factory

J. M. Loose & Sons, piano action manufacturers, are just getting nicely settled in their new factory on Sorauren Ave., Toronto. The new factory is a modern, well lighted, brick building with a floor space of 60,000. Considerable new equipment, in the shape of special machines, has been added, and when the plant is completely organized it is anticipated that production will be nearly double that of the old plant.

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The non-grain-raising quality of an oil stain.
Can be filled directly over the stain like a spirit stain.

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"A prize of $25.00 will be given to any employee who can show a means of speeding up the work of his department.

JOHN LANG, *Superintendent.*"

Joe Pocaro, on his way to lunch one noon hour, stopped at the factory bulletin board and read this notice. Joe runs a belt-sander in the Estey Piano Company's big factory in New York City. Under the whirring sandpaper belt of his machine the hardwood panels of the piano cases receive their smooth satiny finish.

That afternoon Joe did some tall thinking as he worked. Most of the time lost in the finishing department was due to belt trouble, he decided. Breaking belt joints, even when the men made their own—grits wearing off in an hour, that should have lasted half a day—and all the other troubles that require a change of belts and eat up time.

Next day he spoke to Mr. Lang, the superintendent, "You've got a lot of sample sanding belts in your office, Mr. Lang," he said. "Will you let me have them to try out on my machine?"

Mr. Lang tells the rest of the story:

"I let Joe have all the sample belts that had accumulated in my office. In a few days he came back, with one of them in his hand. 'Mr. Lang,' he said, with a grin, 'put this belt on all the belt-sanders and I'll win your $25.00.'

"That belt was marked Manning Speed-grits," Mr. Lang continued. "I took Joe's advice and put them on all the belt-sanders. Result—I'm saving hours of time in my finishing department, and Joe Pocaro got his $25.00."

"It pays to talk over your troubles with your workmen," he concluded. *Good workmen know the difference.*"

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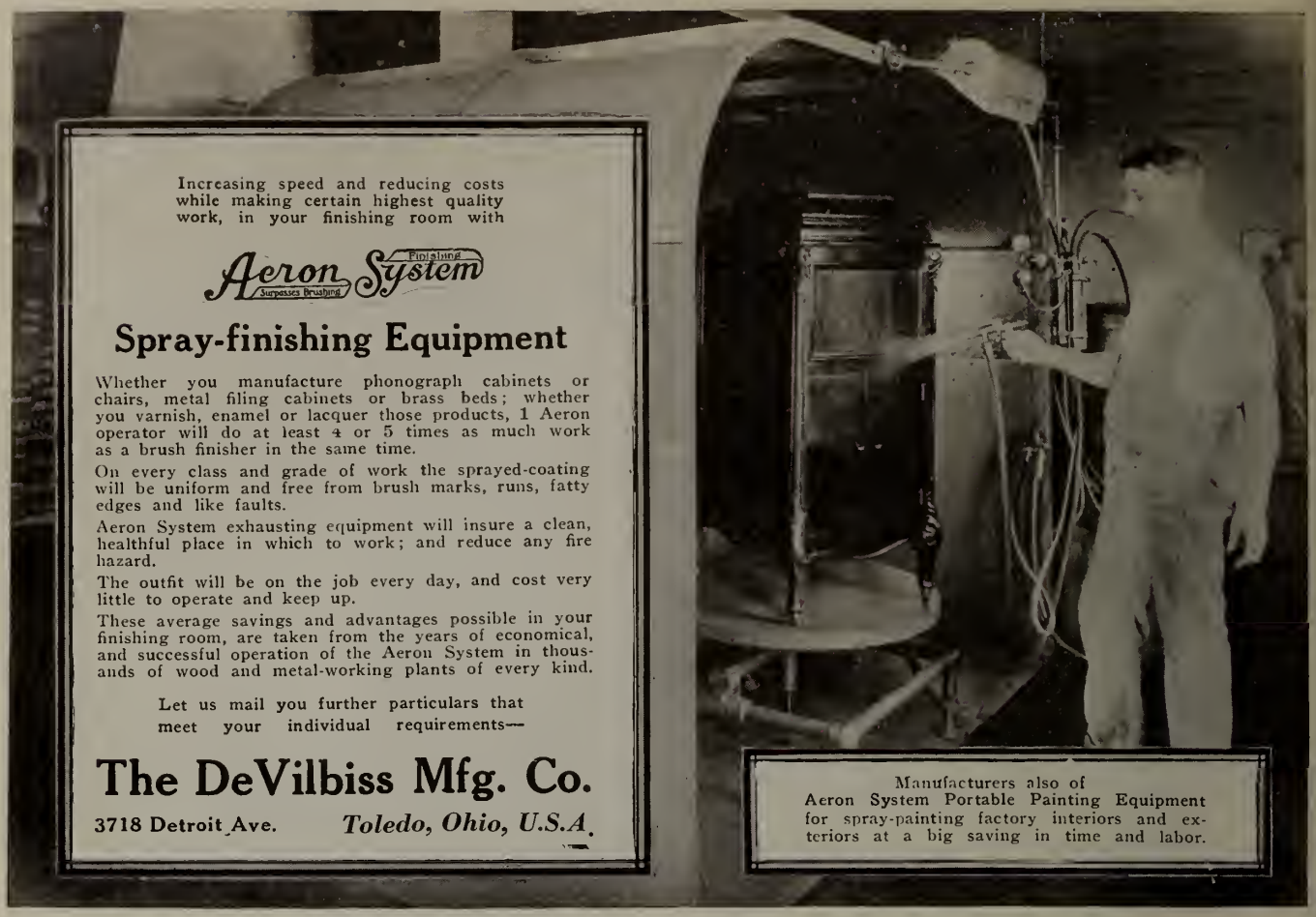

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Veneers and Panels

Is Your Veneer Room Profitable?

Real Importance of Veneering Not Fully Realized—Department Can be Made Pay Handsome Dividends

By W. E. Clarke

It is safe to say that manufacturers are losing more money in their veneer rooms than in any other department of their factory. That this is due to wrong methods and short-sightedness goes without saying and why it should be true the writer has never been able to fathom. I have worked in many plants and visited many others so that in making this statement I feel that I am speaking with authority. Well equipped efficient glue departments, while uncommon, are often found in the most unexpected places, that is in plants where one would not look for a very high degree of efficiency. The reverse sometimes holds true and plants that are up-to-date in most departments fall down badly when it comes to the veneering room.

A case in mind is the last factory in which I worked. With one exception this plant was modern and up-to-date in every respect. Needless to say that the exception was the veneer room. If the machine shop or finishing department would benefit by the installation of a new machine, or perhaps a varnish sprayer, it was purchased and installed without the slightest hesitation. When it came to veneering they simply did not seem to see that their methods were out of date or where a few modern machines would enable them to cut down manufacturing costs and increase production.

Veneering Growing in Importance

One reason for this attitude may be that formerly veneering was only considered a side issue and as such was performed as best it could in some out of the way corner and with little or no equipment. This stage has long since been passed but the attitude of many factory owners is that of a few years ago. They must be made to realize that the use of veneers has assumed such vast proportions that this department is worthy of their best thought and attention. Not only that but in addition to the demand for veneered products, with lumber bringing such high prices the intelligent use of thin veneers can be made to pay handsome dividends.

The resawing of a board with a handsaw is no more out of place in a modern plant than the jointing of veneers and crossbanding with a hand plane and shooting board, yet the latter method is often followed. The same holds true of tacking the matched veneers on a board and attaching the tape by hand. The results secured may be entirely satisfactory but the time consumed is entirely out of proportion to the value of the operation.

Extending the Operation

No doubt many factory managers figure that their output is not large enough to warrant the expenditure necessary to install a complete line of veneering equipment. Even though they cannot keep these machines operating all the time the savings in time and material that could be effected through their use would more than pay a dividend on the money invested. In addition the demand for veneered panels for phonographs and other articles is such that little difficulty would be experienced in securing sufficient contracts to keep this department running to capacity all the time.

Take the veneer jointers that are on the market to-day. These machines are capable of making absolutely straight joints and will handle a large quantity of material in a day's run. In some of them the veneers are fed through in an almost continuous stream while in others a number of sheets are clamped in a carriage which travels past a specially fitted saw. This latter machine will make a true joint on crooked and wavy stock. By using a saw, butt and cross-grained material can be jointed without any of the short grain being torn out. This latter point should be considered when installing a veneer jointer.

Taping Machine Real Necessity

The veneer taping machine is a production machine that has hand taping skinned a thousand ways. The pieces to be taped are fed under a couple of feed rolls and the tape is applied as the work passes through. The rolls are set at a slight angle to each other, which gives them a draw that brings the veneers together tightly, ensuring a perfect joint. Various feeds are provided for and provision is made for varying the time which elapses between the applying of the glue or the moistening of the tape and the application of the tape to the veneers. Thus the tape is pressed on when the glue or mucilage is at its highest state of adhesiveness. The tape seldom if ever becomes loose.

The glue spreader is another piece of equipment that must not be overlooked. This machine will increase the productiveness of the department and by applying an even application, of just the right thickness, practically eliminate blisters and loose veneers and thus raise the quality of the product. The even application of the adhesive and the regulation of the spread tends to effect a saving in the amount of glue used. Either one or two sides of the veneers or corestock may be glued at one operation.

Other Items to Consider

A hydraulic or power press should be given consideration. This machine with a number of retaining clamps is capable of handling a large pile of panels in a nine hour shift. If the hydraulic is fitted with a pressure gauge, by a simple calculation the most suitable pressure for the different sized panels may be applied. This is an important item, one that tends for good work.

There are other items such as band saw, trim saw and a humidity controlled kiln that would contribute further to the efficiency of this department. It might

be well to spend a few hours in your veneer room studying ways and means and then investigate the merits of the different pieces of veneering equipment on the market and see if it would not increase your profits to bring this branch of your organization up-to-date.

Overcoming Warping and Checking

Manufacture of Veneered Products Often Discouraging—Faulty Work Occurs When Seemingly All Precautions are Taken—Some Items Worthy of Consideration

By W. Arthur Lynn

The managers of many woodworking plants often become quite discouraged over the results secured from their veneer departments. They employ what they consider to be the very latest methods and their equipment is supposedly up to date. None but the best grade of glue is used, and this is mixed in modern dissolvers and spread by special glue spreaders. Every precaution seemingly is taken, yet faulty work is going through continually and the results are far from satisfactory.

Usually everything runs along smoothly until the stock reaches the finishing room and is in process of finishing. Then it is noticed that certain of the veneer pieces show signs of warping and checking. Innumerable explanations and suggestions as to the probable causes of this trouble are offered by each department through which the work has passed. It generally resolves itself into a question as to whether the material used or the methods employed are at fault.

Fault Not Always in Stock

Experiments in weighing and measuring test pieces of core and veneer, together with the extraction of all moisture in a heater or oven, show the loss of weight due to the elimination of the moisture to be so small as to lead to the conclusion that the fault does not lie with the condition of the stock at the time of gluing. This leaves as the only alternative an examination of the methods employed in laying and working the veneered pieces.

Sometimes it will be noticed that when the veneers are laid flush with the core, they remain so while being laid and when in the press, this is as it should be. Again, if the material is not put under pressure quickly enough, the thin, dry veneers will absorb moisture from the glue and swell, and at some later period when the moisture is eliminated, attempt to shrink to its natural size again. The point to consider is that a certain amount of moisture is absorbed from the glue and that the amount of moisture so absorbed is controllable to a certain extent by regulating the time which elapses between the spreading of the glue and the application of pressure. Moisture, whether present in the veneers before laying or absorbed from the glue after laying, causes swelling, with a shrinkage as the stock dries. This shrinkage causes strains which often result in checks in the veneers.

Moisture the Cause of Warping

Another common trouble with ply work is that of warping. This is usually due to the moisture taken up from the glue. As this is eliminated, certain internal strains are set up, which cause the pieces to twist and warp. If the veneered stock is kept in the retaining clamps while in the warm room, the warm air will not be able to circulate between the different pieces and the centre of the stock will not be dried. This drying will then take place in the shop as the stock is being worked up and will likely cause trouble from warping and perhaps checking. The clamps should be kept on only long enough to allow the glue to set. When they are taken off, the stock should be carefully piled in the drying room, with strips between each piece, and thus take fullest advantage of the drying room instead of having the stock dry while being assembled or finished. The weight of the upper layers will usually hold the lower pieces flat, but it is best to put a few weights on the tops of the piles to secure the top pieces. If stock is held true and flat while drying and until thoroughly set it will not warp afterwards unless subjected to moisture so that swelling and shrinkage takes place again.

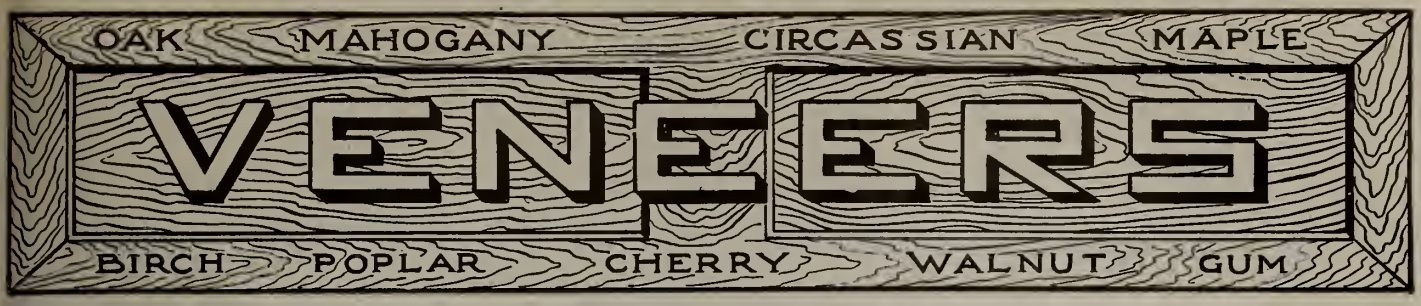
Some woods absorb glue more readily than others. One must be careful and regulate the spread and the consistency of the glue to suit the stock going through. If this is not done, loose and blistered veneers often result. If a light layer of thin glue were to be applied to woods that absorb it readily all the glue will be taken up into the pores of the wood and there will not be sufficient left to bind the pieces together. It stands to reason that when this occurs the pieces will come apart. A study of the glue absorbing qualities of the various woods used should be made and advantage taken of the knowledge thus gained when preparing glue for certain lots.

Veneer troubles can be eliminated and satisfactory results secured only by making a thorough and constant study of the different factors which, to a certain extent, are responsible for nearly all trouble—namely moisture, time, glue and pressure. Eternal vigilance is the price of good veneer work.

Effects of Oils on Glues in Plywood

Plywood may be used near machinery and tanks with little likelihood of being dangerously weakened by the action of oil or gasoline on the glue joints. This fact is evident from a test lately completed at the Forest Products Laboratory.

Plywood panels glued with animal, vegetable, blood albumin, and casein glues were immersed for nearly a year in engine oil and gasoline. At regular intervals specimens were removed from the liquids and tested for joint strength. All the glues weakened somewhat during the early part of the test, the animal and vegetable glues more than the casein and blood albumin glues. The total loss of strength in any case, however, was small enough to be negligible under most conditions of service. A glue shear strength of 100 to 125 pounds per square inch is considered sufficient for practically any purpose for which plywood is used. Only in two or three instances did the strength of the casein and blood albumin glues fall below 150 pounds per square inch. Engine oil, castor oil, and gasoline seemed to have practically the same effect on the glue joints.



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Fifty-two years of making and finishing the right kind of product has resulted in service of that character becoming not only a trade asset and the basis of a National reputation, but a veritable business habit. Our endeavor has for so long been to never deviate from the standards of 100 per cent. excellence as laid down by those who founded this business, that it is practically a matter of impossibility for us to vary the quality of our goods without a complete reorganization over to a high-speed, quantity basis.

American Beauty Walnut

It is recognized by the discriminating trade that our service incorporates not only goods of the highest possible excellence, but thorough understanding of the customer's requirements in order that his share of our always choice selection of goods may be precisely what he prefers.

Our knowledge of customers' needs and our ability to exactly meet those needs, recommend our service to you as a careful and experienced buyer.

HOFFMAN BROS. COMPANY

FORT WAYNE INDIANA

Reg. U.S. HB Pat. Off.

Est. 1862
Inc. 1904

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

VENEERS---*the better quality kind*

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Your orders will be filled exactly as you specify and we can assure prompt shipment from our large reserve stock. Let us hear from you.

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A Full Line of Rotary Cut, Sliced and Sawn, Foreign and Domestic Veneer

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at your service ready to ship to any part of the world promptly on receipt of your order.

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Also hoops, liners and staves for manufacture of packages

Also "Peerless" Rock Maple, Beech and Birch flooring; Hemlock lumber; Lath, etc.

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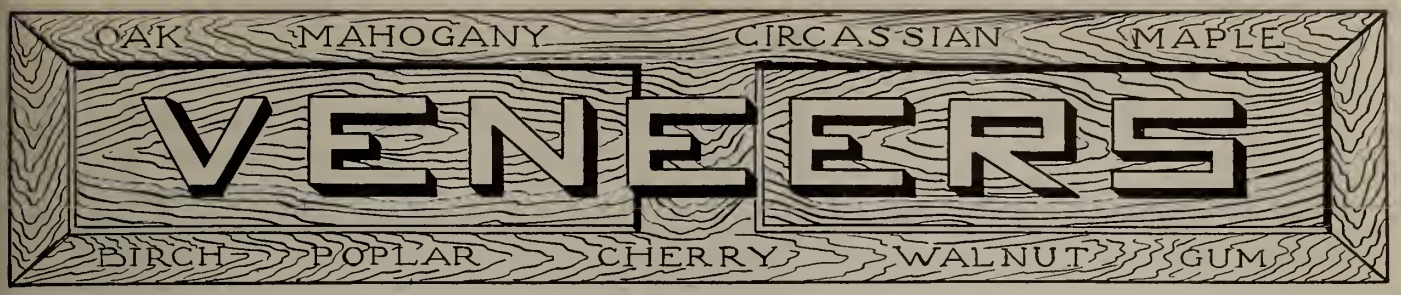

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Veneers

We specialize in large size poplar veneers as we have extra fine poplar logs. We can cut veneer up to 10 feet square.

Our walnut veneer cannot be beat, both in plain and figured wood.

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Winter Ave. and Belt R. R., INDIANAPOLIS, IND.

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Southern Veneer Manufacturing Co., Inc.
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Importers and Manufacturers of all kinds of Sawed, Sliced and Rotary-cut

VENEERS

CARRYING

a large stock of selected Mahogany, Figured and Plain Walnut, Walnut Butts, Sawed and Sliced Quartered Oak and Sycamore and all other native woods.

1,000,000 Feet
QUARTERED RED GUM
to select from

WE Respectfully solicit your inquiries

PANELS and VENEERS

Specialize in

Phonograph Cabinet Panels

For Service and Quality try

HENRY S. HOLDEN
1742 Monadnock Block, CHICAGO, Ill.

Wide Veneer

One carload of 1/20″
Quartered White Oak
Sawed Veneer
12″ and wider

Ready for Quick Shipment.

Memphis Veneer & Lumber Co.
MEMPHIS, TENN.

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

Wood-Mosaic Co., Inc.

Main Office: New Albany, Indiana

BAND MILLS:
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MANUFACTURERS OF

Plain and Quarter Sawed White Oak Poplar, Black Walnut Lumber, Etc.

WE ARE ALSO MANUFACTURERS OF

Both Sliced and Sawed Quartered White Oak Veneer, Sliced Walnut Veneer, and Rotary Cut Poplar Cross Banding

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MAHOGANY

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Rotary, Sliced or Sawed in all Thicknesses

Built up Stock in Birch and Maple

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PICKREL VENEER COMPANY, Inc.

MANUFACTURERS OF

American Walnut

Exclusively

Woodruff and River *New Albany, Ind.*

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

Veneers and Panels

PANELS

Stock Sizes for Immediate Shipment. All Woods. All Thicknesses. 3 and 5 Ply or made to your specifications

We are Chicago agents for WOCO FIR PANELS, and carry a full and complete line in all stock sizes and all thicknesses at our Chicago warehouse for immediate shipment.

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Mills: Des Arc, Ark. and Grand Rapids, Minn.

Panels for Immediate Shipment

Subject to Prior Sale

200	Pls.	30 x 72"	¼"	3 Ply Yellow Pine 1/s
150	"	24 x 72	¼	3 Ply Yellow Pine 1/s
150	"	24 x 60	¾	5 Ply Red Oak 2/s
50	"	24 x 48	5/16	3 Ply ¼ SWD. W. Oak 2/s
50	"	18 x 72	½	5 Ply ¼ SWD. W. Oak 1/s
40	"	36 x 72	½	5 Ply ¼ SWD. W. Oak 1/s
25	"	18 x 72	½	5 Ply ¼ SWD. W. Oak 2/s
25	"	24 x 72	½	5 Ply Mahogany 2/s

Above covers only a small portion of our stock.

GEO. L. WAETJEN & CO.

Milwaukee - Wisconsin

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FROM STOCK OR
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Veneered Panels

Veneers—Wood Dowels

Adolph Sturm Company

ESTABLISHED 1869

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Offices, Mills and Warehouses

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In the Rush of Increasing Demand for Veneers

The natural tendency is for manufacturers to strive toward a greater output often at the expense of quality.

This is a mistake which the Lawrenceburg mills are carefully guarding against and buyers may be sure that in ordering "BATESVILLE QUALITY" Veneer they are getting goods manufactured in strict accordance with that standard of quality maintained for so many years.

Batesville Lumber and Veneer Co.

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Buyers of Veneers and Panels

will find it to their advantage to purchase from the manufacturers and dealers whose advertisements appear in this publication. They are progressive firms—the leaders in the business, which is a guarantee of good service and prompt attention to orders.

Give your business to the man who will spend his time and money to get in touch with you. He deserves it—if his stock and prices are right.

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

Penrod Walnut and Veneer Co.

Kansas City, - Mo.

Exclusive Manufacturers American Walnut Lumber and Veneers

ON account of the freight congestion and the possibility of a very serious car shortage, we suggest you anticipate your Walnut requirements and get in your supply for the next few months as soon as possible.

Write us for prices on Lumber and Veneers. *"PENROD SERVICE" Satisfies.*

INVESTIGATE

P.-J. SERVICE

For high-grade rotary cut veneer, that is smooth and evenly cut and dried by mechanical means to any percentage of moisture desired.

We also operate large band mills where all kinds of southern hardwood lumber is cut from own own tract of timber in the very heart of the Saint Francis Basin District, Arkansas.

PENROD-JURDEN COMPANY

Mills at Helena and Penjur, Ark. General Offices: Memphis, Tennessee.

The Development of Water Proof Glue

Outlining Improvements Made in Water Proof Glues—New Product Does Not Deteriorate in a Few Hours—Rolls on Spreader Turned Practically Smooth

By Lawrence Ottinger*

I know that you are thoroughly familiar with the general quality of the panels produced with waterproof glue and shall therefore confine myself to the development of these glues since the war period. Naturally these improvements were designed to adapt the waterproof glues to practical and economical commercial use, and to develop the following qualities: uniformity, low cost, convenient handling, longer life in liquid form, less absorption, after spreading, non-hydroscopic in dry form, softer dry glue line.

At the conclusion of the armistice there were three prepared casein glues in use, as well as a number of casein and blood albumin formulae. The blood albumin glues have changed little; the difficulty of getting large production with hot plate presses, cost of equipment and the care required to secure the proper temperature on the glue line, have prevented their adoption to any extent. Some work has been done which suggests the possibility of spreading the panels cold, pressing and placing the retainers in dry kilns to produce the required 180 degrees, metallic cauls carrying the heat between the panels. The process is still in its experimental stage.

The Forest Product Laboratory has recently secured patents on a combination formula of casein with blood albumen, but there seems to be no particular advantage in this formula, excepting a slight reduction in cost and, apparently, a somewhat better panel than with the blood albumen used alone.

Overcoming Certain Drawbacks

Considering the casein glues, three cardinal defects had to be overcome; first, and most important being non-uniformity, caused by the casein used in its manufacture, not only as to the quality and fat content, but also as to mesh. It must be recognized that casein is a milk product and that there are as many kinds of casein as there are different kinds of milk, and that the general composition of milk depends on the pasture and the cattle. The maker of casein glue, who is compelled to buy casein on the open market, finds it very difficult to manufacture a uniform glue. Concerns which manufacture their own casein derive their raw material regularly from the same sections of the country, and are able to obtain a uniform card. The non-uniformity which existed during the war displayed itself in various ways, such as a rapid thickening of the glue, so that in some cases it would not remain liquid for more than thirty minutes to an hour; frequent failure under the rigid government specifications and, in some cases, inability to dissolve the glue at all and get a proper working solution. A contributing cause to non-uniformity at that time was the inclusion in the formulae of hydroscopic materials, that is, materials which would absorb atmospheric moisture. One concern during the war shipped its glue in metallic containers to avoid deterioration, and still follows that practice. The solvent heretofore used almost exclusively in connection with casein has been caustic soda, and because this material absorbs atmospheric moisture glue which has been exposed in its dry form for any length of time, takes on moisture and dissolves less readily than that which had been kept thoroughly dry. When that occurs the manufacturer is tempted to add more water, securing lower adhesive strength. Solvents of a non-hydroscopic nature have since been found, so that the glue can be shipped in bags or barrels and will keep indefinitely in its dry form without fear of deterioration.

There is now obtainable from more than one source glue which is absolutely uniform and which will invariably produce a strong panel, and one which will stand the soaking or boiling test. Probably the most radical improvement, from a practical point of view, is the ability to hold the glue over night, so that it can be retained in the mixer or spreaders and the run continued the next day. This has been accomplished by the inclusion in the formula of chemicals which not only accomplish the above result but make a considerably less expensive glue taking a larger proportion of water. On panels having face veneers not thicker than 1/16 in. a spread of from 60 to 70 ft. per pound of glue is obtained and a higher spread is possible on thin veneer with smooth roll spreaders

Equipment for Mixing Glue

The equipment necessary for using casein glues is identical to that used for the vegetable glues, excepting the mixer. During the war the three-speed dough mixer was used largely, and while these are excellent machines, they are quite expensive and of such small capacity that using them in connection with large production was an expensive nuisance. Since that time we have found that any mixer having two paddles revolving in opposite directions and moving at sufficient speed will mix the glue nicely, and the glue machinery people are making special mixers for casein glues, which are practically the same as the glue cookers, excepting that the paddles are changed somewhat in form and the heating jackets omitted. These cost about half as much as the glue cookers and are of large capacity. One mixer will handle two spreaders nicely, and the spreaders may be kept going continuously. The mixer is mounted so that after the mixture has been made it is run into the tank and as many mixtures as required may be made. The usual practice in a plant consuming one thousand pounds a day is to mix five 100 pound batches in the morning and run them into the tank, and after the lunch hour mix another five batches. The mixing of a batch of casein glue, that is, prepared casein glue, requires about five minutes, and it can be run into the tank and the additional time required to dissolve, that is about ten minutes more, takes place in the tank, so that, to mix five batches of 100 pounds each consumes twenty-five minutes of actual mixing, and when the handling of the material, etc., is considered, five batches can easily be made within an hour without interfering with union regulations requiring a man to work any harder than he has to.

*United States Pulpwood Co., New York.

With these new mixers no special care is necessary in adding the glue to the water.

For eceonomy the spreaders should be turned down to a practically smooth surface, that is, just showing the pits of the corrugations, because the glue is very much more liqnid than the vegetable glues, and deep corrugations have a tendency to hold the glue and apply a heavier glue line than is necessary. Perfectly smooth spreader rolls are not desirable, because they will not grip the cores sufficiently. It will be found that when the spreader rolls are turned down, as heavy a spread as desired can be applied by manipulating the guides at the back of the rolls.

The Question of Cost

The cost of the casein glues now obtainable per glue line foot is about the same as the better vegetable glue; in other words, the cost per pound is 33 1-3 per cent. higher, and the spread per foot is about 33 1-3 per cent. greater. The cost per glue line foot of the cheaper vegetable glues is lower than can be achieved by using any of the prepared casein glues, and in discussing cost I am not taking into consideration the quality of the resultant panels. The use of a casein formula, that is, the purchase of casein, the purchase of lime and the purchase of other chemicals will produce a glue line foot nearly as cheap as can be produced with any vegetable glue. It is, however, not possible to get as good a glue by the use of any of these formulae as some of the prepared glues, the reason being that it is necessary to use a considerable volume of water to dissolve the casein separately, and it also requires a very large percentage of lime in order to rescue the casein so dissolved. The result is that the glue is not nearly as high in casein value as some of the prepared glues, and neither lime nor water have adhesive properties.

The use of a casein formula requires the attention of a man who is pretty well equipped to handle it and requires considerable attention, such as water temperature and exact weight of the ingredients and adding them at certain specified intervals. Some very large plants are willing and able to go to this trouble to save expense, and some of them have been able to produce excellent results.

Moisture Content of Stock

Thus far I have discussed cost from the glue line foot standpoint only, and without reference to other conditions which have a direct bearing on cost, such as the ability to glue up veneers with a high moisture content and the ability to take the panels out of the retainers in two and one-half to three hours. On the subject of moisture content, we must divide the panel manufacture into two classes, those which are intended for use in furniture and which are finished, and those intended for trunks, boxes, furniture backs and drawer bottoms. As far as the adhesive quality of the glue is concerned, it will hold veneers of practically any moisture content, so long as they are not rank green. Veneers which have been on the yard under normal weather conditions for forty-eight hours can be glued up without re-drying, and they will produce just as strong, if not stronger, panels than if they were re-dried to a low moisture content. The face veneers of these panels will check if the moisture content of the veneers is over 15 per cent., and will check to a greater extent according to the moisture content. On high-class work veneers containing 10 per cent. may be glued up and the face veneers will not check, particularly if the face veneers are fairly thin. It must be remembered that in glueing up a panel a considerable amount of moisture is put into it and the veneers do not abosrb as much of the moisture from the glue when they contain some moisture as do thoroughly dry veneers. From actual test, there is very little difference in the moisture content of panels after they have been glued up if they are made with veneers containing say 4 per cent. and veneers containing 10 per cent. There are, of course, a large number of variable conditions to be taken into consideration, such as the density of the wood being used, the thickness of the veneers, etc., but the statement made above as to moisture content is generally correct. A large number of plants have adopted the casein glues from a cost standpoint, taking into consideration the lack of sufficient drying facilities. Plants which make both high and low grade panels run part of their veneers through driers and part direct from the yard, increasing their production.

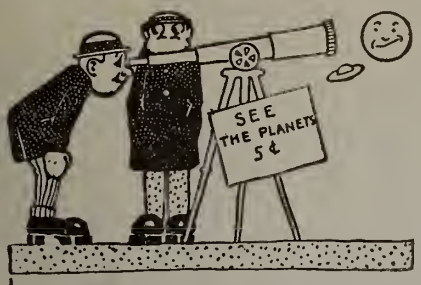
Panels made with a casein glue can be safely removed from retainers in 2½ hours and can immediately be trimmed without any danger of separation. This, of course, has a bearing on the most of manufacture, especially where space, equipment, retainers, etc., are limited, and it has been very difficult to obtain prompt shipment of equipment.

One other comparatively important point is in connection with the effect on cutting tools. The effect of the glue on knives depends upon the quantity and the quality of the glue, and the quantity of glue put into the panels. The lime must be of very fine mesh free of hard particles. The formulae used by most of the plants making their own glue are hard on the saws and knives, and that is also true of some of the prepared glues which contain a high percentage of unselected lime, but some of the prepared glues contain a quantity of lime so small as to be negligible. and the glues are little harder on the knives than vegetable or hide glues. In fact if panels so made are handled within twenty-four to forty-eight hours after they are glued the knives will stand up as well under casein glues as they do with the animal or vegetable or hide glues. In fact, if panels so made now using casein glues, and can testify to the fact that the knife question is one of little or no importance. Proper spreading of casein glue puts a comparatively small amount of glue between the veneers, whereas during the war it was necessary to convert a panel into a veritable cheese sandwich.

What Is Dry Rot?

The term "dry rot," the Forest Products Laboratory finds. is applied by many persons to any decay which is found in wood in a comparatively dry situation. Thus loosely used the term actually includes all decay in wood, since wood kept sufficiently wet cannot decay.

In the more limited sense in which pathologists use the term, "dry rot" applies only to the work of a certain house fungus called Merulius lachrymans. This fungus gains its distinction from the fact that it is frequently found growing in timbers without any apparent moisture supply; in reality it does not grow without moisture and is as powerless as any other fungus to infect thoroughly dry wood. Given moist wood in which to germinate, it is able to make its way a surprisingly long distance in dry timbers, drawing the water it needs from the moist wood through a conduit system of slender, minutely-porous strands.



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BUT you will find that our stock meets the requirements of the man who seeks the better grade of veneers.

We guarantee you fullest satisfaction.

Drop in and see our display.

We have for immediate shipment Cross-banding and Core Stock; Quartered and Plain ⅛" Oak. Quartered Figured Gum.

Toronto Veneer Company

LIMITED

1100-1104 Queen St. West - TORONTO, ONT.

Walnut and Quartered White Oak Veneers and Lumber

Prompt Delivery

LONG-KNIGHT LUMBER COMPANY

INDIANAPOLIS - - - IND.

The reception and display room of British Columbia Lumber Commissioner at 1 Adelaide St. East, Toronto, finished in B. C. fir

B. C. Woods Shown to Advantage

The new Toronto offices of the British Columbia Lumber Commissioner at No. 1 Adelaide St. East, are coming in for a lot of favorable comment. The fine panels, with which the office has been finished, show the beautiful grain of the B. C. forest products to advantage. The accompanying illustration gives an idea of the attractive appearance of this office. The tables in the foreground are made from B. C. fir and cedar. The dark panels along the wall are samples of the different B. C. wood, finished in attractive shades. The pictures, which adorn the wall, are views of the primeval B. C. forests and give the visitor a slight idea of the size to which these timbers grow.

The object of the B. C. Lumber Commissioner's office is to acquaint the Eastern wood user with the merits and worth of the different B. C. forest products. The work done is purely along educational lines, no sales of any kind being made. Information may be obtained pertaining to the timber resources of B. C., and the use, characteristics and merits of the different woods. The Toronto office is in charge of Lieut. L. L. Brown, who recntly took over his duties.

Comparative Lumber Figures

A. C. Brown, secretary of the National Association of Case Goods Manufacturers, recently sent out the following figures giving comparative lumber prices. While these quotations are based on the American market they are of interest, in that they show how each line has advanced:

Lumber	April, 1919 Per M	April, 1920 Per M
Sap Gum, 4/4 1st and 2nd	$40.00	$115.00
Sap Gum, 4/4 No. 1 Com.	36.00	95.00
Sap Gum, 8/4 1st and 2nd	49.00	150.00
Red Gum, 4/4 1st and 2nd	54.00	200.00
Red Gum. 4/4 No. 1 Com.	49.50	170.00
Plain Oak, 4/4 1st and 2nd	73.00	205.00
Plain Oak, 4/4 No. 1 Com	52 00	160.00
Plain Oak, 8/4 1st and 2nd	85.00	220.00
Qtd. Oak, 4/4 1st and 2nd	112.00	310.00
Qtd. Oak, 4/4 No. 1 Com.	78.00	230.00
Birch, 4/4 No. 1 Com.	41.00	140.00
Basswood, 4/4 No. 1 Com.	51.00	125.00
Sound Wormy Chestnut, 4/4 No. 1 Com.	40.00	75.00
Black Walnut, 4/4 No. 1 Com.	68.00	185.00
Crating Lumber, 4/4 No. 3 Birch	28.00	48.00
VENEERS		
Sap Gum, 1/24 cut to dimension	$ 7.25	$ 12.50
Sap Gum, 1/20 cut to dimension	7.50	12.50
Sap Gum, 1/8 log run	13 50	32 00
Sap Gum, 3/16 dimension for cores	17.00	52.25
Sap Gum, 1/4 drawer bottoms	20.00	67.25
Poplar, 1/20 dimension	8.00	15.75
Birch, 1/28 random cut	7.50	15.75
Birch, 1/24 random cut	8.50	15.75
Birch, 1/20 random cut	9.50	15.75
Birch, 1/16 random cut	11 00	18.75
Qtd. Oak, 1/20 average grade	25.00	55.00
PLY WOODS		
7/8" 5-ply, no rims—Plain Oak Face	$250.00	$455.00
7/8" 5-ply, no rims—Qtd. Oak face	280.00	505.00
7/8" 5-ply, no rims—Mahogany	280.00	505.00
7/8" 5-ply, no rims—Pl. Walnut	280 00	530.00
3/16" 3-ply—Birch face	85.00	152 00
3/16" 3-ply—Sap Gum	50.00	142.50
3/16" 3-ply Dr. Bottoms—Walnut face	110 00	282.50
3/16" 3-ply Dr. Bottoms—Mahogany	110.00	252.00
1/4" 3-ply Dr. Bottoms—Walnut	115.00	292.50
1/4" 3-ply Dr. Bottoms—Mahogany	115.00	262.50

A mill with every machine idle, and the engine running needlessly, denotes an indifferent foreman and a careless employer.

A good stock of cutters, which are interchangeable on every machine, is a big asset.

NICKEY BROTHERS, INC.
MEMPHIS, TENN.

N. B. Quality from Nature's Hands to You

The beginning of quality in N. B. Veneer is the hand work of nature. This condition is fostered and developed through every process of its manufacture from the felling of the tree to the beautiful, figured, smooth surface of the finished veneer.

From the discerning eye of the woodsman, through the selective hands of trained inspectors, the dexterity of skilled workmen, the precision of machinery, to the final judicial acceptance by a factory executive, your interests are guarded in the quality of this product.

Concentrate Your Purchases and Save Money

Through Buying

Sliced Figured Red Gum and Rotary Cut Gum Veneer
Sawed and Sliced Ash, Poplar and Gum Grand Piano Rims
Sawed and Sliced Quartered Oak

In Cars with Band Sawed Hardwood Lumber

Carload buyers get closer prices, save freight on local shipments and eliminate damaged goods.

NICKEY BROTHERS INC.

MEMPHIS, TENNESSEE

The Lumber Market

Domestic Woods

The Canadian lumber industry is a trifle quiet at this writing. The American demand is not quite as strong as it was with the result that the same volume of stock is not moving. A fair amount of inquiries are being received, but there is more of a tendency to demur at the prices asked. While the prices on hardwoods have eased slightly. yet the market is remarkably firm. Birch is undoubtedly the strongest hardwood on the list, with maple a trifle weaker. The same uncertainty continues with regard to the removal of the 10 per cent. import tax on maple by the U. S. authorities, and while certain buyers have come in and picked up maple stock, no great movement is anticipated until something definite is decided on. Should the American demand ease off still further, there are signs of an awakened export trade, which, if it materializes. would absorb the stock that has been going below the dine.

Stocks of all hardwood are fairly plentiful. While still green this timber is rapidly approaching shipping condition. Few, if any, stocks are being held for speculative purposes, and it is anticipated that as the material reaches shipping condition, it will move more freely. Prices may have eased slightly but very little. Birch is firm, at the peak reached a short while ago. Maple values have lowered, due to the easing of the American demand.

The softwood situation is holding up well. There seems to be a good demand for all lines, with slow deliveries. B. C. forest products have broken slightly, but prices are on the up-grade again. Both the American and Prairie demand for B. C. woods is reviving, with the natural effect that prices are firmer, with a tendency to rise. The Coast lumbermen are very enthusiastic with regard to the prospects for the next few months. Building seems to be in full swing clear across the continent. This means that building material of all kinds is being sought after. The planing mills and sash and door factories are running to capacity and do not seem to be able to keep up with the volume of business that is offering. The box trade is brisk with the export demand increasing. It would appear that this branch of the industry is in a very healthy condition.

Taking all things into consideration the situation, with regard to Canadian woods, will likely remain firm and no marked changes need be anticipated.

Imported Woods

The situation existing with regard to American hardwoods is what might be called a state of "status quo." The demand has eased off somewhat and there have been price recessions on several lines. Prices on the whole have, however, been remarkably firm. There i. one group who look for a rapid decline in lumber values. They base their conclusion on fundamental business causes. such as the restriction of credits, high interest rates, attitude of buying public and transportation difficulties. Their reasoning seems sound. On the other hand there is the group who look for stabilized values at about the present levels. with, perahps, slight advances in certain items. They reason that the stocks of the manufacturers and wholesalers are low and depleted. The stocks held by the wood users are not any too abundant, so that the furniture manufacturer, the building material man and others must come into the market to keep their respetcive plants going. Any increase in buying activity would speedily result in a return to the conditions which have existed during the past few months. Another feature to consider is the statement that where prices have slackened, the consumer has not benefited. The wholesalers are buying up all stocks offered at reduced prices in the belief that they will realize higher prices in sixty or ninety days. The proposed increase in freight rates should bring many buyers into the field. This would have a tendency to stiffen the market. Building in the States is showing a slight improvement, which means an increased market for hardwoods. It seems to be a case where one man's judgment is as good as another's.

The Buffalo market is quiet, with manufacturers buying for immediate needs only. To a certain extent this is to be expected at this season of the year. Prices have eased somewhat but are holding firm at prevailing levels. Birch, maple and beech are in heavy demand and are among the strongest woods on the market. There has been little change on the Evansville market. Orders and inquiries are coming in at a satisfactory rate. Stocks are still low and are not being replenished. As long as this condition holds, prices are expected to remain firm, with, if anything, an upward tendency. Quartered and plain white oak are being eagerly sought after, and many firms have been unable to secure their requirements in this wood. The situation in the Southern producing centres is slowly improving and production is increasing, but it will be many months before the effects of the unfavorable weather will disappear and conditions return to normal.

Louisville rejorts trade as being slack. This is due to the opinion of certain buyers that prices will recede in the near future. This view is not held by the manufacturer and jobber. If the decline comes it will be slow and gradual and in conjunction with labor and other commodities. The demand for oak, both quartered and plain, shows a slight improvement. The car situation has changed slightly and shipments are going forward.

Traffic conditions are giving lumber manufacturers considerable concern, for with a shortage at present they figure that this will become more acute shortly when the wheat commences to move.

It would look as if it would be the part of wisdom for a manufacturer to keep his lumber stock up rather than allow it to run low.

Well Known Veneer Man Passes Away

W. T. Thompson, president of the W. T. Thompson Veneer Co., of Edinburgh, Indiana, passed away at his home June 26th after a brief illness of one week. He attended the Lumbermen's Convention at Chicago the week before and while there contracted a cold which, developing into pneumonia, caused his death.

Mr. Thompson was a well known veneer manufacturer, president of the Farmers' National Bank of Edinburgh and a thirty-second degree Mason. He was highly esteemed in business and social circles and his demise cause a gloom over the community.

Information and Inquiries

You are cordially invited to make use of this department

Mont Joli, Que., June 29/20

Editor "Canadian Woodworker"

Can you tell me where I can secure a brass hand rail for a stairway?

Yours truly, Oct. Bertin.

The Beaver Brass Mfg. Co., 23 Ryerson Ave., Toronto, make brass hand rails. If you write them direct they will gladly quote on your requirements.

Woodwork for Sewing Machines

A firm in Manchester, England, wish to procure quantities of woodwork used in the manufacture of sewing machine platforms. Three separate pieces are required, consisting of single-piece platforms, drop leaf, and a built-up platform.

The single piece platform is made of hardwood, 16½ by 30 inches, almost 1 inch in thickness, bevelled edge, polished top, slotted 6⅞ by 10⅞ inches, bored with two ¾-inch holes and two ⅝-inch holes. Three slots mortised in under side for hinges to drop leaf. The drop leaf is made of hardwood, 10½ by 16½, with bevelled edge and polished top.

The built-up platform consists of seven pieces, with single-piece hardwood top and four-piece, dovetailed base. Softwood shook tacked to bottom of platform and softwood crosspiece glued to base, between the slots of the top. Platform 10½ by 19 inches over all, with bevelled edge and polished top. Slotted for machine 6⅞ by 11⅝ inches and for drawer in top, with curved end, 2⅜ by 9 inches. Top bored with three ⅝-inch holes. Name of firm enquiring may be secured by writing the publishers of the "Canadian Woodworker."

Equipment Required

St. Pie, P. Q., July 5, 1920.

Editor, "Canadian Woodworker."

Will you kindly tell me the kind of machine, with the name of the manufacturer, that is required for making the shoe shanks which were illustrated in the April issue of your paper. I expect to be in the market for several of these machines. Will be very grateful for any information you furnish.

Yours truly L. P. Beaudry.

It is doubtful if such a machine is on the market. As near as we can ascertain, those who are engaged in manufacturing shoe shanks are using equipment of their own design or made especially to their order.

Built up platform

Single piece with drop leaf

May We Make This Suggestion?

To those buyers whose requirements of hardwood lumber, rotary veneers and panels it has been our privilege to serve and to those others who we hope to serve in the future, we would like to frankly and in friendliness advise that bad as the car situation is to-day, it is bound to be infinitely worse in a month or two. Therefore, to insure delivery and avoid the 30 or 40 per cent. increase in freight rates, due about September first, we earnestly counsel buying now.

May we suggest also that our friends should not reckon too strongly on much lower prices? It is true that the present tendency is downward, but while the southern forests are now pretty well dried out, the almost total impossibility of getting cars is keeping millions of feet of logs in the woods, where vast quantities are rapidly deteriorating. A goodly portion of this accumulation probably never will reach the saw mills. Thus, while one adverse condition is out of the way, another immediately takes its place, and though southern manufacturers have succeeded in making one spurt in production, the average mill stock in the south is still dangerously low. The consequence of such condition has been brought home with force to buyers in the past eighteen months.

This is but a friendly suggestion offered only because we think it absolutely true. Therefore, if you possibly can, buy now. As to price, our only assurance is that now as always, our policy is to give full value for every dollar invested with us.

70,000,000 Feet
ANNUAL
CUT

Anderson-Tully Co.

Memphis - - Tennessee

ALL
SOUTHERN
HARDWOODS

News of the Trade

The Pioneer Auto & Carriage Works, Vancouver, B. C., are constructing a factory at a cost of $10,000.

The O'Neil, Irvine & Mann Lumber Co., Boulder Creek, B. C., recently completed a new saw and planing mill.

Cameron & Campbell, Toronto, Ont, general woodworkers, are erecting a small addition to their factory.

The assets of Duchesne & Grimard, Limited, Montreal, Que., manufacturers of phonographs, have been disposed of.

Wilder & Hutchinson have leased the old Waddell furniture factory in Orono, Ont., and are converting it into a flax mill.

Recent Montreal registrations include Lamer & Debien, carriage manufacturers, and the Standard Broom & Brush Co., Limited.

Wm. Smedley, Toronto, Ont., manufacturer of antique and special furniture, is building an addition to his store at a cost of $1,500.

J. M. Loose & Sons, Toronto, manufacturers of piano actions and keys, have moved from Carlaw Ave. to their new factory on Sorauren Ave.

A shook mill and power house is being constructed at Port Elgin, N. B., by Fred Magee. The cost will be in the neighborhood of $18,000.

Dominion Boxes, Limited, Ottawa, Ont., was recently authorized by supplementary letters patent to change their name to Premier Boxes, Limited.

Schultz Bros, Brantford, Ont., manufacturers of portable houses and various forms of wood products, are building a small addition to their offices at a cost of $1,000.

Stirett's Planing Mill at Port Arthur, Ont, was recently closed down for a few days owing to damage to the electrical equipment which occurred during a severe storm

The Home Appliance Mfg Co, Limited, Winnipeg, Man., has been incorporated to manufacture and deal in washing machines and electrical devices. Capital $250,000.

The Pellerin Pelton Music Co., Limited, Ottawa, Ont, have been authorized by supplementry letter patent to change their name to Pellerin Music Co, Limited.

Aime Ally, Grand Mere, P. Q, is erecting a saw and planing mill. The building will be 1½ storeys high, 80 x 30, and of brick and frame construction. Cost $12,000.

Simmons, Ltd., of Montreal, Que., have taken out a provincial charter, authorizing them to do business in Ontario, provided they do not use a capital in excess of $300,000.

The Veterans Mfg. & Supply Co, Ltd., Toronto, Ont., manufacturers of reed and rattan furniture, have moved their plant from 54 Noble St. to larger premises on Front St. East.

The Stansell Motors, Amherstburg, Ont, consider erecting a new factory for manufacturing auto bodies. A certain amount of stock will be placed on the market to finance this new project.

Ham Bros. Co, Limited, Brantford, Ont., have let a contract for two Sidman lumber curing kilns. These are to be erected in connection with the new factory which is being constructed.

There have been a few changes in the firm of H. Mathieu & Co., who conduct a sash and door factory at Montreal. Wilfred H. Pauze and Eugene Mathieu are now the registered proprietors.

Slight damage was done to the plant of the Canadian Woodworking Co., Yarmouth, N. S., by fire recently. The blaze was extinguished, however, before it had made very much headway.

The Sellers Kitchen Cabinet Co of Canada, Limited, has been granted an Ontario charter, permitting them to do business in the province provided they do not employ a capital in excess of $60,000.

The Sidmans of Canada, lumber curing specialists, recently shipped material for four Sidman kilns to Shanghai, China. A number of these kilns are being operated in India and other foreign countries.

A large part of the plant of the John Watson Mfg. Co., Ayr, Ont., was destroyed by fire. The loss, which amounts to $150,000, was only partly covered by insurance. This firm manufacturers a line of factory trucks in addition to other products. No definite decision has been made with regard to rebuilding.

The Snyder Furnituer Co., Limited, of Elmira, Ont., are constructing three Sidman lumber curing kilns and are rearranging their yard so as to handle their lumber more economically and with less labor.

The Comfort Mfg. Co., Toronto, who manufacture a line of stuff-over chairs and settees, have moved from Jarvis St. to 645 King St. W. They have installed a small plant and manufacture their own frames.

The Continental Match Co., Limited, have been incorporated to manufacture and deal in matches. Capital $250,000. Among the incorporators are J. R. Roaf and J. Creighton, solicitors, both of Toronto.

Construction has been commenced on the new plant of the Oakville Basket & Veneering Co. This new building will be three storeys, 200 x 32 ft. It is understood that about $75,000 will be spent in purchasing equipment.

Hogue, Limited, Montreal, Que., have been incorporated to manufacture and deal in boxes and all kinds of wood products. Capital $49,000. Among the incorporators are J. H. Dorion, and R. H. Beaulieu, both of Montreal.

The directors of the newly-formed Stratford Housing Co., Limited, Stratford, Ont., include D. M. Wright, W. J. Anderson, H. W. Strudley, W. H. Salter. The majority of these gentlemen are prominent furniture manufacturers.

The Cyrano Cabinet Co. of Canada, Limited, have been incorporated to manufacture and deal in toys, pictures, and all kinds of wood novelties. Capital $100,000. E. Sylvestre and F. R. Darche, both of Sherbrooke, Que, are two of the incorporators.

Leyland Motors, Limited, Toronto, Ont., was recently granted a provincial charter to manufacture and deal in motor car bodies, carriages, wheels and other wooden vehicles. The attorney appointed by the new company is W. E. Humphreys, of Toronto, Ont.

Dunn's Auto Markers, Limited, Montreal, Que, have been incorporated to manufacture and deal in automobiles, aeroplanes, boats and other vehicles. Capital $1,000,000. Two of the incorporators are C. Sinclair and S. G. Dixon, advocates, both of Montreal.

W. J. Bear, of Toronto, is erecting a three-storey furniture factory, 135 x 24, and installing new equipment. Mr Bear confines his line almost entirely to the manufacture of antique furniture. The new factory will cost between $40,000 and $50,000.

The town of St. Quentin, N. B, was partially destroyed by fire and the following woodworkers suffered heavy damages: Chas. Roy & Co., sash and door factory; Arthur Isabelle, carriage manufacturer; E. C. Frost and J. E. Michaud, saw and planing mills.

The Hamilton Wirebound Box Co., Ltd., Hamilton, Ont, were recently incorporated to manufacture and deal in boxes and other containers. Capital $40,000. G. W. Ballard and W. Morrison, barristers, both of Hamilton, Ont, are two of the incorporators.

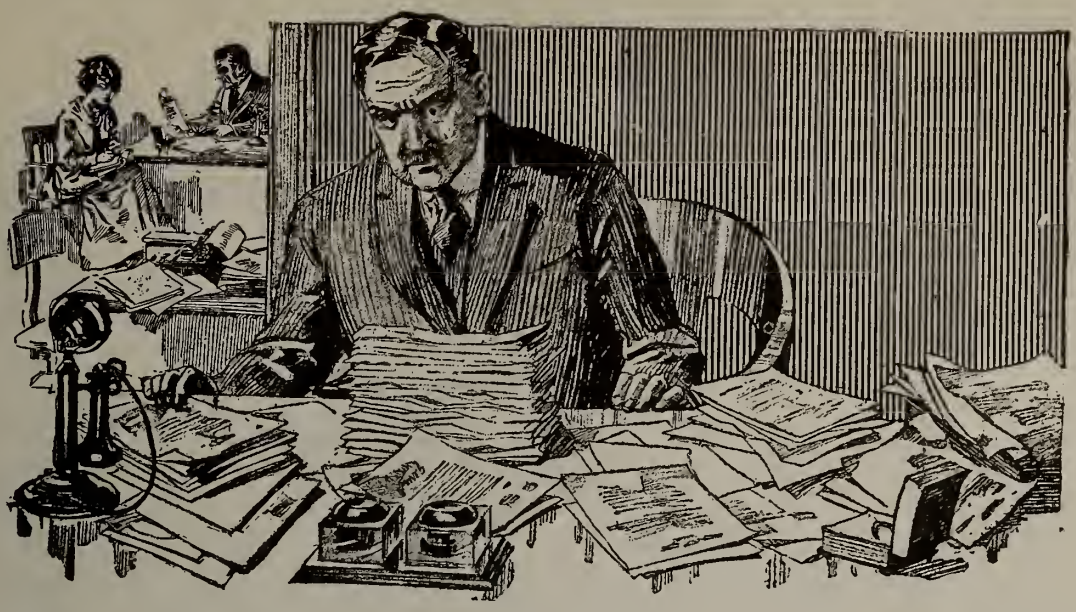
L. C. Barbeau & Co., Limitee, Montreal, Que, were recently granted a provincial charter to manufacture motorboats, aeroplanes and other wooden vehicles. Capital $49,900. L. C. Barbeau and L. E. Seguin, both of Montreal, are two of the incorporators.

The Cornfield Wheel Co, Limited, Toronto, Ont., was recently incorporated to manufacture and deal in motor trucks, wheels and bodies. Capital $150,000. Two of the incorporators are G. M. Huyke and N. E. Strickland, barristers, both of Toronto, Ont.

The Columbia Handle Co., London, Ont., have commenced work on an addition to their factory. They are in the market for special machinery for manufacturing handles and other wood products The cost of the new plant will be in the neighborhood of $25,000.

The W. B. Jennings Co, Ltd., St. Thomas, Ont., have been granted a provincial charter to manufacture and deal in furniture, musical instruments and other wood products. Capital $40,000. Two of the incorporators are W. A. Jennings and H. B. Jennings, both of St. Thomas, Ont.

C. Alf. Gingras & Sons, Limited, who were recently granted a provincial charter to operate sawmills, manufacture lumber, timber, etc, with a capital stock of $45,000, and headquarters at Sherbrooke, Que., have recently moved their plant to larger and more commodious quarters. The new



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(*We could tell him where it is*)

Yes—we could put our finger on it first shot. Years of experience in time recording problems have shown us that there is one big leak-point and few employers grasp it. The difference between the total labor time you pay for and the productive labor time that is actually delivered by the work people. There is the danger spot.

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Enable you to tell exactly what this difference is. Once you know it you have a mighty important part of your overhead burden defined and ready to be taken into proper account when making up your cost.

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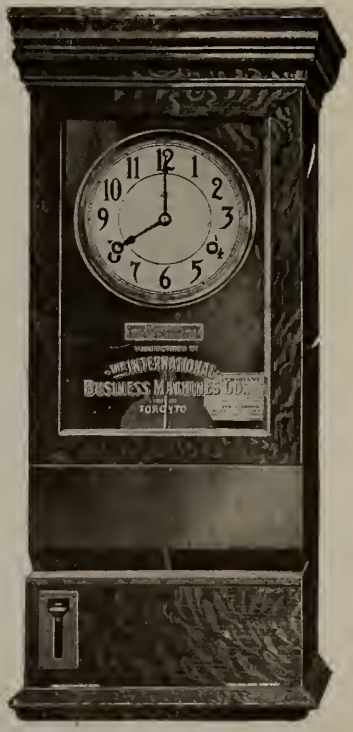

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OTTAWA, 188 Queen Street
TORONTO, 415½ Yonge Street
HAMILTON, 2 Empire Building
WALKERVILLE, ONT., 44 Lincoln Rd
WINNIPEG, 227 McDermott Avenue
SASKATOON, 254, 3rd Avenue
CALGARY, 127, 6th Avenue
EDMONTON, 10118, 102nd Street
VANCOUVER, 110 Water Street

(*Also Manufacturers of Dayton Scales and Hollerith Electric Tabulators*)

company will manufacture all kinds of fixtures, such as those for churches, banks, stores and offices. The firm will also supply contractors with all the material they may require. L. E. Gingras is general manager of the organization.

The British Columbia Spruce Mills, Limited, Wattsburg, B. C., which was recently incorporated with a capital of $1,000,000, are actively engaged in the construction of a large saw and planing mill. It is said that the planing mill will be one of the largest in the interior of B. C.

The Q. R. S. Music Co., Limited, Toronto, Ont, were recently granted a provincial charter to manufacture and deal in pianos, phonographs and other musical instruments. Capital $150,000. H. J. Stuart and M. Aylesworth, barristers, both of Toronto, Ont., are among the incorporators.

The Beaver Motor Truck Corporation, Limited, Hamilton, Ont, have been incorporated to manufacture and deal in motor trucks, boats, aeroplanes and conveyances of all kinds. Capital $1,000,000. Among the incorporators are H. R. Williams and A. P. Goering, both of Hamilton, Ont.

The strike of the Ottawa inside woodworkers, which has partially tied up many of the woodworking plants in that city, was further aggravated by a walk-out of about 250 laborers and teamsters employed in these plants. The laborers and teamsters are demanding a minimum rate of 55c an hour.

Riviere du Loup Excelsior Co., Limited, Riviere du Loup, Que, were recently incorporated to manufacture and deal in excelsior wood fibre, to operate mills and manufacture all kinds of woodenwork. Capital $20,000. J. H. Mailloux and H. Desrosiers, both of Riviere du Loup, are two of the incorporators.

Tremblay, Denis & Compagnie, Limited, Saint Raymond, Que., have been granted a provincial charter to conduct a business as general woodworkers, manufacturing cabinets and other woodenware. Capital $100,000. Two of the incorporators are J. Tremblay and J. Denis, both of Saint Raymond, Que.

Among the firms recently incorporated in British Columbia might be mentioned the Canadian Western Door Co., Limited, Vancouver, B. C., capital $10,000; the Northwestern Box Co., Limited, Vancouver, B. C., capital $10,000; and the Wallace Shipbuilding & Drydock Co., Limited, Vancouver, B. C, capital $1,000,000.

An acute shortage of berry boxes is interfering with the marketting of the strawberry crop in Ontario. One reason for the scarcity of these boxes is the destruction by fire of the plant of the Oakville Basket & Veneer Co, Oakville, Ont. This firm was one of the largest manufacturers of this class of boxes in Canada.

The plant of the Peterboro Canoe Co., Peterboro, Ont., was damaged by fire to the extent of $3,000. The loss is covered by insurance. The fire started in the dry kilns. The fire walls, which surrounded this structure, probably saved the entire plant from destruction. The operation of the plant was not interfered with.

The Standard Fruit Basket Co. of Thorold, Ont., have taken over the basket factory of George Williams and are making changes and installing equipment to convert it to their needs. The new plant will be in operation in about ten days and will have a production of from 3,000 to 4,000 baskets a day. About 10 hands will be employed.

Woeler, Bolduc & Co., Limited, Waterloo, Ont., manufacturers of upholstered furniture, have opened permanent showrooms on the third floor of the Weiler Building, Montreal. A. T. Edwards will be in charge of the Montreal warehouse. Mr. Edwards is well known to the eastern trade, having covered that territory for many years.

The following Owen Sound firms have contracted for electric power and are installing the necessary motors: North American Furniture Co., Limited, 240 h.p.; Owen Sound Chair Co, Limited, 160 h.p.; National Table Co., Limited, 110 h.p.; H. H. Bowman (match factory), 125 h.p.; Keenan Woodenware Co., Limited, 50 h.p. (partial installation).

Frank Stanley, Toronto, piano manufacturer, has taken over the building on Carlaw Ave., formerly occupied by J. M. Loose & Sons, and is adapting it to the manufacture of pianos. A few changes are being made and a certain amount of new equipment will be installed. It is expected that this plant will be in operation toward the latter part of July.

In connection with the block which the Karn Piano Co., of Woodstock, Ont., are remodelling as apartments for their employees, it has been decided to heat these flats from the central heating plant at the factory. This will do away with all furnaces and will not necessitate the employment of a janitor. The amount of rent to be charged for these apartments has not been decided on but it is anticipated that they will be very reasonable, and the fact that they are within a few minutes' walk of the factory, should prove to be an added attraction to the workmen.

The majority of the employees of the North American Furniture Co., the Owen Sound Chair Co. and the National Table Co. went out on strike recently in an endeavor to secure an increase in wages. The men are asking for 10 per cent more for those drawing over $4 00 per day, and an increase of 15 per cent. in the wages of those earning less than the above amount. A settlement has been effected.

The Annapolis Hardwood Co., Annapolis Royal, N. S., recently opened up a plant to work up applewood. Applewood logs of all sizes and shapes have been bought up all over the country and are being worked up into saw and tool handles. A large part of the product goes to Disston & Co., the well-known saw manufacturers of Philadelphia T. H. Fortiter and E. E. Amey are behind the new enterprise.

A. E. Guidal, Limited, has been granted a charter with a capital stock of $100,000 and headquarters in Toronto. The company is empowered to manufacture and deal in all kinds of furniture, pictures, picture frames, mouldings, etc., and to carry on the business of cabinet makers, woodworkers and woodcarvers, and manufactured woodwork of all kinds. A E. Guidal, Tyrell Bldg, Toronto, is one of the incorporators.

At the annual meeting of Edward Clark & Sons, wholesale lumber dealers, Toronto, Edward Clark was re-elected president and A. E. Clark, who has been managing-director, was also elected vice-president. W. A. Walker, who has been associated with the firm for the past three years, was elected a director and appointed secretary-treasurer of the company. This firm handles hardwoods on an extensive scale and specialize particularly in birch.

Prior to his departure for eastern Canada to take over his new work as lumber commissioner for British Columbia, Loren L Brown, late superintendent in charge of the Dominion Forest Products Laboratory, Vancouver, B. C., was tendered a dinner by the B. C. branch of the Engineering Institute of Canada. During the evening Mr. Brown was presented with a suitably-engraved cigarette case, Mr. H L. Robertson making the presentation.

It is reported that the plans have been completed, subject to ratification of the shareholders, for the carrying on of the Pretolia Wagon Works, Limited, by a large corporation. The name of the new company has not not been given out but it is stated that it has some millions of capital behind it. If the deal goes through, it is the intention to manufacture wagons and sleighs on a large scale, and employment will be given to a large number of men. Full particulars will be available at an early date.

According to a Vancouver paper, when G. A. Schreiter, of the DeLuxe Upholstering Co., Limited, Kitchener, Ont., was in Vancouver, attending the convention of the Canadian Manufacturers' Association, held there recently, he made a complete survey of the province with a view to establishing a furniture factory there. He considers that Vancouver offers many advantages for manufacturing. Should Mr. Schreiter establish a branch in Vancouver, it is possible that his son will be placed in charge.

The Canadian Industrial Alcohol Co. of Corbyville, Ont. successors to the Corby Distillery Co., are manufacturing industrial alcohol on a large scale. Whereas formerly the output of the distillery was 3000 gallons of liquor per day, it is now turning out alcohol at the rate of 20,000 gallons daily. At present this is being made from molasses imported from Cuba. There are unlimited possibilities for this alcohol both in manufacturing and as a fuel for internal combustion engines to take the place of the diminishing supply of gasoline.

No settlement has been reached in the strikes of the Ottawa inside woodworkers. The employers have intimated a willingness to treat with the men as individuals, but at a mass meeting of the men, it was agreed to treat with the employees only as a union and not as individuals; thus a state of deadlock seems to have been reached In the meantime the building trade is being faced with a shortage of building material, and if a solution is not reached very shortly, some of the work under construction will be tied up. It is understood that contracts for woodwork have been let to outside firms.

Fred Magee, Limited, Port Elgin, N. B., packers and exporters, are erecting a box and shook mill. The new factory will be 36 x 84, two storeys, and will be equipped with the

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General Offices
GREENWOOD, MISSISSIPPI,
U.S.A.

Any lumber which does not stand the acid test of the men who work it, is expensive. We welcome the judgment of your workmen.

Every board is branded as above, and this brand is your GUARANTEE and our mutual PROTECTION.

Manufacturers Exclusively

BAND MILLS:

GREENWOOD, MISS. MOORHEAD, MISS.

Our Kraetzer-Cured Gum is guaranteed to be practically *flat, straight* and *bright.*

usual box-making machinery including cut-off saws, resaws, double and single planers, matchers, nailing machines, etc. Some of this equipment was purchased from Cowan & Co., of Galt, Ont. The capacity of the new plant is such that it will not only be able to take care of the requirements of the above-mentioned firm but will be able to cater to the outside demand. Manufacturing operations are expected to commence about October 1st.

According to an announcement recently made, the Sterling Caskets, Limited, Toronto, Ont., notice of incorporation of which was published in the June "Canadian Woodworker," are to take over the plant and assets of the New Dominion Casket Co., of Guelph, Ont. The plant will be moved to the building on McDonnell Square, Toronto, which was purchased by H. R. Wansbrough, who is connected with both companies. The Toronto plant is expected to be in operation at an early date and in the meantime the Guelph plant will be running to capacity. This move is due to the fact that the New Dominion Casket Co., of Guelph, found it utterly impossible to take care of the volume of business offered. Mr. Wansbrough will manage the new concern.

Personal

Arthur Craig, of Firstbrook Bros, Limited, Toronto, recently returned from a trip to Calgary.

Walter Evel, of Evel & Co., Hamilton, Ont, casket manufacturers, recently returned from a trip to Great Britain.

Fred M. Thompson, of Robert Bury & Co., Toronto, wholesale lumber dealers, recently spent an enjoyable two weeks' holiday in New York.

J. M. Arnold, formerly proprietor of the New Dominion Casket Co, Guelph, Ont., will superintend the manufacturing operations of the Sterling Caskets Limited, Toronto.

Wm. Marshall, of the Garlock-Walker Machinery Co., Limited, Toronto, left recently on an extended business trip to the Maritime Provinces. He will be away about six weeks and will cover the territory as far east as Sydney, N. B.

J. A. Minchner, manager of the North American Furniture Co., Limited, Owen Sound, Ont, is spending a couple of weeks in Grand Rapids and Chicago. While away, he will visit the furniture exhibitions which are being held in those cities.

D. M. Wright, of McLagan Furniture Co., Limited, Stratford, and C. A. McMurty, of the Gold Medal Furniture Co, Toronto, were among the manufacturers who gathered in Ottawa to protest against the high luxury tax it was proposed to levy on phonographs.

A. Robertson, of the Robertson & Hackett Sawmills, Ltd., Vancouver, B. C., who conduct a large sash and door factory in connection with their sawmill, was recently elected chairman of the newly-formed Woodworkers' Section of the B. C. Manufacturers' Association.

J. H. Baetz, of the Baetz Bros. Furniture Co, Kitchener, Ont., and H. M. Snyder, of the Snyder Bros. Upholstering Co, Limited, Waterloo, Ont., were elected chairman and vice-chairman respectively of the newly-formed Kitchener and Waterloo branch of the Canadian Manufacturers' Association.

Walter C. Palmer has joined the sales organization of the Frank A. Conkling Co., Memphis, Tenn., manufacturers of southern hardwoods. Mr. Palmer, who will represent this firm in Michigan, Ohio, and Indiana, will make his headquarters at Indianapolis, Ind., and will call personally on the trade in his territory. He has been actively connected with the hardwood lumber industry for the past twenty years and has a wide acquainance among the consuming people.

Obituary

We regret to announce the death of Mr. C. Mattison, the esteemed founder and president of the Mattison Machine Works, Rockford, Ill. His sterling character in business and private life had gained the respect and confidence of all with whom he came in contact. His demise will be felt keenly by a wide circle of friends and business associates.

Before the fan system of removing chips and dust was known, endless chains and canvas belts were used with considerable success.

Value of Timber from Live and Dead Trees

Prejudice exists in certain quarters against the use of timber cut from dead trees, and some purchase specifications insist that only timber cut from live trees will be acceptable. As a matter of fact when sound dead trees are sawed into lumber, and the weathered or charred outside is cut away, there is no method known to the Forest Products Laboratory by which the lumber can be distinguished from that cut from live trees, except that the lumber from dead trees may be partly seasoned when sawed.

All the information available at the laboratory indicates that timber cut from insect or fire killed trees is just as good for any structural purpose as that cut from live trees of similar quality, providing the wood has not been subsequently injured by decay or further insect attack. If a tree stands on the stump too long after it is killed, the sapwood is likely to become decayed or badly infested by wood-boring insects; and in time the heart-wood also will be similarly affected. The same thing is true of logs cut from live trees and not properly cared for. Until the wood becomes affected by these destructive agents, dead tree wood should be just as strong and just as durable as sound live tree wood.

In considering the subject it may be useful to remember that the heartwood of a living tree is entirely dead, and in the sapwood only a comparatively few cells are living. Most of the wood cut from trees is dead, therefore, regardless of whether the tree itself is living or not. Such being the case, purchase specifications, instead of providing that material must not be from dead trees, should state that material showing evidence of decay or insect infestation exceeding a specified limit will not be accepted.

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Veneer Presses
Are Made
Entirely of Steel

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Hardwoods

My organization has behind it the experience of thirty-seven years in the manufacturing and distribution of Hardwood Products.

When you purchase from me you buy guaranteed quality and satisfaction. And the prices are no higher than you would expect to pay anywhere for the same quality of stock and service rendered.

Special Offers

1 Car 4/4 Fas. Walnut
1 Car 5/4 No. 2 Common Walnut
1 Car 6/4 No. 1 Common Walnut
1 Car 8/4 No. 1 Common Walnut
1 Car 6/4 Log Run Maple
3 Cars 8/4 Log Run Maple
1 Car 10/4 Log Run Maple
1 Car 12/4 Log Run Maple
1 Car 5/4 Fas. Plain White Oak
1 Car 6/4 Fas. Plain White Oak
1 Car 6/4 No. 1 Com. Plain White Oak
2 Cars 8/4 Fas. Plain White Oak

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First Quality Material for Fibre and Upholstered Furniture Manufacturers

Good Furniture is Only Made From Good Materials, Well Selected Carefully Handled and Inspected

In selecting your Fibre Cord and stakes for Fibre Furniture you can secure no better material than that which we produce. Our Cord is carefully watched throughout the entire process of manufacture and kept uniform in strength. It is giving perfect satisfaction.

Our Uniflax Seaming Cord for Upholstered furniture is unexcelled. It serves the purpose perfectly and lasts indefinitely. Prices for these materials are commensurate with the quality and are withal very reasonable.

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Wanted

Superintendent and Estimator for bank, office and store fixture and interior finish factory, in small Ontario city. Address Box 93, Canadian Woodworker.

Factory Superintendent

in Office and Store Fitting Factory desires change. Capable estimator and designer. Box 87, Canadian Woodworker, Toronto. 6-7

Engine For Sale

65 H.P., 12¼" bore, 30" stroke, slide valve, Wheelock Engine. Good running order, 10' flywheel. Price $250.00 or last offer. Will exchange for lumber, etc.

STANLEY PIANO CO.,
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Machinery For Sale

36" Band Saw.
Jackson-Cochrane Buzz Planer.
26 x 10 Surface Planer with revolving bed.
Wood Turning Lathe.
20" Vertical Drill.
All in good order. Apply to

TOLTON BROS., LTD.,
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FOR SALE

Several pieces

Woodworking Machinery

Practically new

Also quantity of 3", 3½" and 4½" pipe

THE CANADA LAST CO.
LIMITED
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Drum Sanders For Sale

49" Berlin, Spiral, run one week.
48" Berlin, Straight, good as new.
43" Berlin, Spiral, excellent shape.
48" Fay & Egan, excellent shape.
Also
Mershon 44" Band Rip, excellent.
Berlin No. 108-15" Moulder, good as new.
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70" Sheldon Fan.
All the above are very fine tools.
Write Box 82, Canadian Woodworker, Toronto. t.f.

Wooden Tubs Wanted

Cooperage factory wanted to manufacture 5,000 to 10,000 wooden tubs for Washing Machine Company. Box 92, Canadian Woodworker, Toronto.

Veneer Man Wanted

WANTED—A man experienced in veneer doors, both in glue room and machine room. The Knight Mfg. & Lumber Co., Ltd., Meaford, Ont.

Exhaust Fan For Sale

One Double 60" standard steel plate exhaust fan with 23" outlet. Apply McFarlane Mfg. Co., 208 Main St., Toronto.

For Sale

Borer, Upright, single-spindle, $200.
Band Saw, 32" Crescent, New, $225; 36" $285.
Cut-off Saw, Racine, No. 2 "Lightning," New, $135.
Saw, Crescent No. 1 Saw Table, New, $230.
Sander, Disc, 18" Crescent Disc Grinder, New, $175.
Circular Resaw, 24" American, 4-roll. $275.
Dry-kiln trucks, 6' 9" long, Channel Iron, Roller Bearing, (500).
Hand Jointers, 18" Crescent, $225; 20" Greaves-Klusman, $225.
Moulder, 10" American, 4-side, Outside, Heavy, $1,000.
Planer, single cabinet, 30" x 7", Buss Sec. Roll, $500.
Sander, 30" Berlin, single drum, power feed, $275.
Woodworker, Universal, Sidney, 5 machines in one, $575.

Chas. N. Braun Machinery Co.,
Fort Wayne, Ind.
Woodworking Machinery of All Kinds.

For Sale

1 Iron Frame Gaining Machine, cutting up to 3" wide.
1 Witherby Rugg & Richardson Tenoning Machine, single heads and single cope, cut 3" wide, one cut.
1 Fay & Egan, 3 spindle, vertical car boring machine.
1 Fay & Egan, No. 3 automatic railway cut-off Saw, with 24" x 8' 6" roller top table.
1 Fay & Egan, Vertical Car tenoning machine, making single, double or triple tenons on both sides of sills without reversing.
1 John Bertram & Sons, Vertical Solid Chisel Mortising Machine, with drilling attachment, 2" cap.
1 Cant, Gourlay & Co. blind style Mortising and Boring Machine.
1 Bertram & Sons, 7", four-sided Moulder.
3 50-h.p. Electric Motors, 25 cycle, 3 phase, 550 volt, 720 to 750 R.P.M.
3 75-h.p. Electric Motors, 25 cycle, 3 phase, 550 volt, 720 to 750 R.P.M.

Apply L. S. TARSHIS & SONS,
400 Front Street East,
Phone Main 5338. Toronto, Ont.

WANTED

Heavy Combines Sash and Door Sticker.
Double End Tenoner.
Double Color Box Printer.
Nailers, Cleating and Plain.
Cowan Box Matcher.
State exact condition and lowest price will accept.
Box 91, Canadian Woodworker.

For Sale

9 x 30 Morgan Open Back Nailer.
12 x 30 Morgan Open Back Nailer.
Yates Continuous Feed Glue Jointer.
Yates 108 Moulder, 10".
Berlin 108 Moulder, 12".
Fay-Egan Double End Tenoner.
Oliver No. 90 Universal Saw.
24" Yates Surfacer.
42" Cowan Triple Drum Sander.
42" Cowan Band Resaw.
48" Cowan Band Resaw.
12" Lock Corner Box Machine.
All in good order.

Cowan & Company of Galt, Limited,
Galt, Ont.

I Offer the following

Used Machines

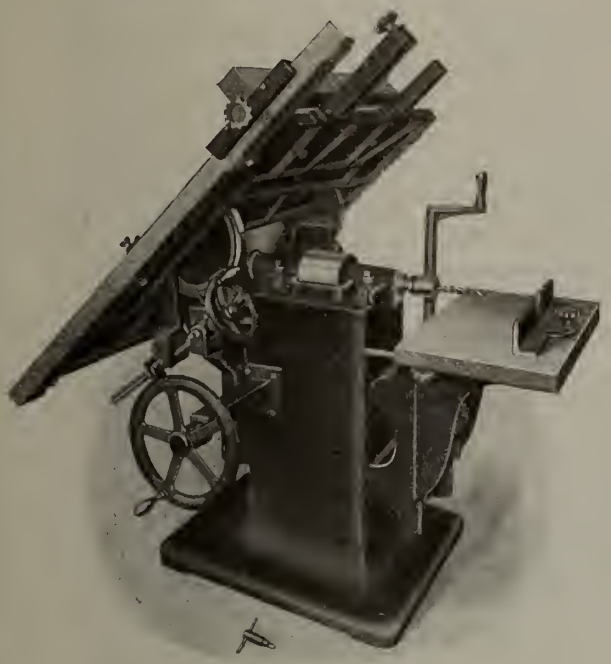
For Immediate Shipment

Subject to prior sale

Combination Single Spindle Shaper and Dovetailing Machine.
New Mereen-Johnson Double Box Board Matcher.
No. 3 Waymoth Turning Lathe.
Francis 42" Combination Single or Double Glue Spreader, with 20 gallon glue cooker.
Superior Jigg Saw.
Moore Machine Co. Standard Rubbing Machine.
Fay & Egan 42" Band Rip Saw.
6' 4" Linderman Jointer.
Mershon Band Resaw.
No. 10 Ober Turning Lathe.
Berlin Machine Works No. 229 Hopper Feed Double Cut-off Saw.
American 30" x 12" 4 Side Timber Sizer.
Moore Machine Co. Double Belt Sandpapering Machine.
30" Whitney Cabinet Surfacer.
H. B. Smith 6" 4 Side Sticker.
E. B. Hayes Dowell Rod Machine.
E. B. Hayes Dowell Gluer and Driver.
E. B. Hayes Standard Power Door Clamp.
Berlin 48" 3 Drum Sandpapering Machine.
Berlin 42" 3 Drum Sandpapering Machine.
Hermance Machine Co. 10" 4 Side Sticker.
Buss Machine Works 30" Cabinet Planer.
Baxter D. Whitney 42" Scraper.
S. A. Woods 24" Pony Planer.
American No. 129 Fast Feed Hardwood Flooring Matcher.
Greenlee Bros. No. 2 Power Feed Rip Saw.
30" Band Saw with iron table.

C. J. ANDERSEN,
15 S. Swan Street,
Buffalo, N.Y.

An Excellent Machine for Furniture and Cabinet Work



The "Famous" No. 16 Variety Saw Bench with boring and mortising attachment will do much to increase your output in your furniture and cabinet shops. Accuracy is a main factor in its operation, while the roughest class of work is handled with the same degree of efficiency.

Write us for further information regarding the "Famous" No. 16 Variety Saw Bench and many other machines that you may need and are included in our complete line of woodworking machinery.

The Sidney Machine Tool Company

SIDNEY, OHIO U. S. A.

Ontario Agent—H. W. Petrie, Ltd., Toronto

Hardwoods

As Below

All at One Point

HARD MAPLE

13M	ft.	4/4"	No. 3 Com. & Btr.
34M	"	8/4	No. 2 Com. & Btr.
10M	"	12/4	No. 1 Com. & Btr.

BEECH

16M	"	4/4	No. 3 Com. & Btr.
7M	"	6/4	No. 2 Com. & Btr.
11M	"	8/4	No. 2 Com. & Btr.

BIRCH

2M	"	4/4	No. 3 Com. & Btr.
6M	"	8/4	No. 2 Com. & Btr.

BASSWOOD

12M	"	4/4	No. 3 Com. & Btr.
9M	"	6/4	No. 2 Com. & Btr.

SOFT ELM

3½M	"	4/4	No. 3 Com. & Btr.
6½M	"	8/4	No. 2 Com. & Btr.
4M	"	12/4	No. 1 Com. & Btr.

Canadian General Lumber Company, Limited

712 Bank of Hamilton Bldg.
TORONTO

MONTREAL OFFICE: 203 McGill Bldg.

Selling

Graves, Bigwood & Co.'s
Lumber, Lath and Box Shooks

Modern and Rebuilt

Band saws, Fay 36-in.; Superior 36-in.; Fay 33-in.
Dovetailers, Dodds 10, 12 and 15-spindle; Tannewitz No. 1.
Jointers, Oliver 12 and 20-in.; Buss 12 and 24-in.; Fay & Egan 16-in.
Lathes, Whitney, Pringle & Brodie, American; 50, 48 and 42-in.
Mortisers, New Britain Nos. 2, 3 and 5.
Mortiser, Famous vertical hollow-chisel.
Moulders, Hermance 8, 10 and 12-in.; Smith 4 and 6-in.; Greenlee 10-in.
Presses, Black Bros. 6-ft. power.
Planers, pony, Chicago No. 35; Fay 24-in.
Planers, cabinet single, Buss, Whitney, American; 30 and 36-in.
Planers, cabinet, double, Buss, Berlin, Whitney.
Resaws, Mershon 44-in. combination band resaw and rip saw.
Rip saws, band, American No. 1, 42-in.
Saw tables, Chicago No. 10, tilting table.
Sanders, Berlin 30, 36 and 42-in.; Columbia 30 and 42-in.
Sanders, Berlin 30 and 42-in. endless bed.
Sanders, Schimmel-Reid automatic power belt.
Scrapers, American 30-in.; Whitney 26, 30 and 42-in.
Shapers, Chicago, Buss and Whitney.
Tenoners, single and double-end.

Chicago Machinery Exchange,
1221-1229 Washington Blvd.,
7 Chicago, Ill.

Machinery For Sale

Partial list of second-hand woodworking machinery for sale.

Two band re-saws.
One heavy band saw with re-saw attachment.
One post band saw.
One long bed 15" 4-sided planer and matcher.
One long bed 15" 3-sided planer and matcher.
Two 12" moulders.
One 10" moulder.
Three 6" 4-sided sash sticker.
One 4" sash sticker.
Three 24" single surfacer.
One 20" pony planer.
One 24" pony planer.
One 48" 3-drum sander.
Two arm sanders.
Three tenoners with double copes.
One combination edge moulder and shaper.
One double spindle shaper.
One single spindle shaper.
Two power feed rip saws.
Two railway cut-off saws.
Three mortisers.
One foot mortiser.
One hand tenoner.
Three wood lathes.
One foot mitreing machine.
Two buzz planers.
Four buffalo steel plate pressure blowers, etc.
Iron working machines.
Brick-making machines.

Price and particulars on request.

E. A. MUIR,
50 S. Algoma Street,
Port Arthur, Ont.

Manufacturing Plant Wants Work

Would like to get in touch with party or company to manufacture a staple article in fully equipped Planing Mill with Saw Mill and Dry Kiln. Suitable party could acquire an interest in the business.

Cayuga Planing Mill Company,
7 Cayuga, Ont.

Double Cut-Off Saw

For Sale at a Bargain

Capacity 4 ft. 6 in. x 3 ft. Absolutely new—never used.

Dodge Manufacturing Co. of Canada Limited
7 Toronto.

FOR SALE

We have immediately available the following used machines, equal to new, because at the most they have only been running three months:—

1—"GOODSPEED" Variety Lathe, complete with regular equipment, without countershaft. Price $385.00.

1—"LEWIS T. KLINE" Variety Lathe, complete with regular equipment and countershaft. Price $465.00.

1—"DAUBER-BELL" Adjustable Dowel Machine, 2 in. capacity, complete with regular equipment, including 4 sets Heads and Rolls. Price $750.00.

The above prices are F.O.B. Cars, Montreal, where they can be inspected.

Williams & Wilson, Limited,
84 Inspector Street,
7-9 Montreal, Que.

Trees on the Prairies

It was in 1901 that the Forestry Branch of the Department of the Interior began to send out trees to the farmers in the prairie provinces to plant shelter-belts about their buildings and fields. Since that time over five million seedlings and cuttings have been sent out from the Dominion Forestry Nursery Station at Indian Head, and the branch nursery recently established near Saskatoon. The success of this plan of free distribution of trees is shown not only in the increasing use made of it by farmers of the prairie provinces, but also by the fact that this system of free distribution has been copied either as it stands or in a modified form by other important administrative bodies. The provinces of Ontario and Quebec, although their conditions are very different from those of the prairie provinces, have applied the plan in a modified form to farmers' wood-lots. The United States Department of Agriculture, after a careful study of the system in Canada, applied it to the prairie states. At present several thousand farmers in the Canadian west are receiving trees annually and this number doubtless now will be increased seeing that the war is over, and the farmers have more time.

PETRIE'S
LIST
of NEW and USED
WOOD TOOLS
FOR IMMEDIATE DELIVERY

Wood Lathes
No. 4 Waymouth, variety.

Wood Planers
26" Double surfacer.
24" Pony planer.
24" Crescent, single surfacer.
12" Buzz planer.

Band Saws
30" Ideal, pedestal.
60" Fay & Egan, band re-saw.

Saw Tables
No. 5 Famous, combination (2).
No. 4 Famous, combination.
No. 125 Preston combination.
McKenzie, combination.
Ballantine, tilting table.
MacGregor Gourlay railway cut-off.
No. 1 Greenlee automatic cross-cut.
No. 642 C. M. C. cut-off.
Galt, iron frame, cut-off.
Goldie & McCullough, power feed rip.
Davis, power feed rip.
7' Williams, swing saw.
Canadian, steel frame airmotor cut off.

Mortisers
Cowan, foot power.
No. 1 C. F. & F., foot power.
No. 2 C. F. & F., foot power.
No. 1 Defiance D handle mortiser.
Dominion, foot power.

Moulders
13" Clark-Demill four-side.
12" Woods four-side, inside.
10" Goldie & McCulloch, three side.
10" Houston, four-side.
8" Dundas four-side.
6" Dundas sash sticker.

Boring Machines
Ballantine, vertical.
Gear driven, post borer.
Fay, single spindle, horizontal.

Sanders
48" Berlin, three drum.
No. 176 Cowan, adjustable.
Post radial, surface sander.

Sawmill Machinery
No. 1 Sawyer-Massey, portable sawmill.
Boss, automatic, shingle machine.
Vaughan, gasoline driven, drag saw.
Champion, friction, drag saw.

Miscellaneous
Saw arbors, for 20"-30" saws.
McGregor-Gourlay 12 spindle dovetailer.
20" American, wood scraper.
Ballantine dowel machine.
Fay, iron frame, double head, tenon machine
C.M.C. 4 head rounding machines (3).
No. 3 Defiance, rim & felloe rounder.
No. 1 Defiance, axle shaper.
No. 1 Defiance, spoke driver.
No. 21 Covel bandsaw filing clamp.
No. 104 Covel band saw roller.
M. 137 Cowan, sash clamp.
M. 21 Cowan, door clamp.
3" x 7" universal wood trimmer.
Cowan veneer press screw.
Humphrey clothespin lathes (5).
Humphrey clothespin slotters (2).

Ask to see our large stock of used supplies—belting, pulleys, machine shop equipment, mill supplies, pipe and fittings., etc. Most of this material is as good as new, and can be bought at greatly reduced prices.

H. W. PETRIE, LTD.
Front St. W., Toronto, Ont.

FORD PRODUCES BIG VALUES

FOR

LITTLE MONEY

AND

MAKES BIG PROFITS

BECAUSE

He Uses the Best Apparatus Obtainable

National Automatic Humidity Controlled Dry Kilns, Ford Motor Co., Detroit, Michigan

Undoubtedly the cost of your product can be reduced and your profits increased by

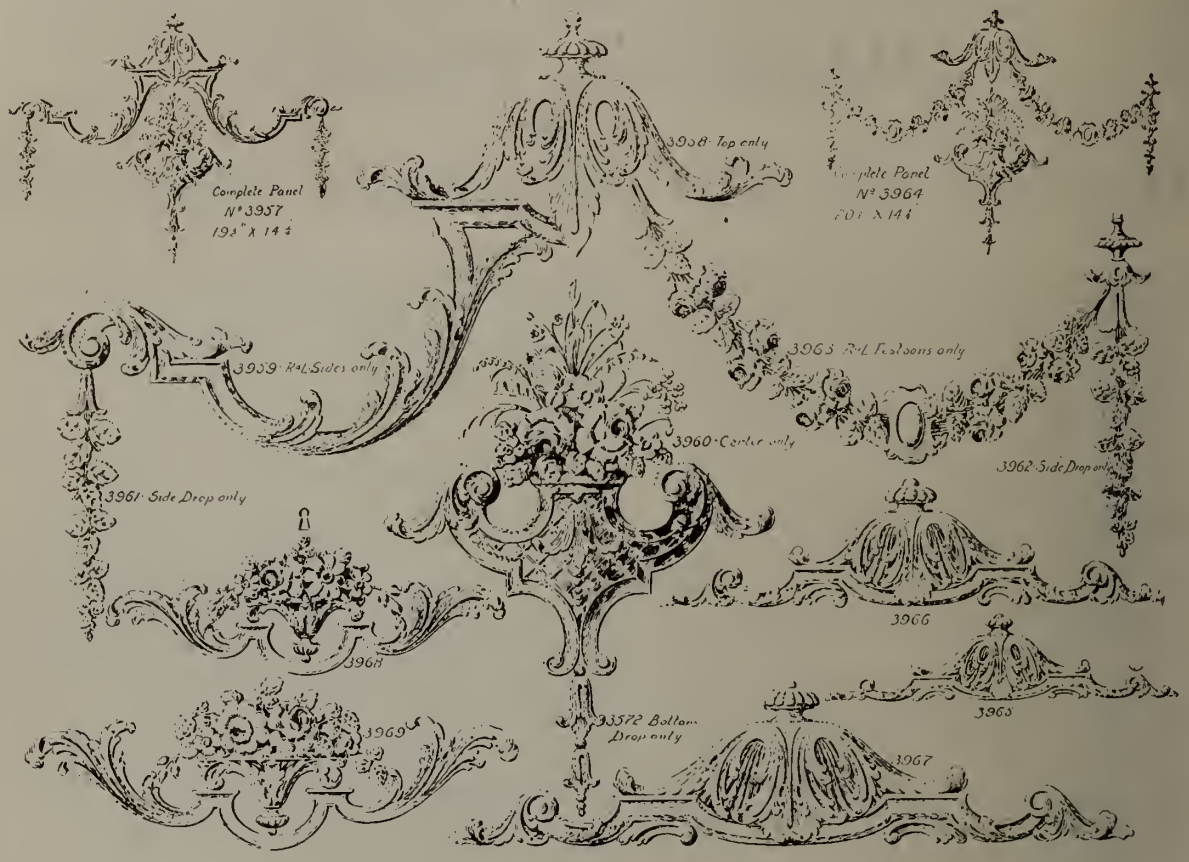
NATIONAL DRY KILNS

Send for Folder Describing Many Exclusive and Money-Saving Features.

THE NATIONAL DRY KILN CO., 1117 East Maryland St., Indianapolis, Indiana.

NATIONAL DRY KILNS

Wood Fibre Carvings



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Furniture	Churches	Altars	Steamships
Offices	Schools	R. R. Coaches	Show Windows

Thousands of designs to choose from

WE INVITE YOUR INQUIRIES

J. WALTER & SONS

KITCHENER - ONT.

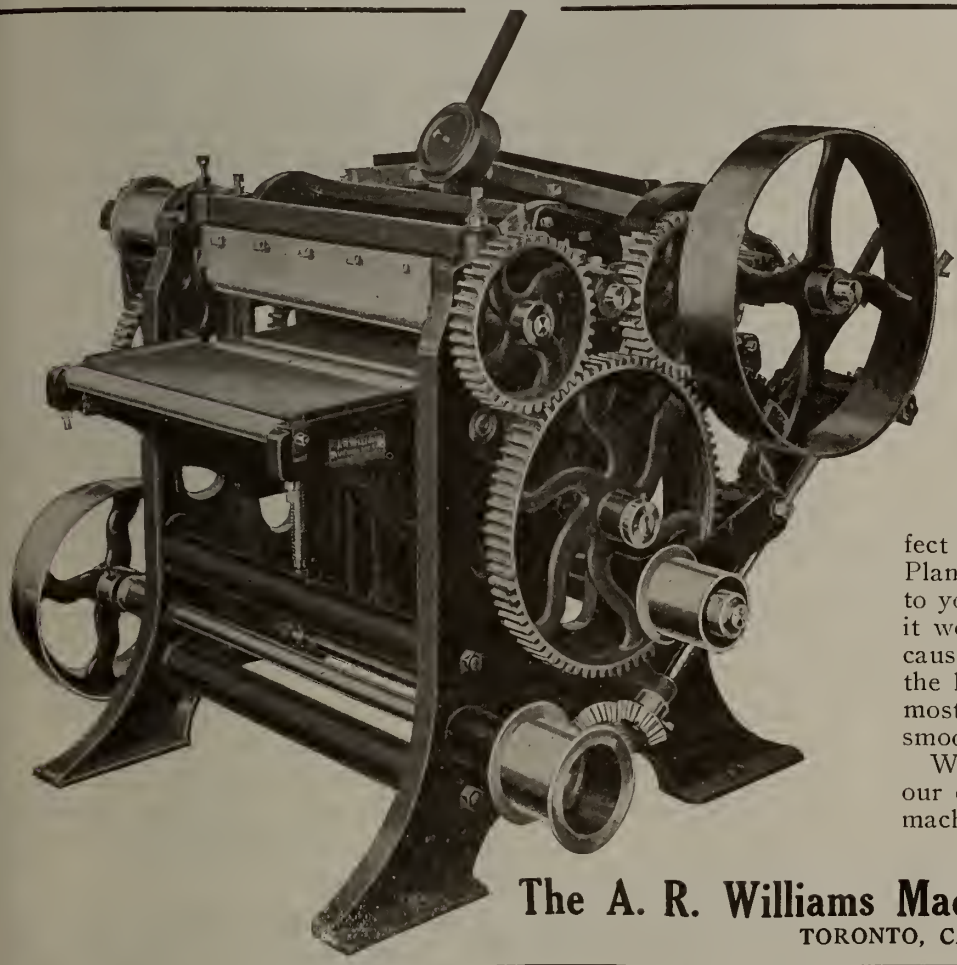
Buy Kilns as You Buy a Car

Ask the Users—Direct.

We are willing, on our kilns. We will gladly send a list of our many users, for "They say it Satisfies." Address:

THE STANDARD DRY KILN COMPANY

1542 McCarty Street Indianapolis, Indiana



A Record Service by

The "Eclipse" SURFACE PLANER

With a record of over 2,000 in actual use and giving full satisfaction and perfect results the "Eclipse" Surface Planer is bound to be of interest to you. For the furniture factory it would be an ideal machine because of its ability to produce the highest grade of planing and most suitable where very thin, smooth work is required.

Write us for full particulars on our entire line of woodworking machinery of all descriptions.

The A. R. Williams Machinery Co., Limited
TORONTO, CANADA

Automatic Hole-Cutting Machines

The Wheel and Hole Cutting Machine has four automatic movements, all of which work in perfect unison, performing their functions in clock-like regularity.

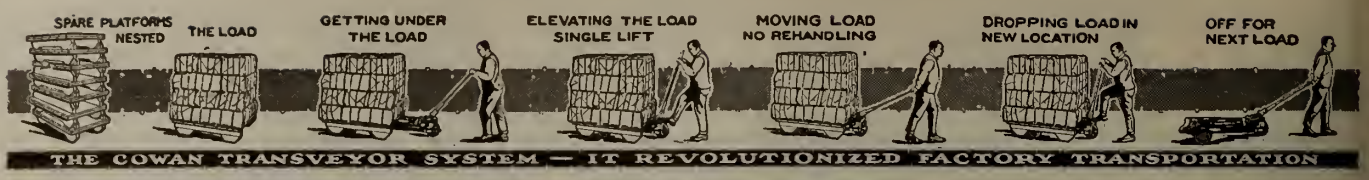
The Hand-Hole Machine will cut hand holes in crate and box ends. It is worked by a carriage and levers, and will cut any size or length hole with either round or bevel edge in any kind of wood.

WRITE FOR NEW DESCRIPTIVE CATALOGUE.

The Virginia Wheel & Hole Sawing Machine Company

S. S. SEE, Manager

14 Third Street N.E. Roanoke, Va.


SPARE PLATFORMS NESTED
THE LOAD
GETTING UNDER THE LOAD
ELEVATING THE LOAD SINGLE LIFT
MOVING LOAD NO REHANDLING
DROPPING LOAD IN NEW LOCATION
OFF FOR NEXT LOAD
THE COWAN TRANSVEYOR SYSTEM — IT REVOLUTIONIZED FACTORY TRANSPORTATION

INSIDE ITEMS

Little notes of interest to users and prospective users of lift trucking and "skid" erection or storage.

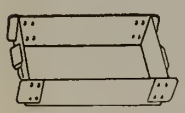
A PLATFORM KINK

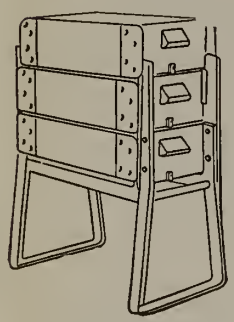
IF your full size platforms are 66 x 30, make up some 33 x 30. Two of the small skids may be transveyed at one time, bearing one load; or different loads on the two platforms may be delivered to different destinations.

EASY TO HANDLE

CONGESTED storage space and car loading often makes it difficult to use a truck to handle in an extended position. It is worth remembering that the Transveyor can be packed with the handle upright, and perfect control of the loads till maintained.

METAL TOTE BOX RACKS





THERE is no difficulty in handling piles of heavily loaded tote boxes on ordinary wooden Transveyor platforms. Sometimes, however, it is necessary to leave boxes and contents in a blueing, baking or annealing oven. In such cases, a special metal base is used, along the lines of the illustration shown herewith.

SOMETHING IN A NAME

KODAKS are cameras, but all snapshotters are not Kodaks. Vaseline is petroleum jelly, but all petroleum jelly is not Vaseline. The list might be prolonged, but would only lead to this,—Transveyors are lift trucks, but only Cowan lift trucks are Transveyors.

SOWING THE SEED

IT is decidedly interesting to watch the rapid development of the Transveyor idea in unusual places. A seed and plant company informs us that the Transveyor is saving them $200 per month by reducing the number of men necessary for moving heavy bags of seed and feed.

THE WEAKEST POINT

LIKE the oft-mentioned chain, an elevating truck can be no stronger than its weakest point. During the many years in which the Cowan Transveyor has been in constant use, anything likely to prove a weak "link" has had the most careful attention, and the weak points eliminated. The Transveyor now has the wear and strain so well distributed over the entire machine that there doesn't seem to be any wear-out left in it.

TRUCKING TRACTORS

A WESTERN maker of farm trucks and tractors says that they have saved, at the very lowest, 30% of the cost of transferring materials around their works by using the Cowan Transveyor. They believe it is the best truck for the purpose made.

WHERE quality products are produced by up-to-date methods the TRANSVEYOR is sure to be found at work. Its superior all-steel construction, 5-year guarantee, and long record of faithful performance, make it the undisputed leader in the factory trucing field.

The TRANSVEYOR System forms the basis of endless short cuts and savings in forwarding, erecting, storing and shipping. Notice in the above picture how material is easily moved with the Transveyor.

Let us send you an illustrated booklet, showing how the Cowan TRANSVEYOR System operates in **your** business.

THE COWAN
TRANSVEYOR
TRADE MARK REG. U. S. PAT OFFICE

Representatives in Principal Cities—refer to Donnelly's Red Book for local address

—Clip and Mail Coupon—

COWAN TRUCK COMPANY
118 W. Glenholme Ave., Toronto, Ont.

I am interested in reducing the cost and increasing the efficiency of hand trucking. Send a copy of "HOW TO APPLY THE TRANSVEYOR TO YOUR BUSINESS."

NAME ... ...

ADDRESS ... ...

An Efemco Product

They Look Good and Work Better

Efemco Acme Grip Neck Casters improve appearance and increase mobility. Because of their smooth, free action, strong axles and compact, sturdy construction, they meet the demands of furniture manufacturers and all users of good casters.

Acme Grip Neck Casters are one of the biggest selling items of the EFEMCO line. They are made in sizes 3, 4, 5, 6, and 7, with Maple, Lignum Vitae, Steel, Iron and Fibre wheels—brass-plated, nickel-plated or non-plated —for furniture of all styles and grades.

Write for catalog showing new lines of improved EFEMCO Casters

FOSTER, MERRIAM & CO.

Meriden, Conn. Hamilton, Ontario New York City

Efemco PRODUCTS

Grip Neck Casters
Ball Bearing Casters
Roller Bearing Casters

Truck Casters
Furniture Trimmings
Automobile Accessories

Piston Rings
Cast Aluminum Ware
Grey Iron Castings

Standardized by 85 years of service

Efemco Products Efemco Products Efemco Products Efemco Products Efemco Products Efemco Products Efemco Products

Improved Glue Heater

No heat controllers or other safety guards are necessary with this heater, **because it cannot injure glue.** It's simple, substantially made of copper and costs less than any other.

Let us tell you more about it.

We make any size desired.

Cincinnati Glue Heater Company
Cincinnati, Ohio

"CASCO" Waterproof Glue

Mixed Cold—Used Cold

COST

FOR JOINTING—very much less than the hide glues.

FOR VENEERING—A little more per pound than vegetable, but little, if any, more per GLUE LINE FOOT.

Hundreds of large manufacturers are using "CASCO" to produce the BEST veneered products, at no increase in cost.

The Casein Manufacturing Co.
Manufacturers of Casein Glues for twenty-five years
15 PARK ROW NEW YORK CITY
NOTE. Send for Casco Red Book. It contains much information on glue, veneer and panels.

"The Woodworker's Standard"

Fast Cutting Long Lived

Carborundum Brand Garnet Paper and Cloth Products will give that beautifully satin-like finish which delights the craftsman.

Every roll, sheet, strip and belt, clean fast cutting and long lived, wonderfully flexible and uniformly coated with hard, sharp pure Garnet.

WRITE FOR NEW PRICES.

Norman Macdonald

62 and 64 Temperance Street
TORONTO - - ONTARIO

A Fine Finish for a Fine Instrument

IN a Jamestown, N. Y., plant they make the cabinets for a celebrated phonograph.

It is the work of master craftsmen, turning out these sounding boxes, the throats, as it were, of the phonographs. The cabinets must have a beautiful, uniform, satin-like finish, so the workmen use

CARBORUNDUM BRAND GARNET CABINET PAPER

They find it will do about forty per cent more work.

They find that it is remarkably flexible—that it lends itself to curves and angles without cracking or splitting—that it lays level without curling under the hand on the flat work.

It cuts fast, it cuts clean, and it's uniform

On the drum sanders and on the belt machines they are also using Carborundum Brand Products and sanding results prove the wisdom of the choice.

Carborundum Brand Products
Make Good Sanders Better Sanders

The Carborundum Company

Niagara Falls, N. Y.

New York Chicago Boston Philadelphia Detroit
Cleveland Cincinnati Pittsburgh
Grand Rapids Milwaukee

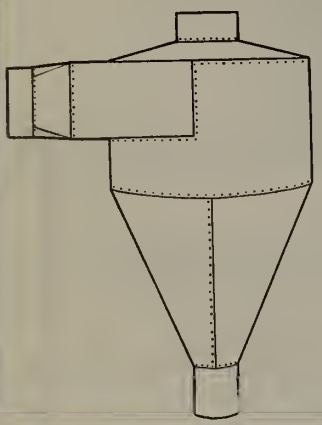
Carborundum Products are:
Carborundum and Aloxite Grains and Powders, Grinding Wheels, Sharpening Stones, Paper and Cloth, Garnet Paper and Cloth and Carborundum Refractories

How about your Shaving Sawdust and Dust Collecting System?

Is It Right?

You cannot afford to equip your factory with a refuse collecting system that is always giving you trouble and out of order most of the time. It is a waste of money and a big expense for operating.

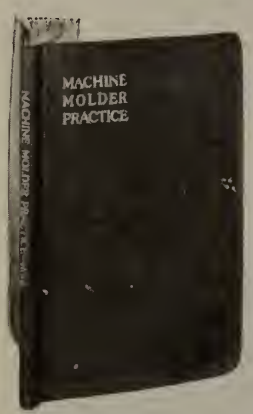
You will save money by consulting us. Our systems are scientifically designed and constructed to give continual and satisfactory service.



If your present is giving trouble or if you are contemplating a new one, write us for particulars.

ANKETELL
AND
DAVIES
279 Roxton Road
TORONO
ONT.

The Cream of Many Minds



MACHINE MOLDER PRACTICE

Is not an exposition of one man's theories, practices and experiences (which would necessarily be very limited) but a clear outline of all principles involved in molder work, together with a choice selection of the best practical, tried and tested methods of leading moldermen, molding room foremen and production men in all parts of the United States.

16 CHAPTERS

The Alignment of a Molder
Setting Up a Molder
Planning Set-ups and Selecting Knives
Balancing Molder Knives
Making Under-Cuts and Dovetail Grooves
The Use of Special Guides and Forms
Special Surfacing and Milling Knives
Running Molding Face-Down
Braces and Knives for Heavy Work
Making Moldings in Multiples
Miscellaneous Molder Work
High-Speed Molder Work
Knife Making
Babbitting High-Speed Bearings
Belting and Installing Molders
Molding Shapes

A REVELATION

Of original data, obtained first hand by the author, W. H. Rohr, through personal experiences, interviews and visits in hundreds of woodworking factories of every size and description, from Coast to Coast and from Canada to Mexico.

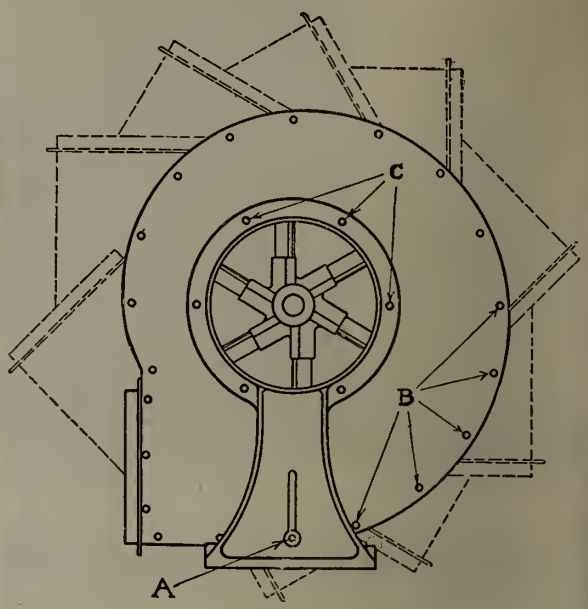
160 pages profusely illustrated with 100 new drawings and halftones. Flexible Red Karatol Leather Binding, lettered in gold.

$3.00 postpaid

Remit by money order or check.

CANADIAN WOODWORKER
345 Adelaide St. W., Toronto

Reversible Housing



One of the features of the Canadian Planing Mill Exhauster is the reversible housing. It is easily adjustable to either hand and to any discharge.

By this arrangement one fan may be used to meet all requirements, thus eliminating crossed belts and sharp angles.

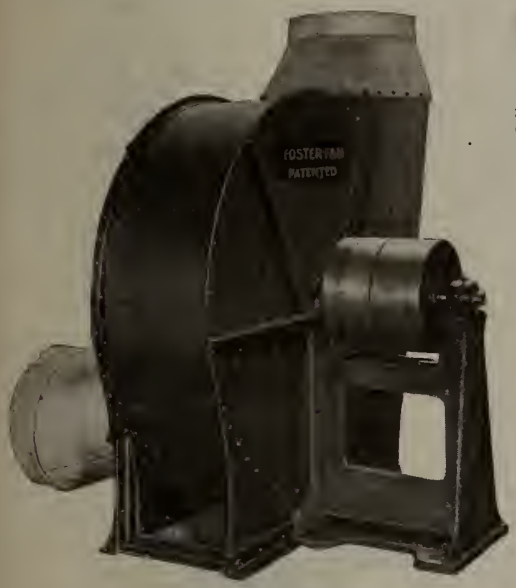
Let our engineering department help you plan your refuse exhauster system.

Write for catalogue 400-13.

Canadian Blower & Forge Co.
KITCHENER, ONT.

Here is the Proof →

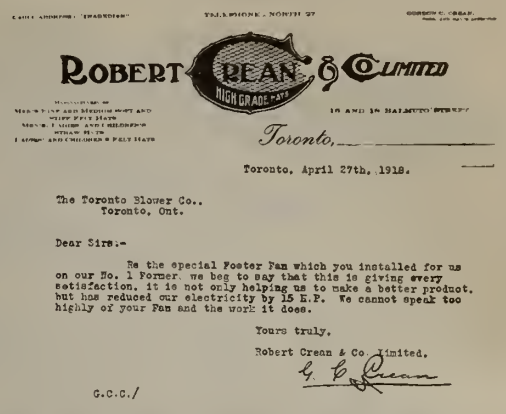
This is conclusive proof of the efficiency of the FOSTER FAN under an unusually severe test.



PATENTED

We are Specialists

We design, install and guarantee our systems from the making of the fan right down to the finest detail of installation.



ROBERT CREAN & CO LIMITED
HIGH GRADE CAPS
10 AND 12 HALMETTO STREET

Toronto,

Toronto, April 27th, 1918.

The Toronto Blower Co.,
Toronto, Ont.

Dear Sirs:-

Re the special Foster Fan which you installed for us on our No. 1 Former, we beg to say that this is giving every satisfaction, it is not only helping us to make a better product, but has reduced our electricity by 15 H.P. We cannot speak too highly of your Fan and the work it does.

Yours truly,

Robert Crean & Co. Limited.

G. C. Crean

G.C.C./

← **THIS IS THE FAN THAT SAVED 15 H. P.**

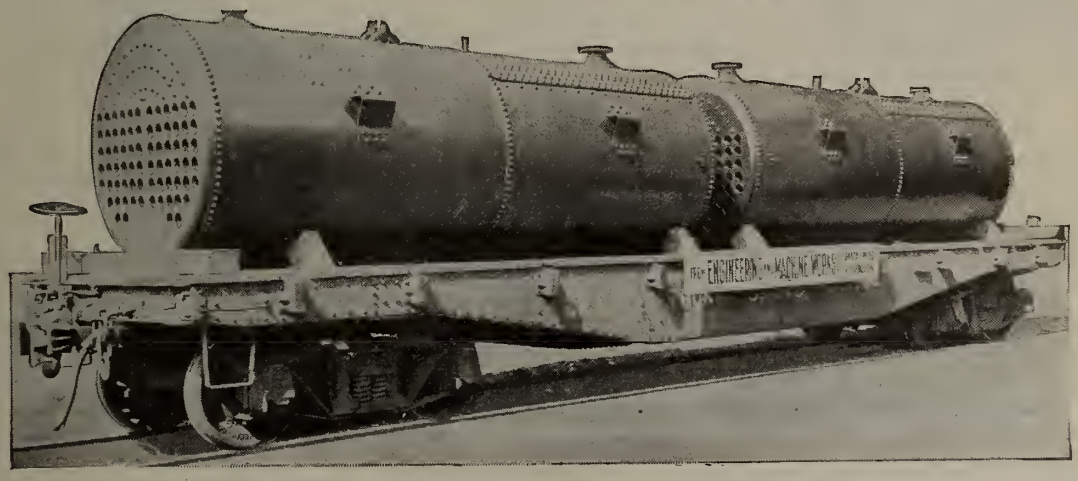
The "Foster Fan"—the heart of our blower systems—is of special design, being the only non-centre suction fan on the market.

It will handle any conceivable material continuously—without clogging, and is the only suction fan having a bearing on the inlet side, thereby eliminating the over-hung wheel. These fans are equipped with special ball bearings, and if desired are also equipped with special ball bearing loose pulley.

Let us demonstrate the most satisfactory exhaust system in Canada.

Toronto Blower Company

156 Duke Street, TORONTO, Ontario



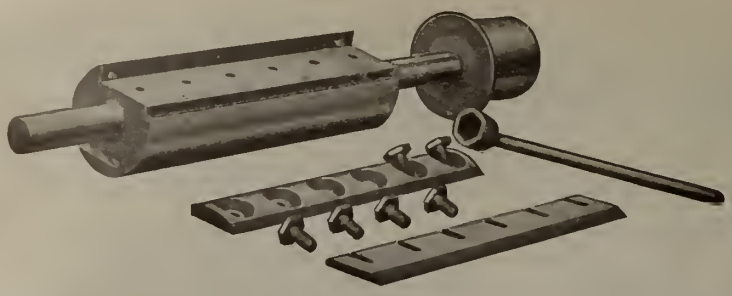
You must have Steam—

and we help you get it with Boilers from a strictly modern plant—yet with 35 years experience behind it—where Workmanship and Service are basic principles, not mere catch words

Engineering & Machine Works of Canada, Limited

St. Catharines, Ont.

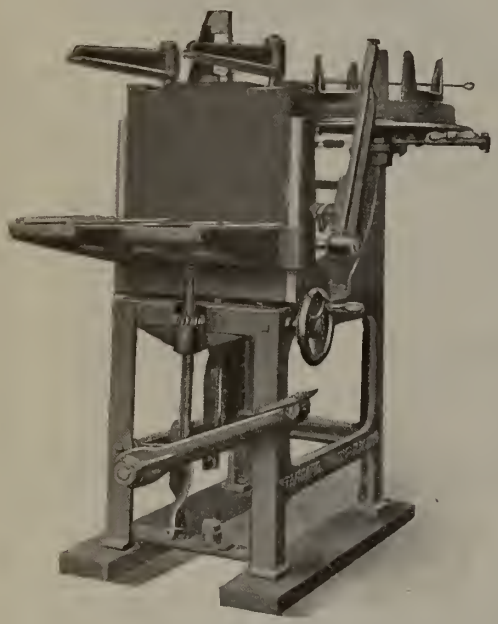
Eastern Sales Offices:
Hall Machinery Co., Sherbrooke Que., and Birk's Bldg., Montreal.



PROTECTION—

Safety First! How often have we heard or seen this phrase, yet daily, yes, and oftener, accidents are occurring. Silver's Round Safety Cylinder will protect the operators of any of our new jointers from needless injury. They are greatly appreciated by the operators of these machines and they help wonderfully to increase production. Write us for descriptive matter regarding our complete line of machinery that will interest you.

The Silver Mfg. Co. Box 370 **Salem, Ohio, U.S.A.**



Bad Order Claims Stopped and Building Problems Solved

Automatic Machines For

BUNDLING WITH WIRE

Box Shooks, Staves, Crating, Veneers, Flooring, Spool Bars, Drawer Bottoms, Etc.

Write for Catalogue

PAKANSHIP CO., INC.

375 FULTON ST. BROOKLYN, N.Y.

No. 3 Self Contained Scroll Saw

Colladay Machine Works

Successors to

Jos. O. Colladay Co., Inc.

Manufacturers of a complete line of woodworking machinery

Since 1867 Philadelphia, Pa.

OAKEY'S

Every Sheet is WARRANTED and STAMPED "OAKEY'S"

GLASS PAPER

This Superior CABINET GLASS PAPER is made especially for the use of Pianoforte and Cabinet Manufacturers. Carpenters, Carvers, etc., etc.

EXTRA STRONG FLINT, SAND & GARNET PAPERS

In rolls 50 yards long by 18, 20, 24, 30, 36, 40, 42 & 48 inches wide

Also in Sheets, Discs, Strips and Bands, of various sizes to suit requirements of Purchasers

Mfrs. of Emery, Black Lead, Glass, Emery, Flint & Garnet Papers & Cloths Emery Wheels, etc

WELLINGTON EMERY & BLACK LEAD MILLS, LONDON, S.E.1.

Canadian Agents:

F. Manley, 42 Silvester-Willson Building, Winnipeg, Man.

Sankey & Manson, 839 Beatty Street, Vancouver, B.C.

NAPCO WATERPROOF GLUE

No wastage

Applied cold—and mixed cold

Profitable in its saving

Consistent in all grades of work

Odorless in the glue room

NAPCO is absolutely uniform. It eliminates waste, is easily applied, is impervious to water, and never lets go.

NAPCO joints are as strong as the wood.

H. LEFEBER

Lewis Building, Montreal, Que.

SOLE AGENT FOR CANADA

Deliveries made from either Montreal or Toronto Warehouses.

Automatically Perfect

The operation of Reynolds' Automatic Magazine Fed Screw Driving Machine is Automatically Perfect. It does not require skilled hands to operate, in fact the human element is of little consequence.

It will drive from 1000 to 2000 ordinary screws per hour, thereby increasing your production, and enormously reducing your labor costs.

Very simple to operate. Just fill the hopper with screws, and the machine does the rest.

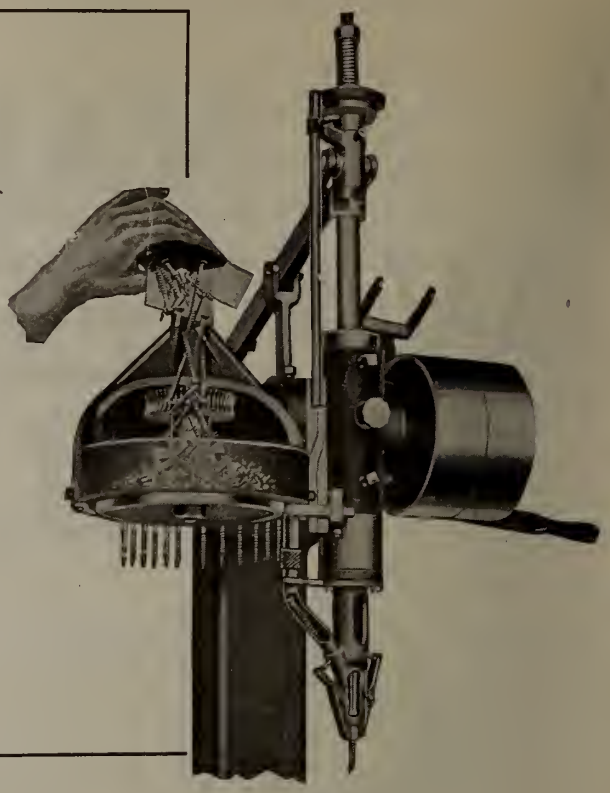
You cannot afford to be without one.

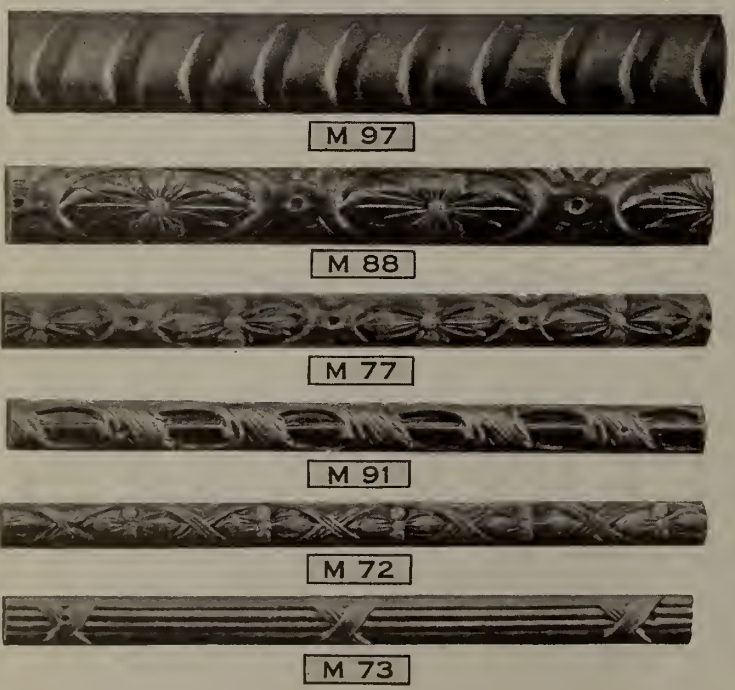
WRITE US TODAY

The Reynolds Machine Co.

Department C

Massillon, Ohio - U.S.A.





MOULDINGS We are making more Period Mouldings than ever before. Orders should be placed early to assure your supply when needed.

KNOBS The Period Knobs we placed on the market a few months ago are proving very popular. If you have not received samples ask for them now.

ROSETTES A new Period item to accompany the knobs.

Waddell Manufacturing Company

Coldbrook and Taylor, N. W. **Grand Rapids, Mich.**

PERKINS GLUE

THE GLUE OF NO REGRETS

It costs money to manufacture **Perkins 183** and the product is summed up in the words **manufactured for tomorrow's satisfaction instead of today's price.**

Competent Manufacturing Experience, adequate facilities under our own laboratory control, these are the facilities which insure satisfaction to the users of

PERKINS 183

TRADE MARK (Reg. U.S. Pat. Office).

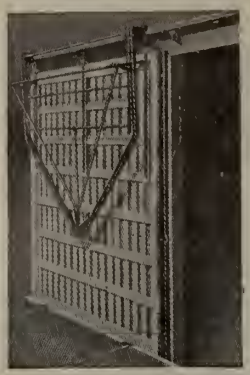
Process and Product Patents covering Perkins Glue were granted July 2nd and March 19, 1912, and have been held valid and infringed by the United States Circuit Court of Appeals. Patents have also been granted in Canada, Great Britain, Germany, France, Belgium, Italy and other foreign countries.

Perkins Glue Company

Factory and General Offices:
LANSDALE, Pennsylvania.

Sales Office:
SOUTH BEND, Indiana

The Door Carrier System

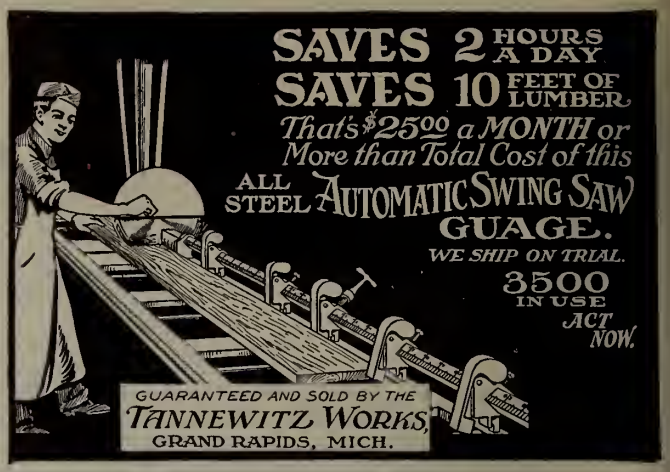


Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

Ask for catalogue.

DRY KILN
DOOR CARRIER CO.
1117 Cornell Ave.
INDIANAPOLIS, IND.


SAVES 2 HOURS A DAY
SAVES 10 FEET OF LUMBER
That's $25.00 a MONTH or More than Total Cost of this
ALL STEEL AUTOMATIC SWING SAW GUAGE.
WE SHIP ON TRIAL.
3500 IN USE
ACT NOW.
GUARANTEED AND SOLD BY THE
TANNEWITZ WORKS,
GRAND RAPIDS, MICH.

Overseas Reed and Cane Co.

REED
AND
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PRODUCTS

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103 Medford St., Charlestown District
BOSTON, MASS.

MANUFACTURERS OF

African, Mexican and Cuban

MAHOGANY

VENEERS and Built-up Panels

TEAK and other Foreign Woods

Woodworking Machinery

Matchers, Moulders, Sanders, Shapers, Jig Saws, Power Feed Rip Saws, Band Rip Saw, Band Saws, Glue Jointer, Mortising Machine, Belt Sanders, Disc Sanders, Sash and Door Cramp, Knife Grinders, Turning Lathes, Buzz Planers, Single Surfacers, Double Surfacer, Multiple Spindle Lockman Carver, Hand Screw Veneer Presses, Scrapers, Exhaust Fans.

Tell us what you need and let us quote you.

WE ALSO CARRY

Belting, Pulleys, Hangers, Shafting, Bearings, and Belt Lacing Machines.

General Machinery Company
57 Frederick St., Toronto

The Peter Hay Knife Co., Ltd.

Manufacture the Best

PLANER KNIVES and CUTTERS

OF ALL DESCRIPTIONS

The Peter Hay Knife Co., Limited
GALT, ONTARIO

NAILS AND WIRE

For Every Need in the Woodworking Industry

Bale ties, Nails and Wire of every description are manufactured by us. We manufacture to your order.

Laidlaw Bale-Tie Co., Ltd.

A. T. Diggins, Toronto, Ont. H. E. O. Bull, Montreal, Que.
Harry F. Moulden & Sons, Winnipeg, Man.
Mr. Norman Jessiman, 505 Hastings St. W., Vancouver, B.C.
Head Office and Works: HAMILTON, CANADA

KILNS

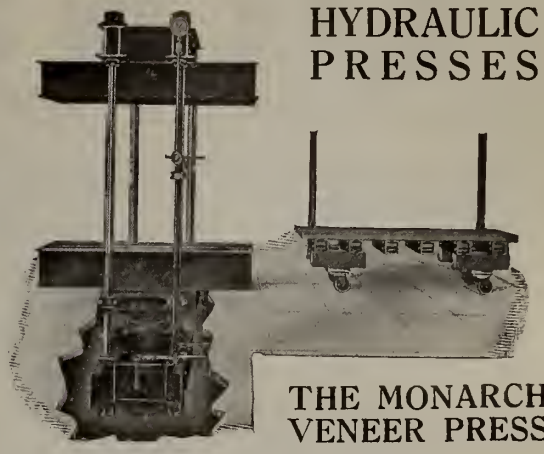
that will dry your lumber ***right*** no matter what you make.

Grand Rapids Vapor Kiln
Grand Rapids, Mich.

Western Vapor Kiln Co. Seattle, Wash.

FARQUHAR

HYDRAULIC PRESSES



THE MONARCH VENEER PRESS

CONSIDER THESE FEATURES:

Heavy Steel Strain Rods.
Steel Cylinder and Detachable Saddle.
Cylinder Repackable without removing Ram.
Double Steel Head and Base.
Quick - acting Pump, Rigid Construction.
Operating Valve at Press.
Improved Retainers.

Our HYDRAULIC VENEER PRESSES are built to suit all requirements. All proportions are very liberal, while material and workmanship are the best throughout.

Pressure of **100**-lbs. to the square inch is applied to the veneering surface. Stock is handled by the renowned retainer system, unsurpassed for both efficiency and economy.

With our process, but five minutes intervene from the time the car enters the press until the stock is released and the press is ready for the next load.

Catalogue, giving full particulars as to sizes and specifications, free on request. We also manufacture all kinds of special Hydraulic Presses to order. Write us concerning your requirements.

A. B. FARQUHAR CO., LTD., Box 171, YORK, PA.

The Sidman Lumber-Curing Kiln

A Word About Automatic Control for Dry Kilns

After the temperature in a kiln is once brought up to the maximum, it should be held to that point steadily, therefore a Thermostaat may be used. But with a Sidman kiln it is never needed, as the radiation for all kilns is so laid out that a few pounds of exhaust or low pressure steam, will always hold the temperature to the desired point, by properly using the Back Pressure and Reducing Valve available in all power plants.

Humidity or moisture in a kiln is **never the same** over 24 hours at a time, but **must** constantly change to properly cure the lumber. Therefore why an Automatic Controller, which takes more time and attention to regulate for the different percentage of humidity required, than The Sidman simple, flexible method of hand control, and when it can give no better results?

GET US RIGHT: We have no objection to any kind of automatic controllers, and when desired by our clients will furnish them. We place these controllers in the same class with recording gauges, and automatic sprinklers in a Sidman kiln. That they simply add an unnecessary expense to the cost of the kiln, and additional trouble in operating the kiln. We believe all the users of our kiln will agree with us, that the simpler the kiln and its operation, the better the results.

THE SIDMAN L.C.K.
Reg. Trade Mark
LONDON CANADA

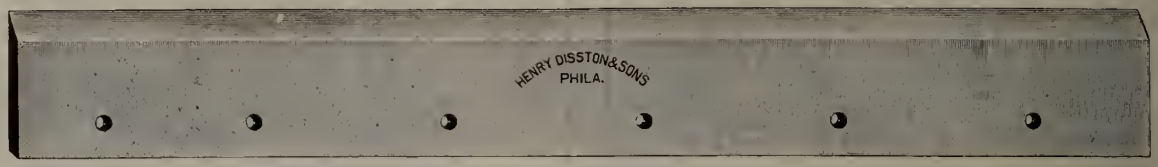
The SIDMANS of CANADA

Ventilating and Heating Engineers
Lumber Curing Specialists

LONDON : ONTARIO

DISSTON

ALL STYLES OF KNIVES FOR WOODWORKERS

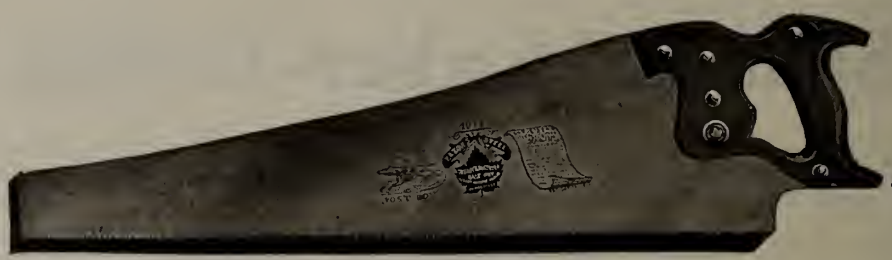


Are you getting the maximum production from your knife equipment? With the present necessity for greatly increased production, be sure your knives will give you the best possible results.

Disston knives cut fast and clean ,and hold their cutting edge.

Write for the Disston booklet on Machine Knives.

HENRY DISSTON & SONS LIMITED
TORONTO CANADA
Branch: Vancouver, B. C.



A Good Saw to Have Around

MAPLE LEAF SAWS

Notice the design of the handle. Observe how it is attached to the blade. The handle is slit at top and bottom. The blade is so designed that it extends through slit the entire length of the handle, and projects beyond the point of the horns.

ADVANTAGES GAINED:—Unbreakable handle, perfect balance, the "right hang," comfortable grip.

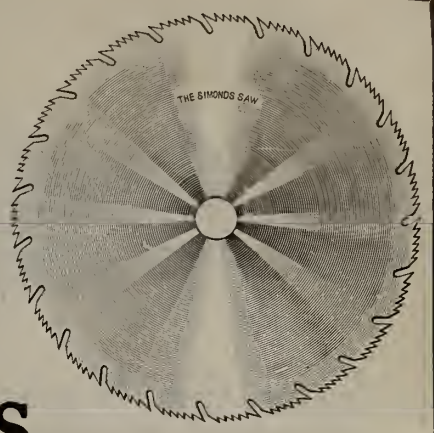
THE BLADE:—Made of Jessop's highest grade steel; taper ground; secret tempered; highly polished.

THE HANDLE:—Mahogany finished.

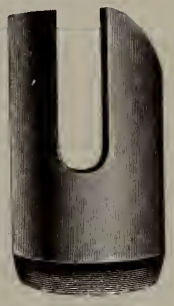
Write for our Catalogue of BETTER SAWS Today

Shurly-Dietrich Co., Limited

Vancouver, B. C. **GALT, ONTARIO** **Ottawa, Ont.**



SIMONDS
SAWS AND KNIVES



The woodworkers' friend. They are satisfactory and guarantee the best results. Made of Simonds Special Crucible Steel, they are evenly tempered, uniform in construction and have the cutting qualities.

We make all kinds of Saws and Knives for either wood or metal cutting

SIMONDS CANADA SAW CO., Limited
St. Remi Street and Acorn Ave.

VANCOUVER **MONTREAL, Que.** ST. JOHN, N.B.

RADCLIFF
Special Saws for Phonograph Case Work

Many plants throughout the Dominion where Gramophone Cases are made, use Radcliff Saws.

We have succeeded in turning out saws and cutters that will cut the various pieces clean and smooth.

The mitres will be perfectly true and ready to glue straight from saw.

Illustration shows the ¼ Bevel wing groover for shelf slots.

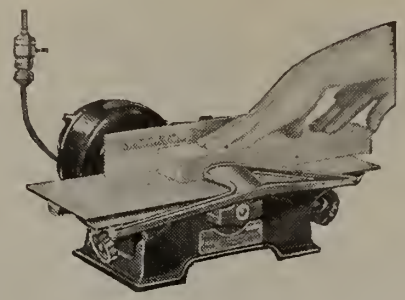
We also furnish Knives for all planing and jointing operations.

Write for Catalogue.

Radcliff Saw Manufacturing Company, Limited

1550 Dundas Street West **TORONTO, ONT.**

AGENTS FOR L. & I. J. WHITE CO., MACHINE KNIVES



Save the Wasted Steps!

Take the machine to the job instead of wasting time taking the job to the machine.

Do the work at the bench on WALLACE Bench Planers, Jointers and Saws—saves hand work also.

J. D. Wallace & Company
1414 Jackson Blvd., Chicago

THE SLIDE IS THE HEART OF YOUR EXTENSION TABLE

If the Slide Does Not Work Properly Your Whole Table is Condemned

Wabash Slides insure Satisfied Customers

SLIDE MAKING is a SPECIALTY BUSINESS

We can Furnish etter Slides for Less Cost

Eliminate Slide Troubles by using WABASH SLIDES

MADE BY

B. Walter & Company
Edsall St., Wabash, Ind.

Cut Miles without Grinding

A Characteristic Experience

Richmond, Indiana.

G. M. Diehl Machine Works,
Wabash, Ind.

Gentlemen:—

You may possibly be interested in an experience which we had recently in our factory with your Diehl Heads and Cutters.

Our Sticker man recently made a run of 10,000 stiles, each piece being 73 inches long, of hardwood, in which we cut a groove ¼ inch wide by 9/16 inch deep, and we made the entire run without taking the Heads or Bits off the machine and without resharpening, which makes a total run of a little more than 11½ miles. The Bits would, no doubt, have run quite an additional number of feet before it would have been absolutely necessary to sharpen them. We consider this a very good performance, especially in view of the fact that these stiles were all run from the rough wood and the Heads being used on a four-sided Sticker

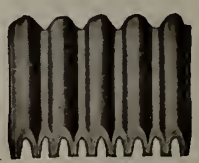
Very truly yours,

RICHMOND FURNITURE MFG. CO.,
Per O. H. BRUBAKER, Manager.

Send for Catalogue

The G. M. Diehl Machine Works
WABASH, INDIANA - U. S. A.
On the Banks of the Wabash

Cary's SUPERIOR QUALITY Corrugated Fasteners



SAW EDGE

PLAIN EDGE

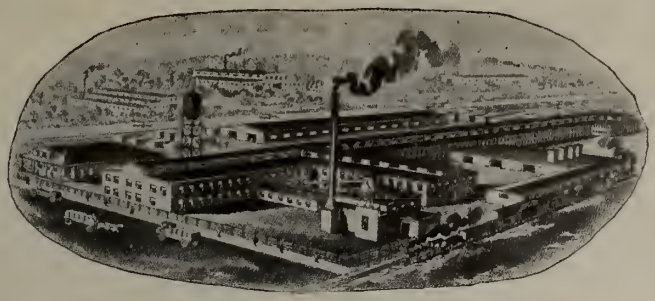
According to final decision, after long litigation, we have been granted the SOLE RIGHT to manufacture a Saw Tooth Corrugated Fastener with a continuous cutting edge. Our fastener is beveled evenly on both sides, which enables fasteners to be driven in straight, and much easier than any other fastener made. Our Corrugated Fastener is made in various widths and corrugations, also in coils wound right and left. Try our products and you will use no other.

Samples and prices on request.

CARY MFG. CO., Brooklyn, N.Y.

The Largest Plant in America devoted exclusively to the manufacture of special table parts for the table maker

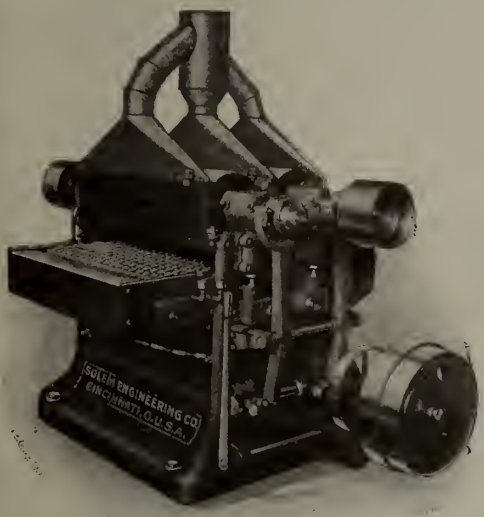
TABLE SLIDES
TABLE RIMS
TABLE PEDESTALS



QUEEN ANNE
WILLIAM & MARY
TABLE LEGS

THE JEFFERSON WOODWORKING CO., Inc. Louisville, Ky.

Greater Production
with
Less Experienced Help



The No. 370 Drum Sander is so simple and accident proof that any boy or girl can feed and take away with absolute safety.

Write for descriptive bulletin.

Patented May 6, 1919

The patented RUBBER PADS used for the bed of this sander are decidedly an improvement and are used in large quantities on every make of Endless Bed Sander. Ask for sample.

Solem Machine Company
ROCKFORD, ILL., U. S. A.

THE PUBLISHING HOUSE of MACLEAN

Thos. S. Young, General Manager

Hugh C. MacLean, Limited
Publishers
Footwear Canada Lumberman
Contract Record Electrical News

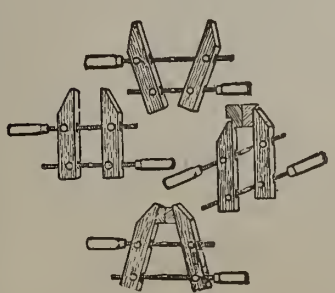
MacLean Daily Reports, Ltd.
Advance Information on Building and Engineering

The Hugh C. MacLean Co., Ltd
Publishers
Coal Review Western Canada Contractor
The Commercial Western Lumberman

Toronto, Montreal, Winnipeg, Vancouver, Chicago, New York, London, (Eng.)

PRESSES
For Veneer and Veneer Drying
Made in Canada
William R. Perrin
Limited
Toronto

Adjustable Clamp Company
216 N. Jefferson St., Chicago, U.S.A.



Manufacturers of the
"JORGENSEN"
the Original
Adjustable Steel
Spindle Clamp

Adjustable to any position. Well made to give the service. Efficient in every way they are bound to win your approval.

If you cannot buy them from your Jobber write us direct.

Hardwood Dowels

Plain, Straight and Spiral Grooved

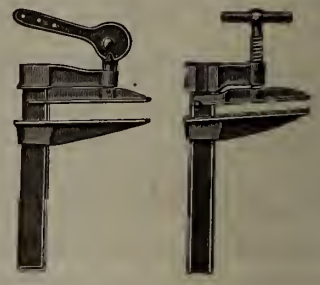
"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co.
Limited
Orillia, Ontario

Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

Colt's Clamps
for the
Woodworker



Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

For further information write for Catalogue No. 294.

Batavia Clamp Co.
235 Centre St. BATAVIA, N. Y.

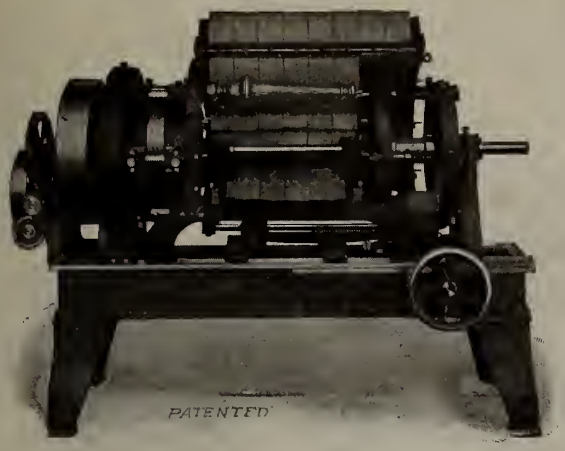
WHAT THE "ELLIOT" CAN DO FOR YOU

The "Elliot" Woodworker will do all your cutting, trimming, fitting, housing, dadoing, etc. Its use will enable you to handle more work and to do it quicker, better and cheaper than it is now being done. Unless you are employing the "Elliot" your plant is not working at capacity and you are not getting the profits that should be yours. Think it over.

Pat. 1910-1914.

ELLIOT MACHINERY
Company, Limited
BELLEVILLE · ONTARIO

NOW is the Time



to reduce your high cost of production by installing labor-saving machinery. Any machine that will save a man's time is worthy of your investigation. The Nash Sander will do many times that, and the work done is of the highest quality. It will PAY YOU to look into this NOW.

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This is our No. 132 Variety Saw, adapted to a general variety of work such as ripping, crosscutting, dadoing, mitre cutting, and, when equipped with Hollow Chisel Attachment, mortising and boring. Sturdy and substantial, with all bearings of ample size, and with full protection for the operator, it is an ideal machine for any shop.

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(The New Name of EXTRA POWER BELT)

The "Canadian Woodworker" Buyers' Directory

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Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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Hall & Brown Woodworking Machine Co., St. Louis, Mo.
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Petrie, H. W., Toronto.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

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Williams Machinery Co., A. R., Toronto, Ont.

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BENCH SAW
Wallace, J. D. & Company, Chicago, Ill.

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Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Perfection Wood Steaming Retort Company, Parkersburg, W. Va.
Williams Machinery Co., A. R., Toronto, Ont.

BLOWERS
Canadian Blower & Forge Co., Kitchener, Ont.

BLOW PIPING
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

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Engineering & Machine Works, St. Catharines, Ont.

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Elliot Machinery Co., Toronto, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Reynolds Machine Co., Massillon, Ohio.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

BOX BANDS
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Laidlaw Bale-Tie Co., Hamilton, Ont.

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Cowan & Company, Galt, Ont.
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Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Morgan Machine Co., Rochester, N.Y.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CABINET PLANERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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CARVING MACHINES
Canada Machinery Corporation, Galt, Ont.
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Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.

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Faultless Caster Co., Evansville, Ind.
Foster, Merriam Co., Merriden, Conn.

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Wallace & Co., J. D., Chicago, Ill.

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Adjustable Clamp Co., Chicago, Ill.
Batavia Clamp Company, Batavia, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

CLAMP CARRIERS
Taylor Mfg. Co., Poughkeepsie, N.Y.

CORRUGATED FASTENERS
Cary Mfg. Company, Brooklyn, N.Y.

CUT-OFF SAWS
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Cowan & Company, Galt, Ont.
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Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

CUTTER HEADS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Diehl Machine Works, G. M., Wabash, Ind.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Shimer Cutter Head Co., Galt, Ont.
Yates Machine Co., P. B. Hamilton, Ont.

CYLINDER HEADS
Cowan & Company, Galt, Ont.

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Dry Kiln Door Carrier Co., Indianapolis, Ind.

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Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

DOWEL MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Williams Machinery Co., A. R., Toronto, Ont.

DOWELS
Canada Wood Specialty Co., Ltd., Orillia, Ont.

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Grand Rapids Veneer Works, Grand Rapids Mich.
National Dry Kiln Co., Indianapolis, Ind.
Sidmans, London, Ont.
Standard Dry Kiln Co., Indianapolis, Ind.

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Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company.

DUST SEPARATORS
Canadian Blower & Forge Co., Kitchener, Ont.

EDGERS (Single Saw)
American Woodworking Machinery Company. Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

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Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

END MATCHING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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Canada Machinery Corporation, Galt, Ont.
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Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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Fay & Egan Co., J. A., Cincinnati, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N.Y.

GLUE
Casein Mfg. Company, New York, N.Y.
Lefeber, H., Montreal, Que.
Perkins Glue Company, South Bend, Ind.

GLUE CLAMPS
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane, & Company, Kitchener.

GLUE HEATERS
Cincinnati Glue Heater Co., Cincinnati, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
International Electric Co., Indianapolis, Ind.
Jackson, Cochrane, & Company, Kitchener.
Pringle, R. E. T., Toronto, Ont.

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Garlock-Walker Machinery Co., Toronto, Ont
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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Jackson, Cochrane, & Company, Kitchener.

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Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

GRINDERS (Knife)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane, & Company, Kitchener, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N.Y.

GROOVING HEADS
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.

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Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
Anderson-Tully Co., Memphis, Tenn.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Brown & Co., George C., Memphis, Tenn.
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Churchill-Milton Lumber Co., Louisville, Ky.
Cornelius Lumber Co., St. Louis, Mo.
Darnell-Love Lumber Co., Leland, Miss.
Gum Lumber Association, Memphis, Tenn.
Hyde Lumber Company, South Bend, Ind.
Merceau-Hawkins Tie Co., Huntington, W.Va.
Nickey Bros, Memphis, Tenn.
Paepcke-Leicht Lumber Co., Chicago, Ill.
Probst Lumber Co., Cincinnati, Ohio.
Sondheimer Co., E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Thomas & Proetz Lumber Co., St. Louis, Mo.

HAND SCREWS
Fay & Egan Co., J. A., Cincinnati, Ohio.

HANDLE & SPOKE MACHINERY
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.

HARDWARE
Laidlaw Bale-Tie Co., Hamilton, Ont.

HARDWOOD LUMBER
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American Column & Lumber Co., Columbus, Ohio.
American Hardwood Lumber Co., St. Louis, Mo.
American Oak Mfrs.' Assn., Memphis, Tenn.
American Walnut Association, Washington, D.C.
Anderson-Tully Co., Memphis, Tenn.
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Baker-Matthews Lumber Co., Memphis, Tenn.
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Barr- Holaday Lumber Co., Greenfield, Ohio.
Bartlett Lumber Co., W. C., Charleston, Va.
Bedna Young Lumber Co., Jackson, Tenn.
Biglow-Cooper Co., Bay City, Mich.
Boland Lumber Co., Grand Rapids, Mich.
Bonner & Sons, J. H., Memphis, Tenn.
Brown & Company, Geo. C.
Brown & Hackney, Inc., Memphis, Tenn.
Bury & Company, Robert, Toronto, Ont.
Buskirk Rutledge Lumber Co., Cincinnati, O.
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Conkling Lumber Co., Frank A., Memphis, Tenn.
Cornelius Lumber Co., St. Louis, Mo.
Canadian General Lumber Co., Toronto, Ont.
Churchill-Milton Lumber Co., Louisville, Ky.
Clark & Sons, Edward, Toronto.
Dacus-Richards Hardwood Co., Memphis, Tenn.
Darby Hardwood Lumber Co., Memphis, Tenn.
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Darnell-Love Lumber Co., Leland, Miss.
DeHewit Lumber Co., Huntington, Va.
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Gayoso Lumber Co., Memphis, Tenn.
Gill Lumber Co., Chas., Wausau, Wis.
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Kosse, Shoe & Schleyer Co., Cincinnati, O.
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Lawrence & Co., P. J., St. Louis, Mo.
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Long-Knight Mfg. Co., Indianapolis, Ind.
McLennan Lumber Co., Montreal, Que.
Memphis Band Mill Co., Memphis, Tenn.
Merceau-Hawkins Tie Co., Huntington, W.Va.
Mowbray & Robinson, Cincinnati, Ohio.
Murrelle Lumber Company, Memphis, Tenn.
Paepcke Leicht Lumber Co., Chicago, Ill.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Perkins Bros., Kelso, Ark.
Pickrel Walnut Co., St. Louis, Mo.
Powe Lumber Co., Thos. E., St. Louis, Mo
Probst Lumber Co., Cincinnati, Ohio.
Reese Sheriff Lumber Co., Williamsport, Pa.
Ritter Lumber Co., W. M., Columbus, Ohio
Sondheimer Co., E., Memphis, Tenn.
Spencer, C. A., Montreal, Que.
Stark & Co., Jas. E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Stimson Hardwood Co., J. V., Memphis, Tenn.
Tallahatchie Lumber Co., Memphis, Tenn.
Thompson, Katz Lumber Co., Memphis, Tenn.
Tustin Hardwood Lumber Co., Memphis, Tenn.
Utley-Holloway Co., Chicago, Ill.
Warren-Ross Lumber Co., Jamestown, N.Y.
Wheeler-Timlin Lumber Co., Wausau, Wis.
Woodruff Powell Lumber Co., South Bend, Ind.
Wayne Lumber Co., New York
Yellow Poplar Lumber Co., Coal Grove, Ohio.

HYDRAULIC VENEER PRESSES
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Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)
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Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Onio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochane & Company. Kitchener. Ont.
Mattison Machine Works, Rockford, Ill.
Petrie. H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Smith, C. W., Grand Rapids, Mich.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

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Fibro Mfg. Company, Beverly, N. J.

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Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

MIRRORS
Hart Mirror Plate Co., Grand Rapids, Mich.

MITRE SAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

MOTOR TRUCK EXTENSIONS
Swedish Crucible Steel Co., Windsor, Ont.

MOULDERS
Hall & Brown Woodworking Machine Co., St. Louis, Mo.

MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.

MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

NAILS
Laidlaw Bale-Tie Co., Hamilton, Ont.

NAILING MACHINES
Morgan Machine Co., Rochester, N.Y.

OIL STONE GRINDERS
Mummert-Dixon Co., Hanover, Pa.

PANELS
Holden Company, Henry S., Chicago, Ill.
Roberts, Geo. G., Chicago, Ill.
Waetjin & Co., L., Milwaukee, Wis.

PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago. Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PERIOD MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.

PERIOD TURNINGS
Walter & Sons, J., Kitchener, Ont.

PLANERS
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PORTABLE DRILLS
Wisconsin Electric Co., Wisconsin, U.S.A.

PRESSES (Veneer)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

REED
Overseas Reed and Cane Co., Ionia, Mich.

RESAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A. Cincinnati, Ohio.

RIP SAWING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Waddell Mfg. Co., Grand Rapids, Mich.

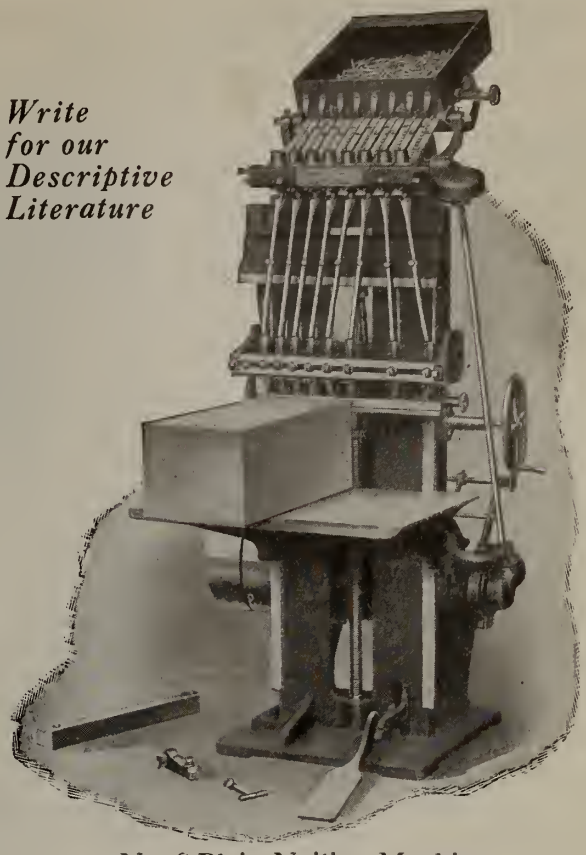
RUBBING MACHINES
DeVilhiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.

SAFETY DEVICES
Cowan & Company, Galt, Ont.

How do YOU Drive Nails?

Write for our Descriptive Literature

The Morgan Automatic Nailing Machine will prove a good investment for any woodworking plant. It drives nails anywhere and in any kind of wood, accurately, effectively and faster than it is possible to do it by hand. It makes money for Box Factories, Canning Factories, Cabinet Factories, Furniture Factories, etc.



No. 8 Plain Nailing Machine

Morgan Machine Co.

DEPT. A ROCHESTER, N.Y.

OLSON FRAME EXTENSION

Increases Service Reduces Costs

Just a Few Users—

Robert Bury Co. Canada, Limited, Toronto, Ontario.

Batts, Limited, Toronto, Ontario.

Gibbard Furniture Company, Napanee, Ontario.

Langmuir Manufacturing Company, Toronto, Ontario.

Gardiner Lumber Company, Galt, Ontario.

Irvin Lumber Company, Toronto, Ontario.

The Olson Frame Extension will mean increased carrying capacity for each of your Ford Trucks. They insure smooth running, perfect balance and easy operation that will prove ideal for the transportation of lumber, furniture, etc., for short or long distances.

Olson Frame Extensions are sold by all Ford dealers. Our nearest branch will be pleased to furnish you with further particulars.

Swedish Crucible Steel Co. of Canada, Limited, Windsor, Ont.

Branches:—614 Excelsior Life Bldg., TORONTO. 285 Beaver Hall Hill, MONTREAL.

"Canadian Woodworker" Buyers' Directory—Continued

SANDERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Solem Engineering Co., Sheboygan, Wis.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAND PAPER
Manning Abrasive Company

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Elliot Machinery Co., Belleville, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS
Atkins & Co., E. C., Indianapolis, Ind.
Disston & Sons, Henry, Toronto, Ont.
Elliot Machinery Co., Belleville, Ont.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Silver Mfg. Company, Salem, Ohio.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.

SAW BENCH
Sidney Machine Tool Co., Sidney, O.

SAW SWAGES
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES
Canada Machinery Corporation, Galt, Ont. ..
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Company, Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont. ..
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY
Reynolds Machine Co., Massillon Ohio.

SCROLL SAWS
Canada Machinery Corporation, Galt, Ont. ..
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane, & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamiltonfi Ont.

SECOND-HAND MACHINERY
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Osborne Sexton Machinery Co., Columbus, O.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS
Anketell & Davies, Toronto, Ont.
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

STAINS
Ault & Wiborg, Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ohio.
Shannon Co., Ed. J., Cincinnati, Ohio.
Standard Paint & Varnish Co., Windsor, Ont.

SINGLE SPINDLE BOXING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE
Whitney & Son, Baxter D., Winchendon, Mass.

STEEL DOOR MATS
Cary Mfg. Company, Brooklyn, N.Y.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Colladay Machine Works, Indianapolis, Ind.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Tannewitz Works, Grand Rapids, Mich.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohoa.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES
Jefferson Woodworking Co., Louisville, Ky.
Walter & Company, B., Wabash, Ind.

TEMPERATURE REGULATORS
Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Compan, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS
International Business Machines Co., Toronto, Ont.

TRIMMERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Preston Woodworking Machinery Company, Pretson, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS
Cowan Truck Company, Toronto, Ont.
National Dry Kiln Co., Indianapolis, Ind.

TURNED WOOD GOODS
Algoma Wood Products Co., Algoma, Wis.

TWINES & WEBBING
Doon Twines, Ltd., Kitchener, Ont.

UPHOLSTERY FABRICS
Burch Co., A. F., Grand Rapids, Mich.

UPHOLSTERY SUPPLIES
Burch Co., A. F., Grand Rapids, Mich.

VARNISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto. Ont.
Penfound Varnish Co., Toronto, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N.Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS
Astoria Mahogany Co., New York, N.Y.
Batesville Lumber & Veneer Co., Lawrenceburg, Ind.
Birds Eye Veneer Co., Escanaba, Mich.
Bury & Compny, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christmann Veneer & Lumber Co., St. Louis, Mo.
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Evansville Veneer Co., Evansville, Ind.
Freiberg Lumber Co., Cincinnati, Ohio
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Holden, Henry S., Chicago, Ill.
Geo. Kersley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Litton Veneer Co., Rockford, Ill.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Veneer Co., New Albany, Ind.
Roberts, Geo. G., Chicago, Ill.
Southern Veneer Mfg. Co., Louisville, Kv.
Stimson Veneer & Lumber Co., Memphis, Tenn.
Sturm Co., Adolph, Chicago, Ill.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Underwood Veneer Co., Wausau, Wis.
Veneer Manufacturers Co., Chicago, Ill.
Waetjen & Co., George L., Milwaukee, Wis.

VENEER TAPE
Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.

VENEER JOINTERS
Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY
Garlock-Walker Machinery Co., Toronto, Ont.

VENEER PRESSES (Hand and Power)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont
Perrin & Company, Wm. R., Toronto, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Johnson Co., O. E., Chicago, Ill.

WALNUT LUMBER
American Walnut Mfrs. Assn., Chicago.
Des Moines Saw Mill Co., Des Moines, Iowa.
Pickrel Walnut Company, St. Louis.
Purcell Walnut Lumber Co., Frank, Kansas City.

WIRE
Laidlaw Bale-Tie Co., Hamilton, Ont.
Pakanship Company, Brooklyn, N.Y.

WIRE BOX STRAPPING
Cary Mfg. Company, Brooklyn, N.Y.

WOOD FINISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Penfound Varnish Co., Toronto, Ont.

WOODWORKING MACHINERY
General Machinery Co., Toronto, Ont.

WOOD SCREWS
Robertson Mfg. Co., P. L., Milton, Ont.

WOOD TURPENTINE
Brown Corporation. Quebec. Que.

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Garlock-Walker Machinery Co., Toronto, Ont.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WODD LATHES
Colladay Machine Works, Indianapolis, Ind.

44 Yates No. 275
30 and 60-in. Automatic
Knife Grinders,
Brand New, at
One-half Price

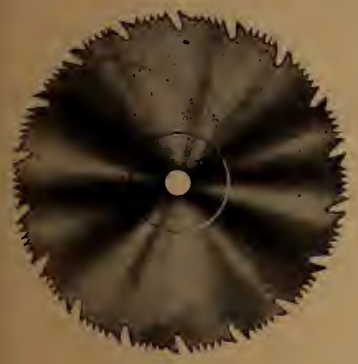
Machines arranged for Motor Application as per cut, or regular belt drive, if wanted.

8 New Andrew Mutiple Vertical Borers, 20, 30, 42 and 60-in., any number of heads.

7 New Hermance Molders, 8, 10 and 12-in., stationary and slip-on heads.

Band rip saw, Fay & Egan, 42-in.
Band saws, 32, 36 and 38-in.
Borer, Andrew, 10-ft., 13-spindle, power table.
Borers, Andrew mult. vert., 20, 42 and 60-in., new.
Carver, 5-spindle, Moore.
Door clamp, Fay-Egan, heavy.
Edgers, two, three and four saws.
Glue cookers and retainers. Glue spreaders.
Hogs, two, Mitts & Merrill.
Jointers, 8, 12, 16, 20, 24 and 30-in.
Knife grinders, two 32-in., F. & E.
Lathe, Ober spoke and handle, almost new.
Lathes, Mattison, No. 8 auto; No. 6 block mach.
Lathes, speed, eight, mounted on iron bed.
Lock-corner machine, Morgan No. 8, full set.
Matcher, American Northwest, 24x8-in., 3 sides.
Matcher, end, Sherman, fine condition.
Matcher, 24x6-in., 3 and 4 sides.
Automobile spoke machines, Defiance, complete set.
Band resaw, 50-in., Fay & Egan, tilting rolls, full set of filing room tools.
Molder, Smith 14-in. outside, latest style, practically new.
Molders, 4-side, 9, 10 and 12-in. American.
Molder, Fay & Egan No. 184, 12-in. outside.
Molders, inside, 13-in. American and Woods.
Mortiser and router, Fay & Egan No. 124.
Mortiser, chain saw, New Britain No. 1, 25 chains.
Mortiser, chain saw, New Britain No. 7, new.
Mortisers, F. & E. vertical, hollow-chisel; also plunger type.
Nailers, two, Morgan No. 8, used three months.
Nailing machines, 2 closed back, 4-track, 4d, 15-in. spread.
Pony planers, 16, 20 and 24-in.
Relisher and mortiser, Greenlee.
Rip saws, self-feed, Hoosier, F. & E., Greenlee.
Router for stair stringers, H. B. Smith, flexible arm with adjustable table and forms.
Sand belt, closet seat and similar work.
Sander, H. B. Smith, spindle and disc, practically new.
Sanders, 30 and 42-in. Columbia; 30, 42 and 48-in. Invincible; 30-in. double Invincible.
Saw, 8-ft. double cut-off, roller table.
Saws, combination and variety, single and double arbor, also tilting arbor, stationary and tilting table, 24 and 30-in. circular resaw.
Saw, circular re-slab, 40-in. blade, power feed rolls.
Shapers, Fay single-spindle reversible, also Shimer single with overhead routing attachment.
Surfacer, 30-in. double, cabinet, B. & M., practically new.
Surfacer, Whitney 30-in. double, sectional roll and sectional chipbreaker; American No. 4½, 36-in. sectional and solid; Fay & Egan No. 140, 27 and 30-in. double divided rolls; also 18, 20, 24 and 30-in. single cylinder panel planers.
Tenoners, B. & M. double-end, also several single-end tenoners with and without copes.
Timber sizer, Fay-Egan 4s, 17x12-in.
Window frame machines, Smith & Phillips combination.
Wood-worker, universal, Fay & Egan and Bentel & Margedant. One lot of glue room machinery.

The Osborne & Sexton Machinery Co.
Re-manufacturers **COLUMBUS, OHIO**



100% Production

will be necessary to meet the demand for all wood-working material and furniture that will be required for the 4,000,000 buildings that must be erected in 1920.

ATKINS

STERLING QUALITY

SAWS and KNIVES

will make it possible for you to meet this demand in producing your share.

The high grade material and expert construction of Atkins Saws and Knives make possible the superior service they render.

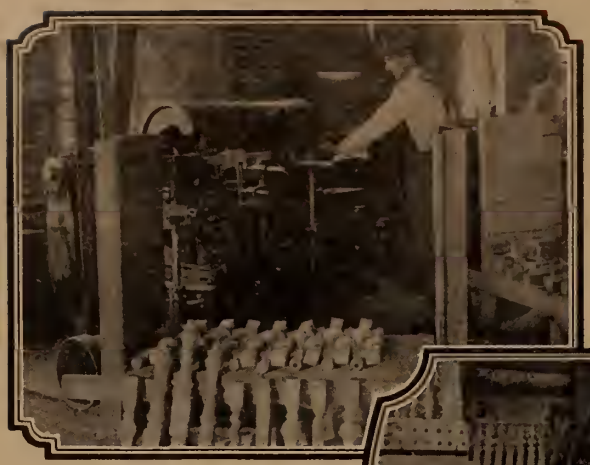
Let Their Efficient Performance Tell You the Atkins Story of Perfection.

Write to-day for our Knife Booklet "CW" and Pattern Template Paper.

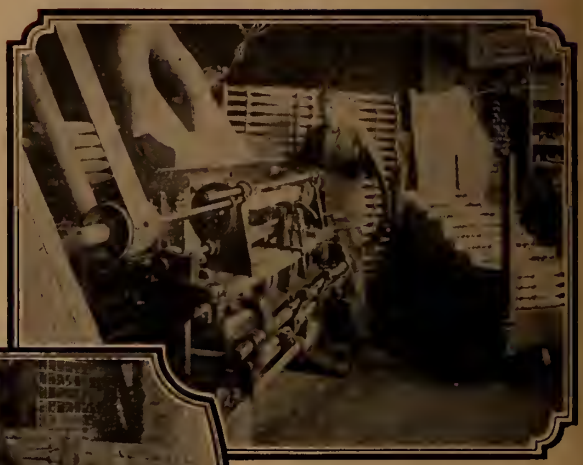
E. C. ATKINS & CO., ***Makers of Sterling Saws***

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

MATTISON
"Automatic"
The Standard Shaping Lathe



A Practical, Economical Machine Turner



Provides unlimited capacity and minimizes Labor Cost.

Allows the designer free play in the creation of elaborate or complicated patterns.

Efficient and dependable — requires but an ordinary mechanic to operate.

Thru the various stages of its development, the "Mattison" has given profitable service to its users

Conditions faced in 3,000 installations brought problems, the solving of which showed the way to the improvements now designed into the latest model "Mattison."

Mattison Machine Works

Rockford, Illinois, U.S.A.

Volume Twenty TORONTO, AUGUST, 1920 Number Eight

CANADIAN WOODWORKER and Furniture Manufacturer

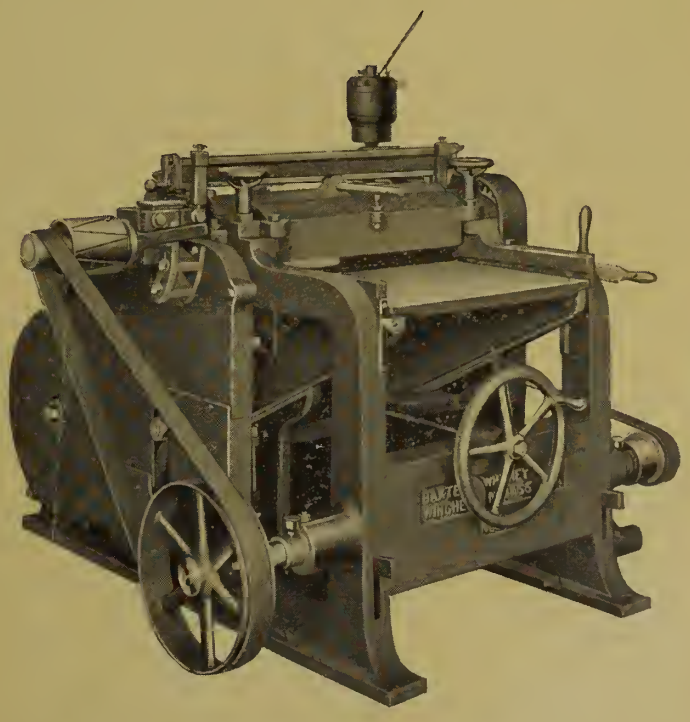
The Planing Counts Most

A planer that does its duty often swings the business up to success—buying a planer merits your deep study

Fully and frankly, we tell you about

Whitney Planers

Single and Double Surfacers



Have features which appeal to every woodworker, such as a rigid frame with ample weight of metal—a BED raised and lowered on SOLID WEDGES operating on wide tracks—a HARDENED CENTER TABLE made extra thick.

An AUTOMATIC CHIPBREAKER that remains the same distance from the cutter head, regardless of the cut taken—DETACHABLE CLAMP CYLINDER BOXES—a cutterhead with long bearings of large diameter and MACHINE-CUT GEARS, are but a few of the features that enable Whitney Surfacers to do superior surfacing at the lowest cost.

Just Write Us a Line

Notice how Whitney Planers are found in wood working shops that are considered representative.

BAXTER D. WHITNEY & SON, Inc., Winchendon, Mass.

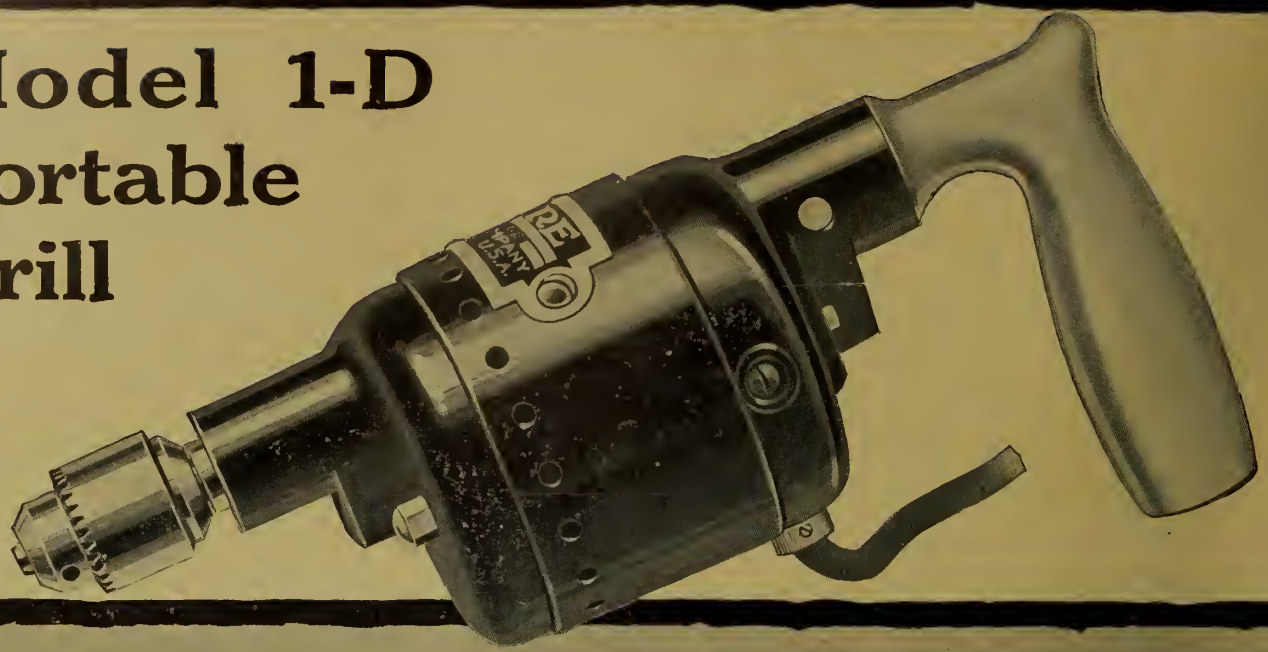
H. H. Plummer & Co.
451-453 Monadnock Bldg.,
San Francisco, Cal.

New York Office:
World's Tower Building,
110 West 40th Street.
C. L. Babcock, Manager.

Canadian Representatives:
H. W. Petrie, Limited
Toronto, Ontario.

Alphabetical Index to Advertisers, Page 12

Model 1-D Portable Drill



HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—4¾ pounds.

Capacity—Steel, 0 to 3/16". Wood and alloys, 0 to ¼".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3⅜ inches.

Spindle—Offset from center 3/32".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

Jacob's Chucks used as a regular equipment.

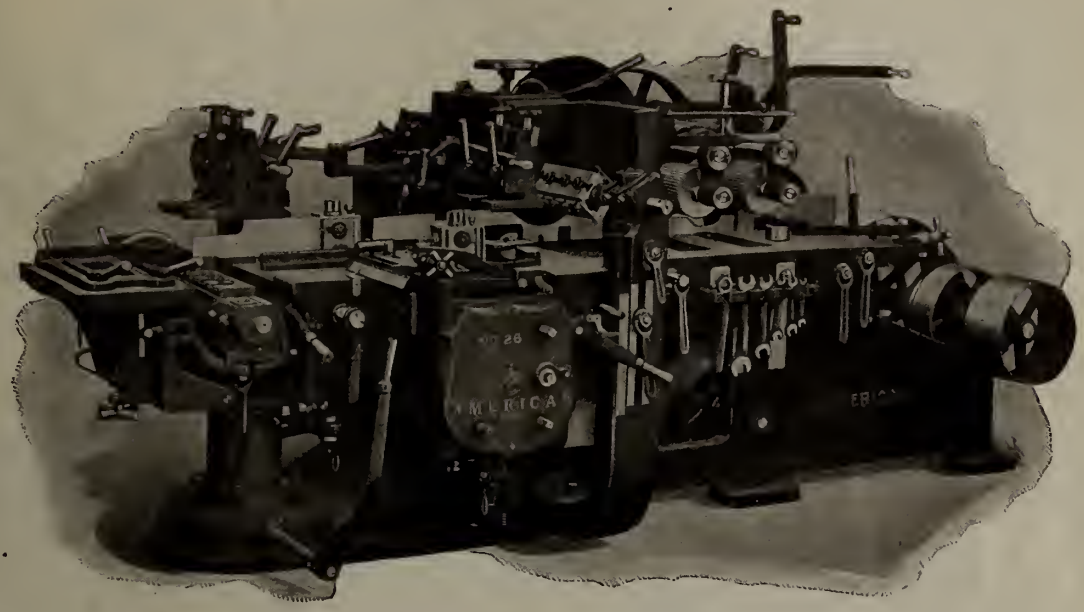
FOR speed in drilling and countersinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

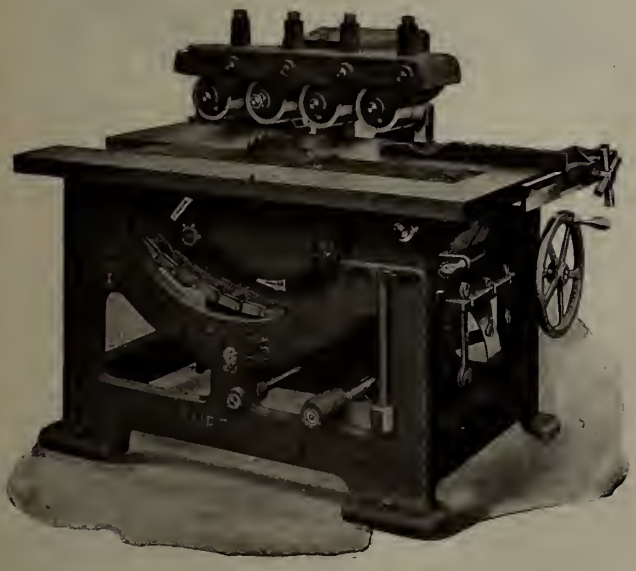
Wisconsin Electric Company
7126 Sixteenth Street, Racine, Wisconsin, U. S. A.

DUMORE GEARED ELECTRIC DRILLS

American No. 26 Four Sided Outside Moulder



A fast-feed machine—slip on and off heads—quick adjustments—heavy type—chip-breaker throws back out of the way when applying or changing cutters—Large size feed rolls with chain drive—and many other improvements which make possible quicker setting up and operation on this outside Moulder.



American No. 25 Edging Saw

Large size arbor and pulley allows high speed with plenty of power. Two chains in table and four sets upper feed rolls. Strong and accurate feed. Owing to arrangement of upper feed rolls very short stock can be fed through this machine. Compact, but with strength in every line and dimension.

Both of these machines for delivery from our Toronto warehouse.

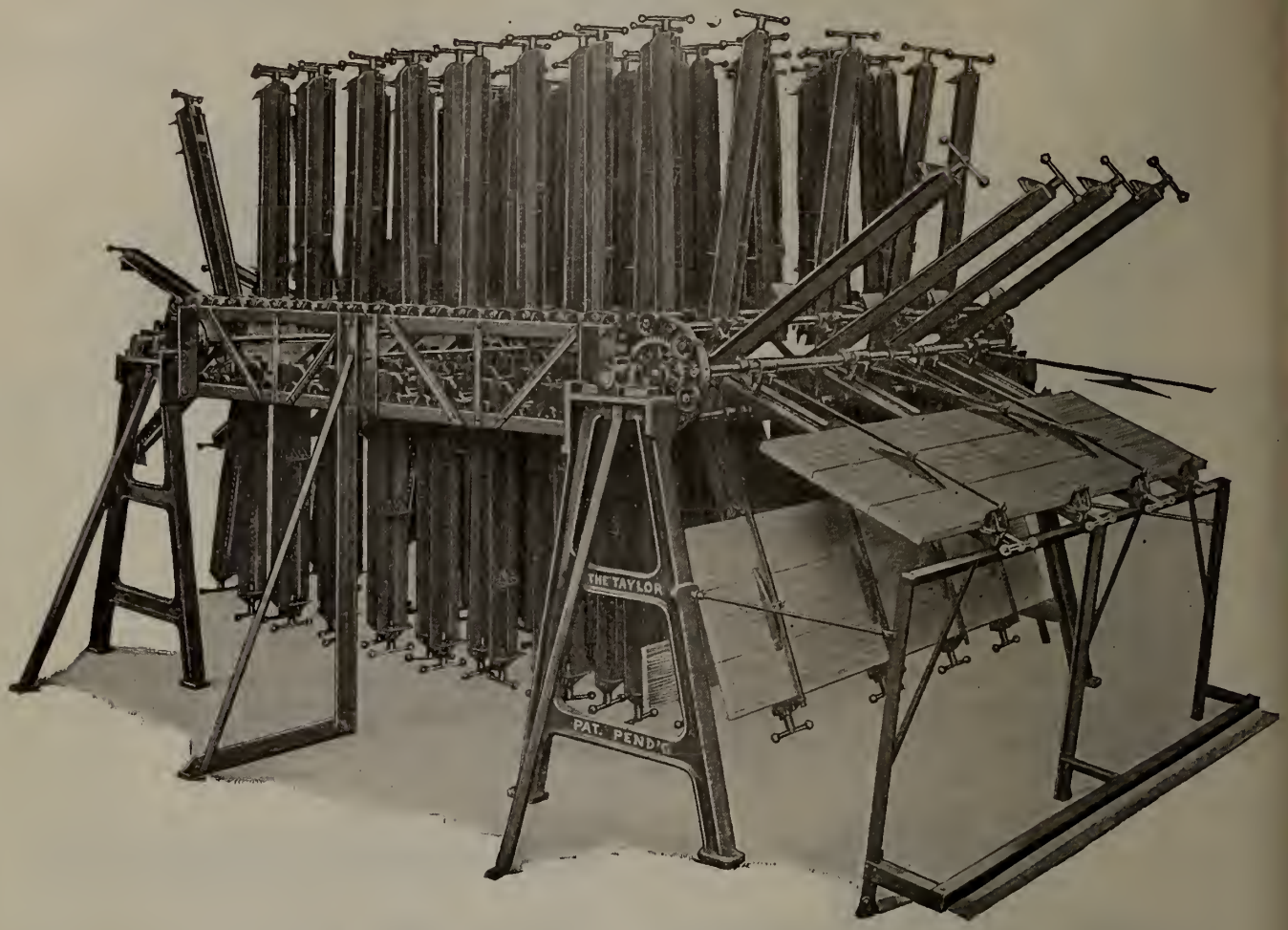
Write for further particulars

Garlock-Walker Machinery Company, Limited

MONTREAL TORONTO WINNIPEG

"Everything in Machinery"

CLAMP The Taylor TRADE MARK CARRIER



Forty section machine carrying 160 clamps, measuring 8 ft. 2½ in. between shaft centers.

The clamp is one of the most interesting features of the clamp carrier. A remarkable strain can be applied with greatest ease; the work it turns out—both thick and thin stock—is 100 per cent. perfect.

An Engineering concern recently wrote:

"I am recommending Taylor clamps to the Germain Mfg. Co. because I have proven the clamps more efficient through scientific time studies on both and all existing types of gluing-up machines and devices."

As a result of the above recommendations, The Germain Mfg. Co. referred to bought two Taylor carriers. They installed them, and tested them and have since purchased two more. We can tell you numerous instances where customers are using from two to nine Taylor carriers each as a result of similar experiences.

Let us prove the truth of these claims by showing you one of these carriers in operation, or you can try the clamps out on your own work. Ask for C. C. Folder and further information.

A. R. Williams Machinery Co., Toronto, Canada — Representatives

James L. Taylor Manufacturing Co.

POUGHKEEPSIE, N. Y.

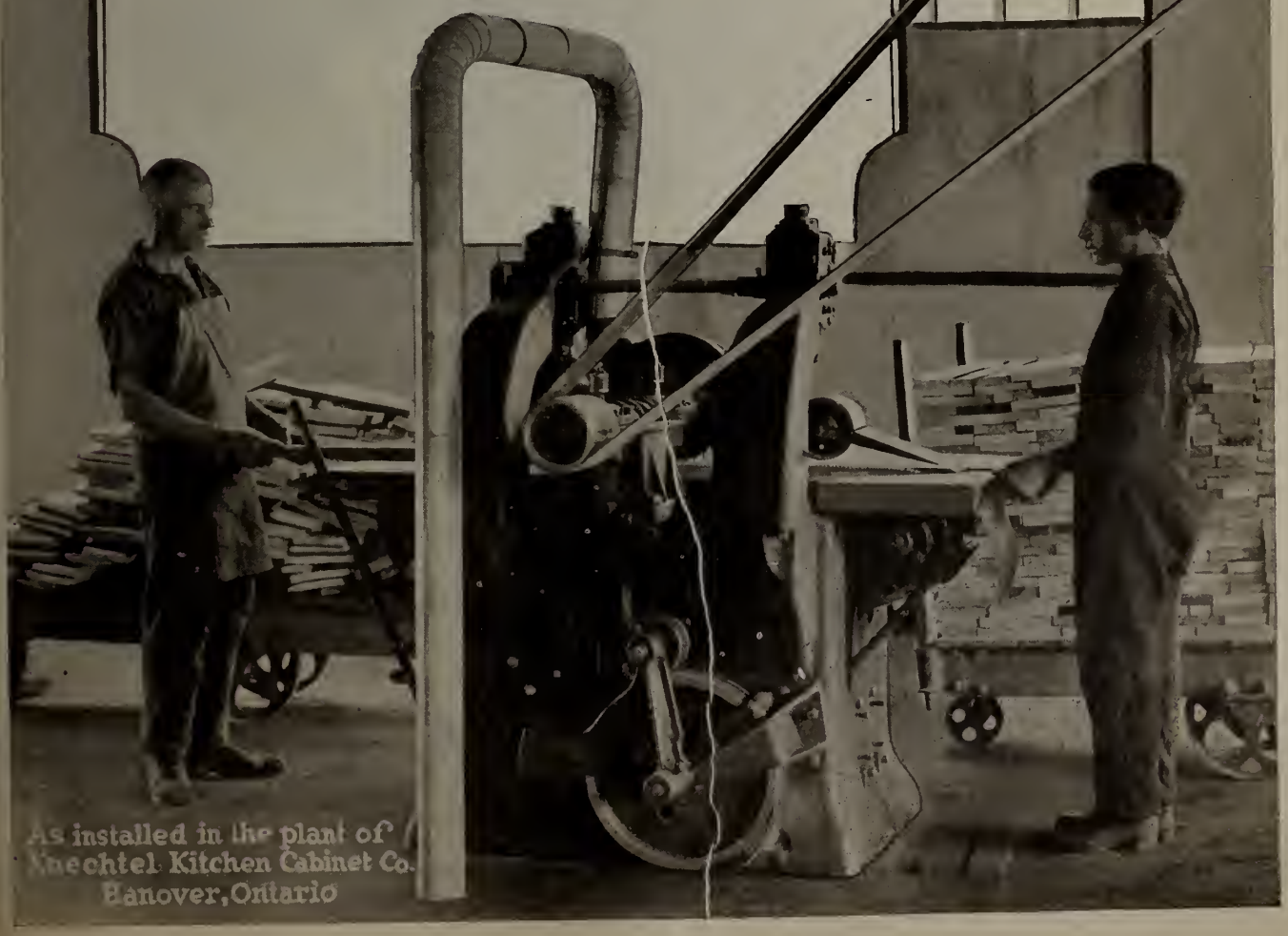
Yates

MADE RIGHT— RIGHT IN CANADA

Here is a saw that rips absolutely to a straight line, so straight that glue joints for rough work can be made direct from the cut. Chain feed, compact, sturdy, either belt or motor drive. Has many users, and every one a friend; a standard unit for conservative buyers.

WRITE FOR LITERATURE

P. B. Yates Machine Co. LTD.
HAMILTON, ONTARIO



As installed in the plant of
Knechtel Kitchen Cabinet Co.
Hanover, Ontario

Will do the work of Five Hand Jointers in making Glue Joints

This is the guarantee given with our

No. 4 Continuous Feed GLUE JOINTER

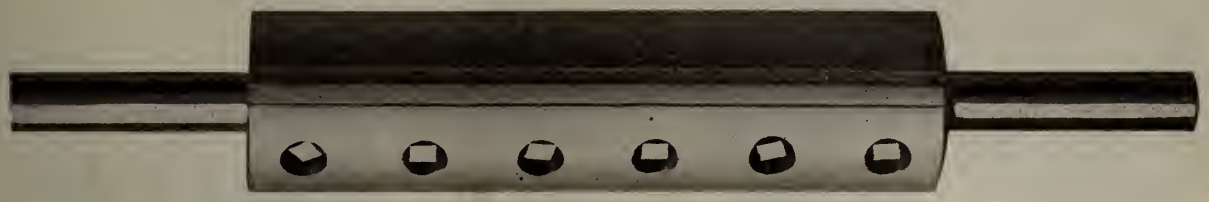
Strongest and most complete machine on the market.
Any part may be readily removed or renewed.
Feeds in opposite direction, giving 100 feet per minute.
Works material from six inches up to any length desired.
Also from one quarter to 3 inches thick, and from three-quarters of an inch wide up to any width.
1 set Shimer Special Jointer Heads supplied with machine.

Investigate the merits of this machine—it will pay you!

Jackson, Cochrane & Company

KITCHENER - CANADA

The Shimer Round Safety Cylinder with High Speed Knives



A Round Safety Cylinder that will Appeal to the Buyer and the User for Three Reasons:

The first is our adjusting nut for setting the knives. It is the only cylinder with properly located adjusting nuts for setting the knives, which, with our way, can be set to 1-1000 of an inch.
The second is our way of holding the knife without tapping into the head.
The third is the correct angle of cut for the knives.

Made for Any of the Different Makers' Machines and in Any Length Cylinder.

WRITE FOR PRICES

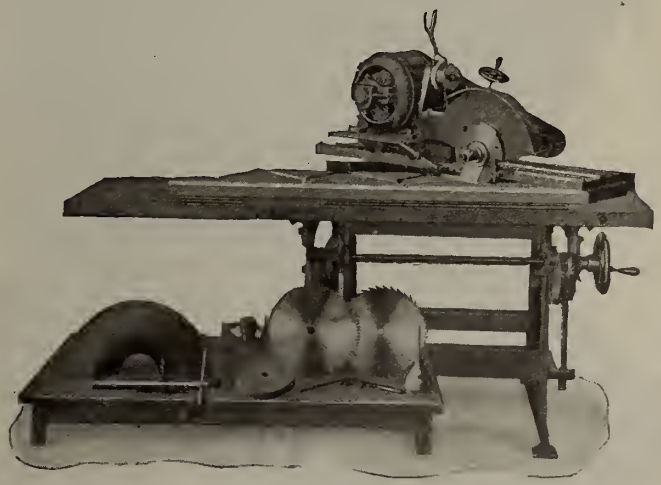
SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

SUCCESSORS TO SAMUEL J. SHIMER & SONS, Inc.

GALT, ONTARIO

WHAT THE "ELLIOT" CAN DO FOR YOU

The "Elliot" Woodworker will do all your cutting, trimming, fitting, housing, dadoing, etc. Its use will enable you to handle more work and to do it quicker, better and cheaper than it is now being done. Unless you are employing the "Elliot" your plant is not working at capacity and you are not getting the profits that should be yours. Think it over.



Pat. 1910-1914.

ELLIOT MACHINERY

Company, Limited

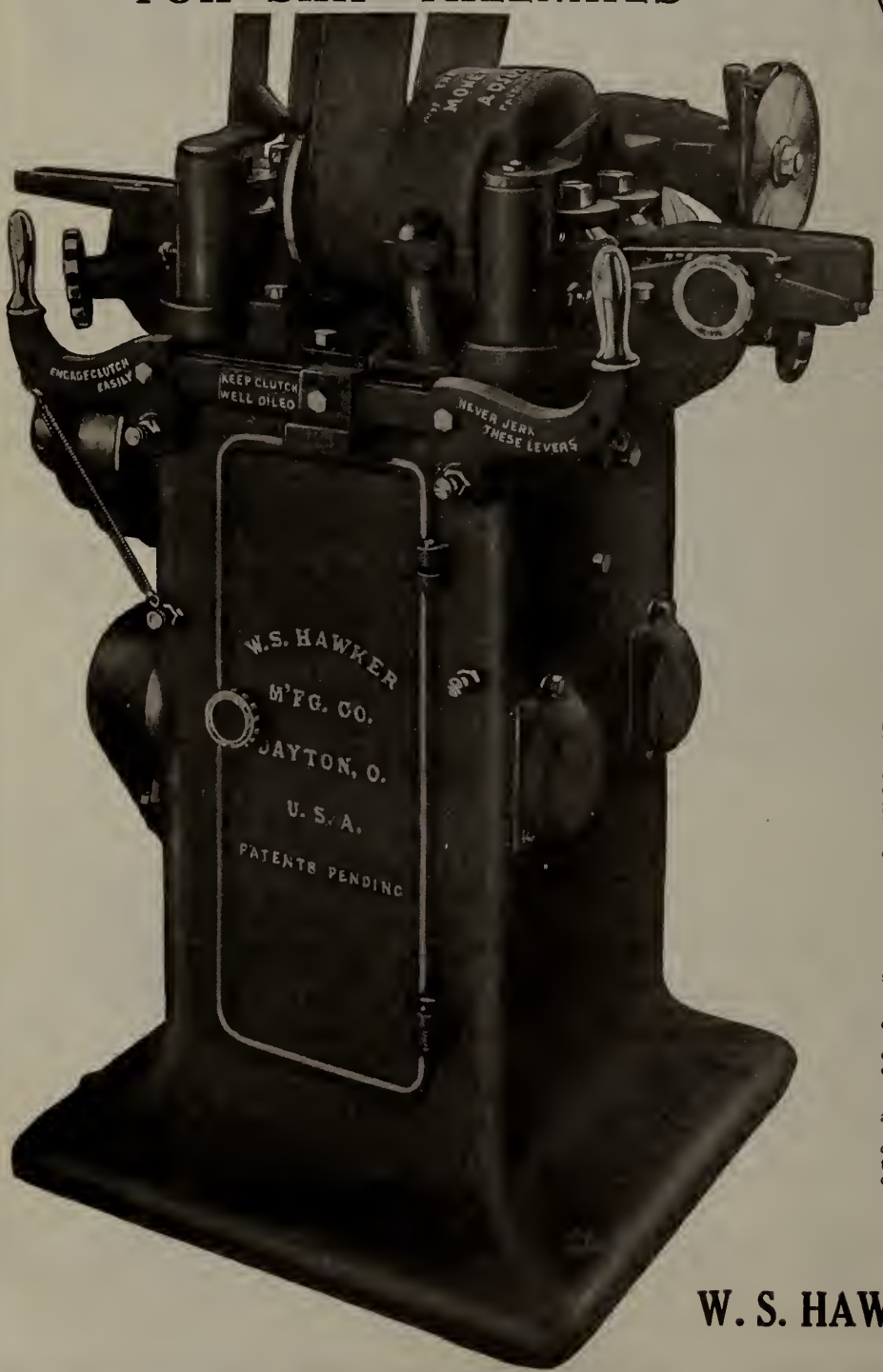
BELLEVILLE - ONTARIO

UNIVERSAL ADJUSTABLE CUTTER HEAD Patented
Infringements (maker or user will be vigorously prosecuted.

Two Heads

that have put 100% more profit in the production of Dowel Stock.

FOR SHIP TREENAILS



W. S. HAWKER.

Inventor and Designer of the World's most efficient Tubular Turning Machinery

THE

Money Maker Adjustable Rod and Dowel Machine

The machine that is sent under a guarantee to show you a gain of from 100 to 400 per cent. before you buy it.

The improved dowel machine that 90 per cent. of the largest and oldest machinery builders and dealers now endorse and recommend in preference to the solid chuck machines they themselves previously built.

One cutter head turns from 1/4 in. to 2 in. diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

Works stock as short as five inches.

Rolls automatically centre variations in squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid chuck dowel machine.

We can save you from one dollar out of every two, to four out of every five, that the operation of solid chuck machines costs you.

Engagements for competitive test solicited.

Formal orders not solicited. All sales made after demonstration.

The only question is, are you willing to cut cost of your dowel turning to one-half or one-third of what it costs with any make of solid chuck machine?

Machine delivers the goods before you buy.

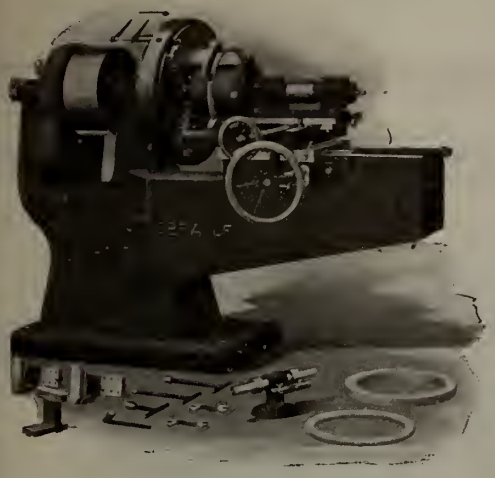
State conditions of stock closely.

Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY

DAYTON, OHIO.

THE DEFIANCE
No. 207 Steering Wheel Rim Shaping Machine



will shape both the inner and outer circles of STEERING WHEEL RIMS to any contour desired.

There is a DEFIANCE machine for every operation necessary in the manufacture of Steering Wheels—such as the bending, jointing, equalizing, polishing.

Illustrated and descriptive circulars covering these machines, sent upon request.

The Defiance Machine Works

New York DEFIANCE, OHIO, U.S.A. London

HART MIRROR PLATE CO.

IMPORTERS AND MANUFACTURERS OF

MIRRORS

GRAND RAPIDS QUALITY

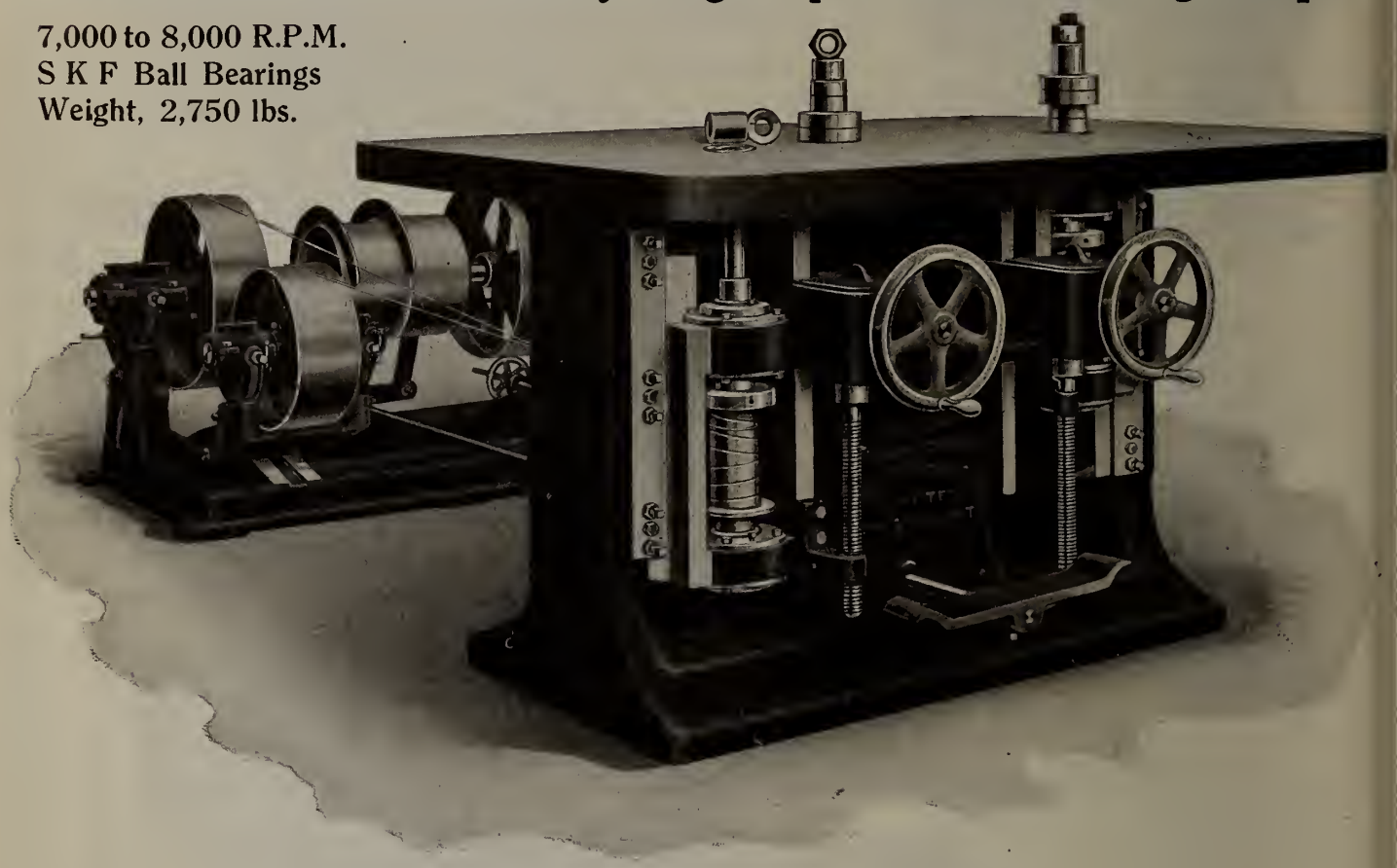
Grand Rapids, Mich.

Largest manufacturers of high grade mirrors in America serving the furniture trade exclusively.

A General, All-round Shaper that Will Give You Maximum Service at All Times

"Preston" No. 162 Heavy High Speed Ball Bearing Shaper

7,000 to 8,000 R.P.M.
S K F Ball Bearings
Weight, 2,750 lbs.



Double Your Production

The "Preston" No. 162 Heavy High Speed Ball Bearing Shaper is unquestionably a machine of exceptional merit. It has proven its ability time and again in many of the largest woodworking plants in Canada. Its special features make it the leader in its field.

Made either as a single spindle or a double spindle machine, as desired.

We are the pioneer manufacturers of ball bearing shapers in Canada and our experience is at your disposal for any special machine you may require. Write us.

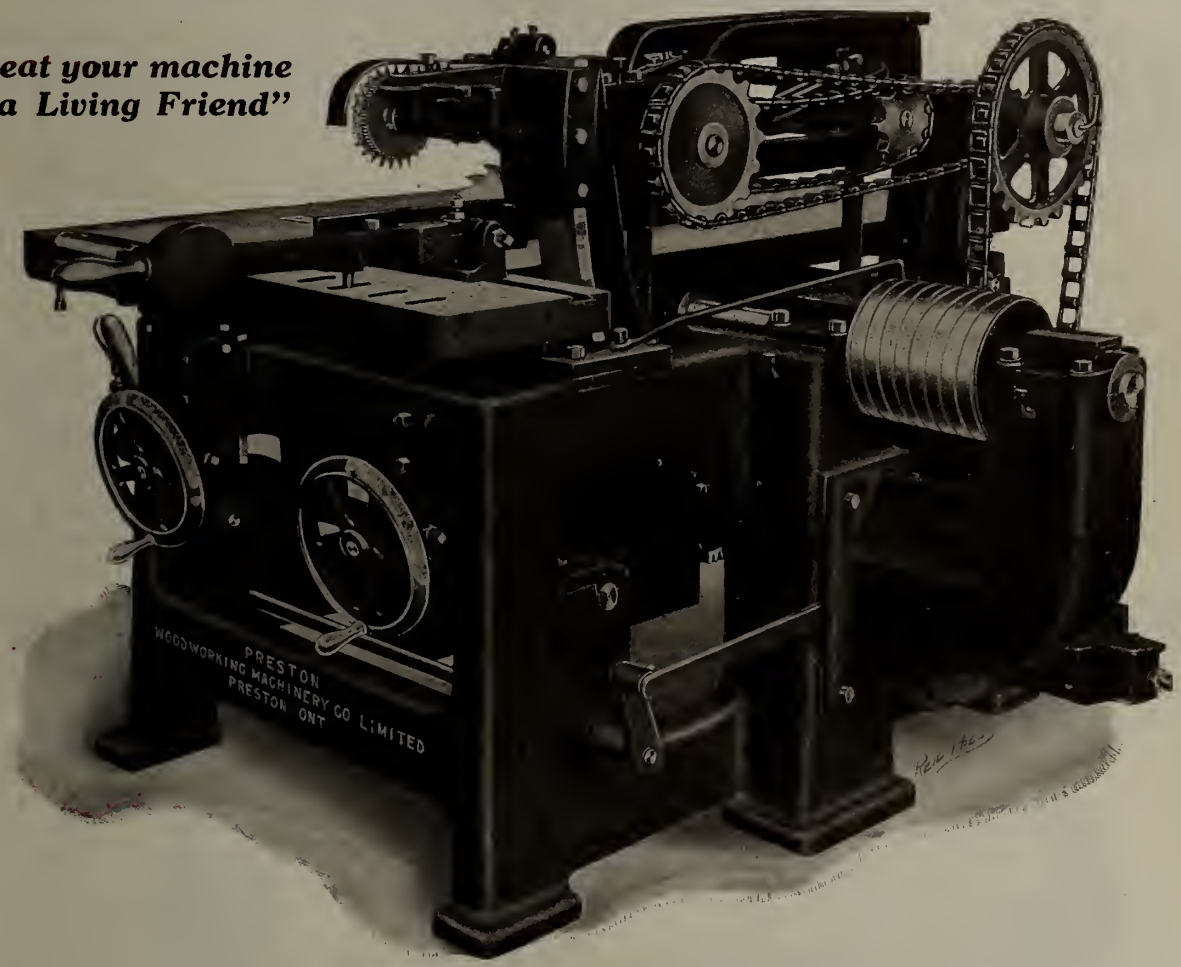
The Preston Woodworking

PRESTON

Made like all other "Preston" machines to give maximum service

No. 129 "Preston" Power Feed Rip Saw

"Treat your machine as a Living Friend"



Carefully made to give genuine service the PRESTON No. 129 Power Feed Rip Saw, with variable feed will increase production and cut down your labor costs.

The frame is one solid casting, each bearing is self oiling and both table and upper works are raised and lowered by hand wheels.

The PRESTON No. 129 Power Feed Rip Saw will merit your approval by its efficient service.

Our catalogue describes this and many other woodworking machines that are worthy of investigation every time you contemplate a new machine. You should have a copy of it. Let us send one.

Machinery Company Ltd.

ONTARIO

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Wood Working Machinery

BELT SANDER 319

CONVENIENT, SIMPLE, SUBSTANTIAL, EFFICIENT. TABLE 5½′ or 8′.

COWAN & COMPANY OF GALT, LIMITED, Galt, Canada

Removing the Brake

FRICTION is the relentless enemy of efficient operation. In the average mill it destroys at least 25 per cent. of all the power produced or bought.

Yet this tremendous waste can be largely reduced—in fact, has been reduced to a minimum in hundreds of plants of every description through the aid of SKF Bearing Engineers.

These practical engineers, backed by the fund of knowledge constantly available in the SKF Research Laboratories render an invaluable service. They remove the brake that slows down production by solving perplexing and costly friction problems.

Manufacturers are invited to avail themselves of this bearing service at any time.

CANADIAN SKF COMPANY, LIMITED

412 St. James St.
MONTREAL

83 King Street W.
TORONTO

SKF INDUSTRIES

Hess-Bright Ball Bearings
S K F Ball Bearings
Atlas Steel Balls
Gronkvist Chucks
Transmission Hangers

No. 140-A Surfacer will set New Standard for Production and Grades in your Mill and Factory

No. 140-A Patented Double Cylinder Surfacer

No. 351 Automatic Feeder

Furniture manufacturers are quick to realize that a wonderful finish invariably sells the furniture. No. 140-A whether used for general surfacing or the finest smoothing work will set new standards for production costs and grades in your mill or factory.

No. 140-A is especially valuable to concerns which do not buy the highest grade of lumber, as it will finish this low grade stock perfectly, not tearing out even when working knotty or cross-grained stock.

Exclusive Fay & Egan construction features, make this machine a fine investment from the standpoint of initial cost, power and up-keep expense, and results.

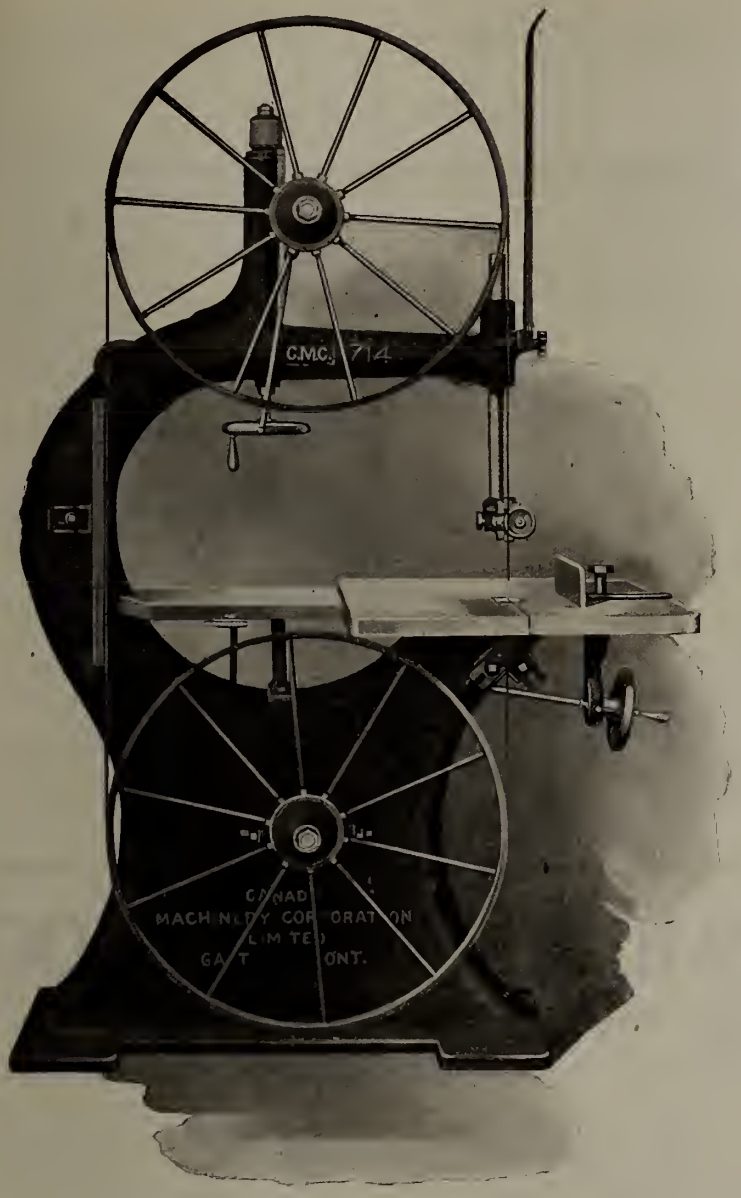
Send for our special Bulletin B-12 for full information.

J. A. Fay & Egan Company

ESTABLISHED 1830

World's Oldest and Largest Manufacturers of Woodworking Machinery

153-173 West Front Street Cincinnati, Ohio



C.M.C.

714 - 36"
BAND SAW

With Steel Wheels

A splendid looking machine, as good as it looks

This type of band saw is perhaps the most popular machine of its kind upon the Canadian market, and is a prime favorite in furniture factories and other manufacturing plants. It is also unexcelled for use in manual training schools and similar establishments.

Our special bulletin describes this machine in detail and will be cheerfully furnished to all parties interested.

CANADA MACHINERY CORPORATION, GALT, ONTARIO
LIMITED

Toronto Office and Warerooms, Brock Avenue Subway

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DRY AND PARTLY DRY STOCK

Ready for Shipment

Your inquiries will bring very prompt quotations. You can depend on straight grades, quick service, and well manufactured lumber.

RED GUM

11219	ft.	8/4 1sts & 2nds Qtd.
36728	"	8/4 No. 1 Common Qtd.
18917	"	6/4 1sts & 2nds Qtd.
51022	"	6/4 No. 1 Com. & Sel. Qtd.
10195	"	6/4 No. 2 Common Qtd.
2842	"	5/4 1sts & 2nds Figured
3575	"	4/4 No. 1 Com. & Btr. Figured
84088	"	6/4 1sts & 2nds
553648	"	6/4 No. 1 Com. & Sel.
76177	"	6/4 No. 2 Common
47921	"	5/4 1sts & 2nds
222017	"	5/4 No. 1 Com. & Sel.
41051	"	5/4 No. 2 Common
7000	"	4/4 1sts & 2nds
354690	"	4/4 No. 1 Com. & Sel.
110337	"	4/4 No. 2 Common

SAP GUM

16170	"	8/4 1sts & 2nds Plain
16360	"	8/4 No. 1 Common Plain
5180	"	8/4 No. 2 Common Plain
301736	"	6/4 1sts & 2nds
470990	"	6/4 No. 1 Com. & Select
185418	"	6/4 No. 2 Common
100453	"	5/4 1sts & 2nds
196429	"	5/4 No. 1 Com. & Sel.
78285	"	5/4 No. 2 Common
13280	"	5/4 No. 3 Common
44506	"	4/4 9-12" Box Boards
104671	"	4/4 1sts & 2nds
230717	"	4/4 No. 1 Com. & Sel.
120374	"	5/4 No. 2 Common
31122	"	4/4 No. 3 Common

LA. WHITE ASH

7980	"	8/4 1sts & 2nds (Dry)
76476	"	10/4 12/4 No. 1 Com. & Btr.
3900	"	6/4 8/4 Log Run (Dry)
7450	"	6/4 8/4 No. 3 Common (Dry)
35800	"	8/4 No. 2 Common (Dry)
20000	"	6/4 No. 1 Common (Dry)
14820	"	6/4 No. 2 Common (Dry)
42000	"	5/4 No. 1 Common (Dry)
18700	"	4/4 No. 1 Common (Dry)
30000	"	4/4 No. 2 Common (Dry)
14321	"	4/4 No. 3 Common (Dry)
53292	"	4/4 Sound Wormy

PECAN—DRY

1000	"	8/4 Log Run
660	"	4/4 Log Run
4000	"	8/4 Flitches
4500	"	8/4 No. 2 Common
1200	"	5/4 No. 3 Common
12000	"	6/4 No. 2 Com. & Btr.

OAK

5992	ft.	4/4 1sts & 2nds Qtd. Red
10053	"	4/4 No. 1 Com. & Sel. Qtd. Red
3014	"	4/4 No. 2 Com. Qtd. Red
3019	"	4/4 No. 3 Com. Qtd. Red
13709	"	4/4 No. 3 Common Qtd. White
11265	"	4/4 Log Run Qtd. Red
17407	"	4/4 1sts & 2nds Plain Red
69080	"	4/4 No. 1 Common Red
43900	"	4/4 No. 2 Common Red
46727	"	4/4 1sts & 2nds Mixed
13109	"	4/4 1sts & 2nds White
121079	"	4/4 No. 1 Com. & Sel. Mixed W.
91325	"	4/4 No. 2 Common Mixed
90675	"	4/4 No. 3 Common Mixed
70210	"	4/4 Sound Wormy
3920	"	5/4 No. 2 Common Red

LA CYPRESS

5121	"	10/4 1sts & 2nds
18241	"	10/4 Select
11097	"	10/4 No. 1 Shop
6012	"	10/4 No. 1 Common
9590	"	8/4 No. 1 Common
17839	"	6/4 Select
1067	"	6/4 No. 1 Common
3190	"	6/4 No. 2 Common
18588	"	6/4 & 8/4 Dog Bds.
15800	"	5/4 No. 2 Common
8605	"	4/4 Shop & Better
100100	"	4/4 No. 1 Shop
152851	"	4/4 No. 1 Common
15551	"	4/4 No. 2 Common
4300	"	4/4 No. 3 Common
51020	"	4/4 Peckie
7890	"	4/4 No. 2 Boxing

ELM—GREEN

58710	"	10/4 & 12/4 No. 2 Com. & Btr.
26941	"	8/4 No. 2 Common & Btr.
2100	"	6/4 No. 1 Common & Btr.

ARKANSAS YELLOW PINE—AIR DRIED

18760	"	4/4 B. & Better
76292	"	4/4 No. 1, No. 2, No. 3 Com. 6, 8, 10 & 12" W.

ABERDEEN LUMBER COMPANY, Pittsburgh, Pa.

Tennessee Aromatic Red Cedar

STRAIGHT CARS OR MIXED WITH HARDWOODS

Quartered Sap Gum

8 cars 4/4" Common and Better
8 " 6/4" Common and Better

Plain Sap Gum

1 car 4/4" Panel 1 & 2—18" and up
2 " 4/4" 1st and 2nd—13-17"
5 " 4/4" 1st and 2nd—6/12"
10 " 4/4" No. 1 Common and Selects
2 " 4/4" No. 2 Common
3 " 4/4" No. 3 Common
4 " 6/4" Common and Better
6 " 6/4" No. 2 Common
10 " 6/4" No. 3 Common
5 " 8/4" No. 3 Common

Plain Red Gum

5 cars 4/4" 1st and 2nd
5 " 6/4" No. 1 Com. and Selects
5 " 4/4" No. 2 Common
3 " 6/4" No. 2 Common
1 car 8/4" No. 2 Com. and Btr.

Quartered Red Gum

1920' 3/4" Common and Better
1 car 4/4" 1st and 2nd
5 " 4/4" No. 1 Com. and Selects
2 " 6/4" Common and Better
5 " 8/4" 1st and 2nd
5 " 8/4" No. 1 Com. and Selects

Red Gum Figured Wood

3 cars 4/4" No. 1 Com. and Selects
1 " 4/4" Com. and Btr. Qtd.
2 " 8/4" Com. and Btr. Qtd.

Plain Red Oak

3 cars 4/4" No. 1 Com. and Selects
3 " 4/4" No. 2 Common
2500' 5/4" Common and Better
4000' 8/4" Log Run

Quartered Red Oak

1260' 3/4" Common and Better
1 car 4/4" 1st and 2nd
2 " 4/4" No. 1 Com. and Selects
1 " 4/4" No. 2 Common
3000' 5/4" No. 1 Common and Selects

Plain White Oak

3 cars 4/4" 1st and 2nd
7 " 4/4" No. 1 Common and Selects
10 " 4/4" No. 2 Common
1 " 10/4" No. 2 Com. and Btr.
1 " 12/4" No. 2 Com. and Ber.

Quartered White Oak

3 cars 4/4" 1st and 2nd (10% 10" and wider)
5 " 4/4" No. 1 Common and Selects
3000' 4/4" No. 2 Common
2 cars 4/4" Strips, 2" to 5½"
1 " 6/4" Common and Better

Miscellaneous Oak

2 cars 4/4" Sound Wormy
7 " 4/4" No. 3 Common Mixed
1 " 8/4" No. 2 and 3 Common

Miscellaneous Hardwoods

9000' 4/4" L. R. Elm
1 car 4/4" No. 2 & 3 Common Elm
3940' 5/4 L. R. Elm
2 cars 6/4" No. 2 Com. & Btr. Elm
1 " 6/4" No. 2 & 3 Common Elm
10 " 8/4 Log Run Elm
5 " 10/4" Log Run Elm
1 " 8/4" No. 2 and 3 Com. Elm
2 " 10/4" No. 3 Common Elm
3 " 6/4" Log Run Pecan
4500' 4/4" Log Run Maple
3 cars 4/4" to 8/4" No. 3 Com. Ash
9000' 4/4" Log Run Sycamore
2 cars 4/4" Shop and Better Cypress
2 " 4/4" Log Run Pl. Black Gum
1 " 6/4" No. 3 Common Maple
4/4" Com. and Btr. Tenn. Aromatic Red Cedar

St. Francis Basin Hardwoods

GEO. C. BROWN & COMPANY

Mills — PROCTOR, Ark., COSGROVE, Ark., GRENADA, Miss.

Main Office — MEMPHIS, Tenn.

Canadian Representative: M. E. Cummings, 814 Richmond Ave., Buffalo, N. Y.

High Grade Lumber

QUALITY SERVICE

All Thicknesses

Oak - Poplar - Gum

Quarter-Sawn or Plain

Memphis Band Mill Co.
Memphis, Tenn., U.S.A.

Boland Lumber Company

Murray Bldg., Grand Rapids, Mich.

Manufacturers and Wholesalers Northern and Southern Hardwoods

Northern Woods:

Ash, Basswood, Beech,
Birch, Hard Maple,
Quartered Maple,
White Maple, Soft Maple,
Soft Elm, Rock Elm.

Southern Woods:

Cherry, Chestnut,
Cottonwood, Cypress, Gum,
Hickory, Magnolia,
Oak, Poplar, Sycamore,
Walnut, Willow.

Please send us your inquiries and it will be a pleasure to quote you and describe our stocks

Band Mill and Yards, Memphis Plant.

The stock listed below is band sawn lumber of our own high grade manufacture and is ready for prompt shipment. All stock listed is subject to prior sale. Wire your enquiries at our expense and we will take pleasure in quoting you.

ASH

12M	5/4	FAS
30M	10/4	Com. and Btr.
2M	4/4	No. 1 Com.
15M	5/4	No. 1 Com.
12M	6/4	No. 1 Com.
10M	6/4	No. 3 Com.
1M	8/4	No. 3 Com.

COTTONWOOD

20M	4/4	FAS
80M	4/4	No. 1 Com.
15M	4/4	No. 1, 2 & 3 Com.
13M	4/4	No. 2 & 3 Com.

CYPRESS

4M	4/4	Selects
15M	4/4	Shop
26M	4/4	No. 1 Com.
20M	6/4	No. 1 Com.
3M	6/4	No. 2 Com.

ELM

10M	4/4	Log Run
30M	8/4	Log Run
30M	10/4	Log Run
12M	6/4	No. 3 Com.

QUARTERED RED GUM

1M	4/4	FAS
200M	8/4	Com. and Btr.
15M	4/4	No. 1 Com.
12M	5/4	No. 1 Com.
11M	6/4	No. 1 Com.
17M	10/4	No. 1 Com.

PLAIN RED GUM

30M	4/4	FAS
10M	4/4	Com. and Btr.
5M	6/4	No. 1 Com.
50M	4/4	No. 2 Com.
2M	5/4	No. 2 Com.

QUARTERED RED GUM (SAP NO DEFECT)

250M	8/4	Com. and Btr.
50M	10/4	Com. and Btr.
100M	12/4	Com. and Btr.
125M	4/4	No. 1 Com.
50M	6/4	No. 1 Com.
5M	8/4	No. 2 Com.
2M	10/4	No. 2 Com.
4M	10/4	No. 3 Com.

PLAIN SAP GUM

15M	4/4	FAS
6M	6/4	FAS
100M	4/4	No. 1 Com.
85M	6/4	No. 1 Com.
50M	4/4	No. 2 Com.
70M	6/4	No. 2
2M	8/4	No. 2
5M	4/4	No. 3 Com.
2M	6/4	No. 3
70M	8/4	No. 3
7M	12/4	No. 3

QUARTERED WHITE OAK

60M	4/4	FAS
40M	5/4	FAS
150M	4/4	No. 1 Com.
75M	5/4	No. 1 Com.
150M	6/4	No. 1 Com.
45M	8/4	No. 1 Com.
12M	4/4	No. 2 Com.
20M	5/4	No. 2
12M	6/4	No. 2
15M	6/4	No. 3 Com.

QUARTERED RED OAK

2M	4/4	FAS
50M	5/4	FAS
15M	6/4	FAS
100M	4/4	No. 1 Com.
125M	5/4	No. 1 Com.
30M	6/4	No. 1 Com.

QTD. WHITE OAK STRIPS

30M	4/4	No. 1 Com.
5M	5/4	No. 1 Com.
5M	6/4	No. 1 Com.

PLAIN WHITE OAK

20M	4/4	FAS
15M	6/4	FAS
100M	4/4	No. 1 Com.
2M	5/4	No. 1 Com.
50M	6/4	No. 1 Com.
12M	8/4	No. 3 Com.

SOUND WORMY OAK

100M	4/4	
50M	5/4	
80M	6/4	

TUPELO GUM

125M	4/4	FAS
3M	5/4	FAS
20M	6/4	FAS
175M	4/4	No. 1 Com.
3M	5/4	No. 1 Com.
17M	6/4	No. 1 Com.

MAPLE

5M	4/4	Log Run
10M	10/4	Log Run

PLAIN RED OAK

50M	4/4	FAS
45M	5/4	FAS
2M	6/4	FAS
16M	10/4	Com. and Btr.
100M	4/4	No. 1 Com.
100M	5/4	No. 1 Com.
30M	6/4	No. 1 Com.
13M	4/4	No. 2 Com.
18M	5/4	No. 2 Com.
60M	6/4	No. 2 & 3 Com.
2M	8/4	No. 2 & 3 Com.
100M	4/4	No. 3 Com.
60M	5/4	No. 3 Com.
60M	6/4	No. 3 Com.
2M	8/4	No. 3 Com.

DIRECT FROM PRODUCER TO CONSUMER.

Wire your orders at our expense

GAYOSO LUMBER COMPANY

P.O. Box 1097 MEMPHIS, TENNESSEE U.S.A.

Stock on Hand in Kitchener

7,000	ft.	4/4 SAP Gum No. 1 Com. & Selects
9,000	"	8/4 Qtd. Red. Gum, No. 1 C&B
5,000	"	5/4 Pln. Oak FAS
30,000	"	6/4 Pln. Oak FAS
30,000	"	6/4 Pln. Oak No. 1 Com.
30,000	"	8/4 Pln. Oak FAS
50,000	"	8/4 Pln. Oak No. 1 Com.
12,000	"	8/4 Pln. Oak Sd. Sq. Edge
1,200	"	4/4 Pln. Oak No. 1 Com.
15,000	"	4/4 Tenn. Red Cedar Brds. No. 1 C&B
35,000	"	4/4 Qtd. Wht. Oak FAS
35,000	"	4/4 Qtd. Wht. Oak No. 1 Com.
7,000	"	4/4 No. 2 Com. & Sd. Wormy Chestnut
23,000	"	5/4 No. 2 Com. & Sd. Wormy Chestnut
50,000	"	6/4 No. 2 Com. & Sd. Wormy Chestnut
12,000	"	5/4 FAS Chestnut
10,275	"	5/4 No. 1 Com. Chestnut
		Odd lots of No. 1 Com. Chestnut 4/4, 6/4 & 8/4
1,847	"	3/4 No. 1 C&B Qtd. Wht Oak
69	"	4/4 FAS Qtd. Wht. Oak
2,065	"	4/4 No. 2 Com. Qtd. Wht. Oak
1,000	"	3/4 No. 1 C&B Pln. Wht. Oak
2,624	"	3/4 FAS Sap Gum 13/17"
2,152	"	3/4 Select Sap Gum 3/12
8,573	"	3/4 Select Sap Gum 12" & up
470	"	5/4 Select Sap Gum
15,000	"	12/4 No. 1 C&B Hard Maple
15,000	"	4/4 No. 2 Basswood

PERCY E. HEENEY
202 Weber Chambers, KITCHENER, ONT.

Ohio Hardwoods

Why buy inferior stock when you can get the following items from my Ohio Mills?

2 cars 10/4 No. 2 Com. & Better Hard Maple. Choice stock—very wide.
2 cars 4/4 Quartered White Oak, Com. and Better, Fine.
1 car 4/4 Quartered White Oak, No. 2 Com.
5 cars 4/4 Plain White Oak, Com. and Btr.
2 cars 4/4 Log Run Poplar and 2 cars Chestnut.
1 car 6/4 Com. and Btr. Plain Oak, extra wide, 50% FAS.

With 40% freight advance almost a certainty, and lack of cars, hadn't you better send us that order?

WILL S. STERRETT
810—2nd Natl. Bank - CINCINNATI, OHIO

Reese Sheriff Lumber Co.

WILLIAMSPORT, PENNSYLVANIA

Manufacturers of

Northern and Southern Hardwoods White Pine, Spruce and Hemlock

With special attention to **Oak, Chestnut, Poplar, Cherry, Walnut, Gum and Basswood.**

OUR MOTTO

REASONABLE PRICES – that you can afford to pay.
EFFICIENT SERVICE — that you have a right to expect
FAIR TREATMENT — that you can depend on getting

We would appreciate an opportunity of furnishing a portion of your lumber requirements.

GLIMPSES INTO THE SPIRIT OF AMERICA'S SECOND GREATEST INDUSTRY. (*No. 1*)

Similarity of Ideals Is What Makes a Nation

It was America that changed the definition of "nationality" from a similarity of race to a similarity of taste. Also it was America which first elevated the widespread sense of *patriotism* from a mere massing of individual ambitions into a solider fabric of *mutual aids* to *Community Needs.*

It is singular that the railroads, the postal service, the telegraph and telephone, the fire and water departments, meat packing, steel making, lumbering and various other universal needs have achieved their present degree of high relative efficiency apparently without much regard for whether they were so-called private or so-called public enterprises.

This is because one of the prime incentives has been a certain pride in *Public Service,* with personal pride in making a *first class job* of it. Disregarding all theories of social organization, it is certain that, in any case, *the same men* would have done the same jobs in the same faithful and proudly progressive way—because of their proven superior fitness for the vital and difficult work in hand.

So it seems to be more a matter of *efficient spirit* in *public service* than it is of just who or what is the immediate employer of the kind of special talent needed.

Next to food, *shelter* is the most important thing for mankind, and for this purpose the varied products of TREES have been his chief reliance ever since the increasing population caused a shortage of caves.

So the American *Lumber Industry* is, and always has been, practically second to agriculture as a facile, dependable and economical reliance for us all.

Of course, in most cases, the harder the wood the longer it lasts and the more serviceable it is. Therefore, it is that the notable variety of Hardwoods in our great mid-south forests, are so vital a fact of our national life and comfort.

The breadth of concept and purpose, in war and peace, of the many thousands of independent loggers, sawyers, executives and fine craftsmen engaged with our Southern Hardwoods is one of the most encouraging truths of American Industry—just as their product is one of the elemental daily and hourly needs of the life of every one of us.

YOU CANNOT EVEN SIT ON A CHAIR without realizing this. (*All chairs are of hardwood.*) *You cannot even reprove your young son for accidentally digging his restless heel against the INTERIOR TRIM of your home without realizing this — and without being glad that it is hardwood, and thus practically "mar-proof."*

The splendid co-operation in the American hardwood manufacturing industry, among all elements concerned, deserves not only mutual recognition among themselves but also a fuller knowledge by the consuming public—which means everybody. This it will be our purpose to help along by a few simple little stories of *facts* that are much *simpler,* and much *more important,* and *vastly more fascinating,* than they may have seemed.

WATCH THIS PUBLICATION FOR *GLIMPSE NO. 2*

American Hardwood Manufacturers' Association

MEMPHIS, TENNESSEE

American Oak	Cottonwood	Elm	Sycamore	Willow
Red Gum	Chestnut	Beech	Tupelo	Lynn
American Walnut	Hickory	Basswood	Cherry	Magnolia
Poplar	Ash	Maple	Persimmon	et al.

IOWA BLACK WALNUT

Used in the New Pennsylvania Hotel, New York City

We believe that you will be interested in a statement recently made by the management of this hotel:—

> "The fact the we have chosen Walnut as a furniture wood and for the interior trim for the largest hotel in the world, and a hotel which is designed for New York's most discriminating hotel patrons, speaks for itself. Could we say more?"

This proves that the trend is unquestionably towards Walnut and we urge you to prepare accordingly.

We would appreciate a list of your needs.

Des Moines Sawmill Co.
DES MOINES, IOWA

"Hartzell's Choice Walnut"

Are you a believer in the fact that

"Quality Counts"

Have you ever experienced that delightful sensation of accidently overhearing a person speaking in a complimentary way of the "Quality of your Product."

"We emphasize Quality"

If your finished product is made from Hartzell's American Walnut Lumber and Veneers you will have the last word in "Quality"

There is a difference and it will pay you to think it over.

Samples submitted and quotations made upon application.

Our Motto is
"Satisfied Customers."

Geo. W. Hartzell - Piqua, Ohio

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

BROWN ASH

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	35,900	8,500	40,000	17,000
1¼ in.	58,500	7,300	36,200	15,300
1½ in.	36,500	....	35,000	7,500
2 in.	7,500	....	20,000	2,000

WHITE ASH

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	65,000	800	98,000	110,000
1¼ in.	99,000	7,500	120,000	20,000
1½ in.	18,900	1,200	20,000	41,000
2 in.	56,300	500	68,000	86,000
2½ in.	31,500	....	4,000	16,500
3 in.	87,500	——	62,500	25,500
4 in.	7,000	....	2,000	500

BASSWOOD

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	65,700	1,000	240,000	180,000
1¼ in.	151,300	14,000	235,500	70,800
1½ in.	94,600	....	31,800	15,000
2 in.	60,900	....	13,000	12,500
2½ in.	84,000	....	13,900	15,000
3 in.	13,550	....	10,500	5,900
4 in.	40,300	....	450	....

BEECH

	1 & 2	No. 1 Com.	No. 2 Com.
⅝ in.	.....	.....	.....
¾ in.	41,000	61,000	9,500
1 in.	63,000	254,700	23,000
1¼ in.	50,200	18,600	20,000
1½ in.	80,800	....	2,400
2 in.	6,000	6,000	2,600
2½ in.	....	....	....
3 in.	400	....	4,500
4 in.	225	1,200	475

BUTTERNUT

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	15,300	49,800	20,600
2 in.	8,400	....	2,000
2½ in.	3,000	3,000	....

CHERRY

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	160,500	160,200	60,500
1¼ in.	5,500	7,600	5,500
1½ in.	16,000	18,700	50,300
2 in.	2,100	20,200	52,900
2½ in.	5,500	2,700	2,200
3 in.	31,700	2,500	4,300
4 in.	7,900	....	500

CHESTNUT

	1 & 2	Clear Strips	No. 1 Com.	S.W.& No. 2 Com.
¾ in.	.....	.....	.....	.....
1 in.	15,900	1,500	78,300	319,500
1¼ in.	161,800	2,800	88,200	273,200
1½ in.	116,500	.....	86,000	28,000
2 in.	59,200	.....	69,300	116,200
2½ in.	4,000	.....	1,150	500
3 in.	2,100	.....	1,300	500
4 in.	1,500	.....	300	.....

CYPRESS

	1 & 2	Select	No. 1 Shop
1 in.	.....	29,000	1,200
1¼ in.	3,400	10,800	.....
1½ in.	19,100	5,200	18,000
2 in.	24,000	24,200	4,600
2½ in.	8,000	3,200	.....
3 in.	69,400	28,100	12,000
4 in.	10,300	.....	.....

SOFT ELM

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	3,700	8,000	2,800
1¼ in.	41,500	38,200	6,800
1½ in.	10,500	13,300	5,400
2 in.	.....	.....	.....
2½ in.	.....	.....	.....
3 in.	30,280	1,500	5,000
4 in.	6,100	6,200	6,000

PLAIN RED GUM

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	35,300	28,000	2,500
1¼ in.	.....	15,000	7,700
1½ in.	9,000	10,300	9,500
2 in.	2,500	3,800	7,500

QUARTERED RED GUM

	1 & 2	No. 1 Com.	No. 2 Com.
4/4	1,000	8,000	12,100
5/4	2,100	....	....
6/4	2,900	4,500	4,600
8/4	9,100	5,500	3,600

SAP GUM

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	14,400	58,000	.....
1¼ in.	.....	.....	.....
1½ in.	500	8,000	13,500
2 in.	1,490	9,700	10,400

QUARTERED SAP GUM

	1 & 2	No. 1 Com.	No. 2 Com.
4/4	.....	2,500	12,000
5/4	14,000	.....	.....
8/4	1,000	.....	.....

Also Large Stock of BEECH, BIRCH and MAPLE

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

Brown & Hackney, Inc.

MEMPHIS, TENN.

Manufacturers of High Grade
Bandsawn Southern Hardwood

LUMBER

August 1920—Stock List

BROWN & HACKNEY, Inc., LITTLE ROCK, ARK.

QUARTERED WHITE OAK

10,000′	5/8″ 1s&2s	1 car	4/4″ Clear Strips
3 cars	5/8″ No. 1 Common	2 cars	4/4″ Common Strips
3 cars	4/4″ 1s&2s	2 cars	8/4″ No. 1 Common
10 cars	4/4″ No. 1 Common	1 car	8/4″ No. 2 Common
2 cars	4/4″ No. 2 Common		

PLAIN OAK

1 car	3/4″ 1s&2s Plain Red Oak
2 cars	3/4″ No. 1 Common Plain Red Oak
1 car	3/4″ No. 2 Common Plain Red Oak
3 cars	4/4″ No. 1 Common Plain White Oak
3 cars	4/4″ No. 2 Common Plain White Oak
4 cars	4/4″ Sound Wormy Oak
4 cars	4/4″ No. 1 Common Plain Red Oak
2 cars	4/4″ No. 2 Com. Plain Red Oak
1 car	8/4″ Oak Dog Boards

PLAIN GUM

3 cars	5/8″ No. 2 Common Sap Gum
1 car	4/4″ 1s&2s Sap Gum
3 cars	4/4″ No. 1 Common Sap Gum
3 cars	4/4″ No. 2 Common Sap Gum
2 cars	5/4″ No. 2 Common Sap Gum
2 cars	6/4″ No. 2 Common Sap Gum
2 cars	4/4″ No. 2 Common & Better Black Gum
2 cars	6/4-8/4″ Gum Dog Boards

CYPRESS

2 cars	4/4″ No. 1 Shop & Better
2 cars	4/4″ No. 1 and No. 2 Common
2 cars	4/4″ Pecky
2 cars	8/4″ No. 1 Shop & Better
3 cars	8/4″ No. 1 Common
1 car	8/4″ No. 2 Common

MISCELLANEOUS

1,800′	6/4″ 1s&2s Quartered White Oak
3,000′	6/4″ No. 1 Common Quartered White Oak
8,000′	8/4″ No. 3 Common Quartered White Oak
6,000′	8/4″ No. 2 Common & Better Quartered Red Oak
5,500′	3/4″ Common & Better Black Gum
7,500′	4/4″ Log Run Maple
5,100′	4/4″ Log Run Lynn
1,800′	4/4″ Log Run Elm
15,000′	6/4″ No. 2 and No. 3 Common Elm
	3″ & 4″ Red and White Oak Bridge Plank

BROWN & HACKNEY LUMBER COMPANY
TRANSYLVANIA, La.

QUARTERED WHITE OAK

30,000′	4/4″ 1s&2s	40,000′	4/4″ No. 1 Common

QUARTERED RED OAK

8,000′	4/4″ 1s&2s	20,000′	4/4″ No. 1 Common

PLAIN OAK

24,000′	4/4″ 1s&2s Plain Red Oak
30,000′	4/4″ No. 1 Common Plain Red Oak
10,000	4/4″ 1s&2s Plain White Oak
30,000′	4/4″ No. 1 Common Plain White Oak
100,000′	4/4″ Sound Wormy Oak

PLAIN GUM

100,000′	4/4″ No. 1 Com. Plain Sap Gum
50,000′	5/4″ No. 1 Common Plain Sap Gum
100,000′	6/4-8/4″ Gum Dog Boards

QUARTERED GUM

130,000′	6/4″ No. 1 Common & Better Quartered Sap Gum
50,000′	8/4″ No. 1 Common & Better Quartered Sap Gum

CYPRESS

50,000′	4/4″ No. 1 Common	30,000′	5/4″ Selects
30,000′	4/4″ No. 2 Common	40,000′	5/4″ Shop
30,000′	5/4″ 1s&2s	30,000′	8/4″ Selects

MISCELLANEOUS

50,000′	8/4″ Log Run Pecan
15,000′	4/4″ Log Run Hackberry

WRITE US FOR PRICES

HAVE you considered contracting for 1920 Hardwood requirements?

Edward Clark & Sons, Limited
807-9 Bank of Hamilton Bldg.
Toronto, - Ont.

If Dryness Counts--You Can't Beat This

Bone Dry Plain Oak

402,500′	2	″	No. 1 Com.	White	and	Red.
239,600′	2	″	No. 2	“	“	“
106,800′	2½	″	No. 1	“	“	“
12,400′	2½	″	No. 2	“	“	“
83,900′	3	″	No. 1	“	“	“
15,600′	4	″	No. 2	“	“	“

We also have a good stock of dry Oak in other thicknesses of both Plain and Quartered. Prices on request.

James E. Stark & Co., Inc.

MEMPHIS, TENN.

Canadian Hardwoods

Good Stocks, Right Goods,
Prompt Shipment

C. A. SPENCER, Limited
LUMBER MERCHANTS

Offices—500 McGill Building
MONTREAL - - Quebec

WARREN ROSS LUMBER CO.
JAMESTOWN, N. Y.

Please let us quote you on the following:—

455'	3/4 1s & 2s Bataan Mahogany	1,500'	8/4 1s & 2s Walnut
		12,000'	8/4 No. 1 Com. Walnut
10,000'	4/4 1s & 2s Bataan Mahogany	7,000'	8/4 No. 2 Com. Walnut
		15,000'	4/4 1s&2s Plain Red Oak
468'	5/4 1s & 2s Bataan Mahogany	4,000'	5/4 1s&2s Plain Red Oak
		4,000'	6/4 1s&2s Plain Red Oak
25,000'	4/4 1s & 2s Cherry	20,000'	8/4 1s&2s Plain Red Oak
12,000'	4/4 No. 1 Com. Cherry	20,000'	4/4 No. 1 Com. Pl. "
5,000'	6/4 1s & 2s Cherry	4,000'	5/4 No. 1 Com. Pl. "
5,000'	8/4 1s & 2s Cherry	4,000'	6/4 No. 1 Com. Pl. "
2,000'	8/4 No. 1 Com. Cherry	10,000'	8/4 No. 1 Com. Pl. "
7,000'	4/4 No. 1 Com. Walnut	15,000'	4/4 1s&2s Poplar S.N.D.
1,500'	5/4 Selects	3,000'	5/4 1s&2s Poplar S.N.D.
2,000'	6/4 No. 1 Com. Walnut	3,000'	8/4 1s&2s Poplar S.N.D.

J. H. Bonner & Sons
Memphis, Tenn.
Mills:
Jonquil and Ruffwood, Ark.

Manufacturers

Band Sawn Hardwood Lumber

Write or wire for prices on

Gum, Oak, Elm, Etc.

Hardwood Lumber

Wire collect, or write for delivered prices on any or all of the following DRY STOCK

100 M'	4/4	No. 2 Com. & Btr. Soft Maple.
50 M'	10 & 12/4	No. 1 Com. & Btr. Soft Maple.
12 M'	8/4	No. 1 Common Ash.
30 M'	6/4	No. 2 Com. & Btr. Beech.
75 M'	4/4	Sound Wormy Chestnut.
85 M'	5 & 6/4	Sound Wormy Chestnut.
30 M'	8/4	Sound Wormy Chestnut.
50 M'	8/4	No. 2 Com. & Btr. Sap Gum.
35 M'	6/4	No. 1 Common Sap Gum.
50 M'	5, 6 & 8/4	No. 1 C. & B. Pl. Red Gum.
17 M'	8/4	No. 1 Com. & Btr. Qtd. Red Gum.
15 M'	12/4	No. 1 Com. & Btr. Hackberry.
75 M'	12/4	No. 1 Com. & Btr. Sycamore.
90 M'	4/4	No. 2 Com. & Btr. Sycamore.
15 M'	4/4	No. 1 C. & B. Pl. & Qtd. Tupelo.
28 M'	12/4	Bone dry No. 1 C. & B. Pl. Oak.

The Woodruff-Powell Lumber Co.
South Bend, Indiana

J. R. EATON & SONS, LIMITED

MANUFACTURERS OF HIGH GRADE WOOD PRODUCTS

Wood Turnings, Hardwood Dowels, Turned Table Legs, Kitchen Tables, Kitchen Cabinets, Oak Extension Tables, Oak Library Tables, "Empire Brand" Hardwood Flooring in Maple, Birch, and Plain or Quarter Cut Oak, Solid Pine and Veneered Hardwood Doors.

A Large Factory equipped with up-to-date machinery is at your service to furnish "WHAT YOU WANT"— WHEN YOU WANT IT."

YOUR ENQUIRIES SOLICITED

Orillia Ontario Canada

E. SONDHEIMER CO.

MEMPHIS, TENN., U.S.A.

Manufacturers and Exporters of

AMERICAN HARDWOODS

Specializing in RED GUM and SALIX

Dry Stock for Immediate Shipment

3	Cars	5/8"	Com. & Btr. Sap Gum.	3	"	10/4	No. Com. & Btr. Qtd. Red Gum	1	"	5/4	FAS Qtd. Red Oak.
3	"	3/4	No. 1 Com. Sap Gum.	3	"	4/4	FAS Qtd. Figured Red Gum.	3	"	4/4	No. 1 Com. Qtd. Red Oak.
10	"	4/4	FAS Sap Gum.	5	"	4/4	to 8/4 No. 1 Com. Figured Red Gum.	1	"	5/4	No. 1 Com. Qtd. Red Oak.
20	"	4/4	No. 1 Com. Sap Gum.	2	"	4/4	FAS Plain White Oak.	2	"	5/4	No. 2 Com. Qtd. Red Oak.
20	"	4/4	No. 2 Com. Sap Gum.	5	"	4/4	No. 1 Com. Plain White Oak.	1	"	4/4	No. 1 Common Magnolia.
5	"	5/4	FAS Sap Gum.	5	"	4/4	FAS Salix.	5	"	4/4	No. 2 Com. Cottonwood.
2	"	6/4	No. Com. & Btr. Sap Gum.	10	"	4/4	No. 2 Com. Salix.	10	"	5/4	No. 1 Com. Cottonwood.
5	"	4/4	No. 1 Com. & Btr. Qtd. Sap Gum	15	"	5/4	Log Run Salix.	10	"	6/4	No. 1 Com. Cottonwood.
2	"	5/4	No. 1 Com. & Btr. Qtd. Sap Gum	3	"	6/4	No. 1 Com. Salix.	20	"	4/4	to 6/4 No. 2 Com. Cottonwood.
3	"	12/4	No. 1 Com. & Btr. Qtd. Sap Gum	5	"	8/4	No. 1 Com. & Btr. Salix.	5	"	4/4	No. 1 Com. Ash.
1	"	3/4	FAS Plain Red Gum.	3	"	4/4	FAS Plain Red Oak.	2	"	5/4	No. 1 Com. Ash.
2	"	3/4	No. 1 Com. & Btr. Pl. Red Gum	1	"	4/4	FAS Qtd. White Oak.	1	"	6/4	No. 1 Com. Ash.
5	"	4/4	FAS Plain Red Gum.	2	"	4/4	No. 1 Com. Qtd. White Oak.	1	"	8/4	No. 1 Com. Ash.
5	"	4/4	No. 1 Com. Plain Red Gum.	2	"	4/4	No. 2 Com. Qtd. White Oak.	3	"	4/4	to 6/4 No. 2 Com. Ash.
5	"	4/4	No. 1 Com. & Btr. Qtd. Red Gum	5	"	4/4	FAS Qtd. Red Oak.				
10	"	8/4	No. 1 Com. & Btr. Qtd. Red Gum								

Also Pecan, Hickory, Sycamore, Black Gum, Poplar, Tupelo, Circassian Figured Red Gum

Distributing Yard and Sales Office
McLean & Chelsea Ave., Memphis, Tenn. U.S.A.
Cable Address : "Sonderco"

We have Four Band Mills :
Sondheimer, La., Tallulah, La.,
Ferriday, La., Baton Rouge, La.

Walnut Lumber with Mahogany

Straight or Mixed Cars

WALNUT VENEERS

Plain---Striped---Figured---Circassian Effect

Let Us Know Your Requirements

The Kosse, Shoe & Schleyer Company

Eastern Branch
Baltimore, Md.

325 Powers Theater Bldg.,
Grand Rapids, Mich.

Main Office and Band Mill
Cincinnati, O.

WHEN IN NEED OF HARDWOOD LUMBER——WRITE TO

Wheeler-Timlin Lumber Co.

WAUSAU, WISCONSIN

Our new cut is now dry and we are particularly anxious to move a few cars of the following: –

1 ″	No. 2 Common and Better Basswood.	2½″	No. 1 Common and Better Birch.
1½″	No. 2 Common and Better Basswood.	1 ″	No. 2 Com. and Btr. Wisconsin Plain Red Oak.
1¼″	No. 2 Common and Better Basswood.	1½″	No. 1 Common Hard Maple.
2 ″	No. 2 Common and Better Basswood.	2½″	No. 1 Common and Better Hard Maple.
2½″	No. 1 Common and Better Basswood.	3 ″	No. 1 Common and Better Hard Maple.
1 ″	No. 1 Common and Better Birch.	1½″	No. 2 Common and Better Soft Elm.
1½″	No. 1 Common and Better Birch.		

Good Grades, Prompt Service, give us an opportunity to serve you.

POPLAR

We offer for prompt shipment from Louisville, Ky., where cars are more plentiful and embargoes less stringent than at other points, the following:

5,000	5/8	1s and 2s
80,000	5/8	No. 1 Common
50,000	5/8	No. 2 Common
40,000	4/4	Saps and Selects
150,000	4/4	No. 1 Common
30,000	4/4	No. 2A Common
40,000	5/4	No. 1 Common
17,000	8/4	No. 2 Common A & B
250,000	4/4	Mill Run
16,000	5/4	Mill Run

This Poplar is Kentucky and Tennessee mountain stock. It's soft textured, shows good widths and lengths and is nicely graded.

WE CAN SURFACE OR RESAW

North Vernon Lumber Mills

NORTH VERNON, IND.

LOUISVILLE, KY. DYERSBURG, TENN.

WRITE FOR COMPLETE LIST AND PRICES

The Hyde Lumber Co.

Band Mills: LAKE PROVIDENCE LA.

Southern Office: MEMPHIS, TENN.

Bank of Commerce Bldg.

Northern Office: SOUTH BEND, IND.

MANUFACTURERS

Plain Red Gum

Quartered Red Gum

Plain Sap Gum

Quartered Sap Gum

Cottonwood, Cypress

Tupelo, Ash, Elm, Oak

CHARLES O. MAUS

Canadian Representative

American Hardwood Lumber Co.

St. Louis, Mo.

Large stock of—

Dry Ash, Quartered Oak

Plain Oak and Gum

Shipments from — NASHVILLE, Tenn., NEW ORLEANS, La., and BENTON, Ark.

British Columbia Forest Products

British Columbia Lumber Commissioner

No. 1 Adelaide St. E., Toronto

(Street Floor)

Personal calls or correspondence cordially invited from Dealers and others interested in British Columbia Woods

Telephone Main 6872. Note: We do not quote prices

An American Walnut Tree Selected For Our

LUMBER

PURCHASING AGENTS:—

Owing to embargoes and shipping delays, it is practically necessary for purchase orders to be placed thirty days earlier than in former years—we think this is especially advisable in Walnut today.

The years of experience of our buyers and the time and care used by them in selecting the raw material, for our output, terminates in the high character and quality of our lumber.

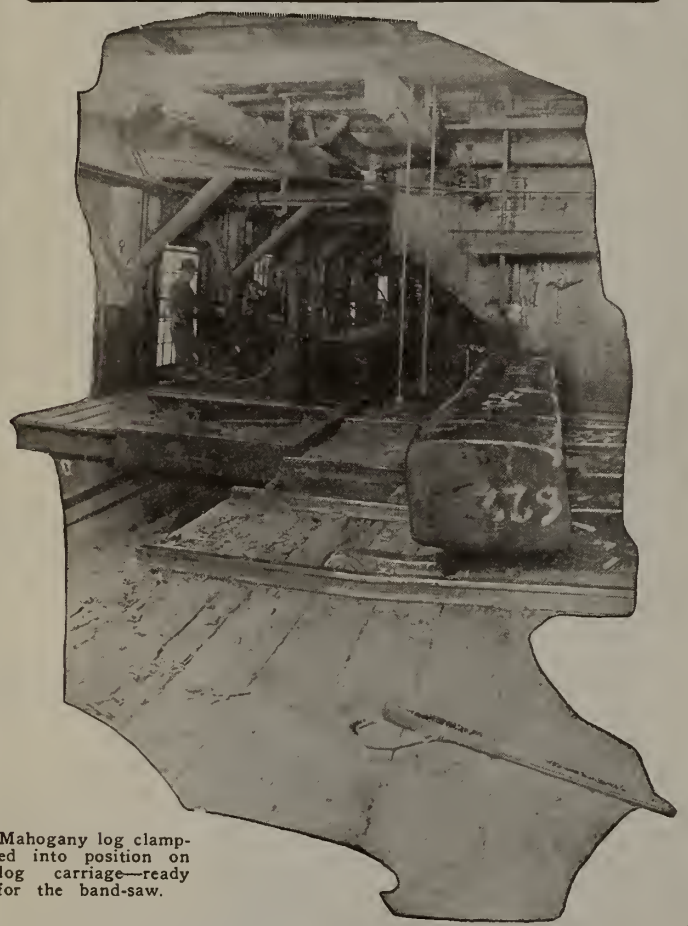
ALL GRADES AND THICKNESSES—American Walnut Exclusively

Pickrel Walnut Company

St. Louis, Missouri

ASTORIA MAHOGANY

LUMBER & VENEERS



Mahogany log clamped into position on log carriage—ready for the band-saw.

Lumber or Veneer?

The soundest mahogany logs are unsolved mysteries until the band-saws reveal their inner beauty. Then the exacting demands of our experts decide whether each log is satisfactory for lumber or veneer. Careful attention to detail in maintaining a high standard is one of the elements which have made us the largest complete mahogany organization on the Atlantic and Gulf Seaboard.

Astoria Mahogany Company, Inc.
1031 Steinway Ave., Long Island City, N. Y.

Successors to

Huddleston-Marsh Mahogany Company
Astoria Veneer Mills and Dock Company
F. W. Kirch, Inc.

Mills and Yard, Long Island City, New York

Branches: 44 North Market Avenue, Grand Rapids, Mich.
2256 Lumber Street, Chicago, Ill.

OAK

Plain and Quartered
Uniform Color—Soft Texture

Poplar, Ash

and other

Hardwoods

We have 35,000,000 feet dry stock—all of our own manufacture, from our own timber grown in Eastern Kentucky

Prompt Shipments

The Mowbray & Robinson Co.
(INCORPORATED)

Manufacturers

Office: CINCINNATI, OHIO

MILLS
Quicksand, Ky.; Viper, Ky; West Irvine, Ky.

Canadian Representative:
M. E. CUMMINGS, 814 Richmond Ave., Buffalo, N. Y.

30 Million Feet Hardwoods Yearly

Manufactured by

Darnell-Love Lumber Co.

Leland, Mississippi

We own and operate two large band mills with sufficient timber to supply these mills, at present capacity, fifteen to twenty years

Cutting

Oak, Ash, Gum, Elm

Cypress, Cottonwood

and various other Native Woods

Our Specialties are—

3/8", 1/2", 5/8" and 3/4" in Gum and Oak

and

8/4" Quartered Red Gum

8/4" Quartered Red Gum Sap No Defect

WE SOLICIT YOUR INQUIRIES AND ORDERS

Aromatic Tennessee Red Cedar

CAR LOAD LOTS
OR LESS

Earthman Lumber Co.
Murfreesboro, Tenn.

A name that should be on your inquiry list for Hardwood Lumber

American Column & Lumber Co.
Brunson Building, COLUMBUS, OHIO
—Manufacturers of—

West Virginia

Soft Yellow Poplar
Plain White Oak
Plain Red Oak
Quartered White Oak
White Oak Timbers and Plank

Chestnut	Butternut
Basswood	Ash
Maple	Cherry
Hickory	Walnut
Beech	Sycamore
Buckeye	Black Gum
Birch	Hemlock

Oak and Hardwood Dimension Stock

QUALITY—SERVICE

AT RIGHT PRICES

MANUFACTURERS OF

Cabinet parts	Enamel bath seats
Turned office stool tops	Special cabinet work of all descriptions
Turned piano stool tops	
Turned restaurant stool tops	Sanitary seats
Turned bath room stool tops	Toilet seats

Algoma Wood Products Co.
ALGOMA, WIS.

— A name worth remembering —

Thomas E. Powe Lumber Co.

St. Louis, Mo.

Manufacturers and Wholesalers of

SOUTHERN HARDWOODS

Specializing in

Ash-Oak-Gum-Poplar

Mills: PRESCOTT, ARK.—DOTHAN, ALA.

ST. LOUIS YARD

Mixed Carload Shipments — Carry stocks of the following:

Hickory	Magnolia	Elm
Maple	Willow	Sycamore
Tupelo	Red Cedar	Beech
Cypress	Plain Oak	Quartered Oak
Sap Gum	Red Gum	Mahogany
Poplar	Ash	Black Gum
Yellow Pine		

Steele & Hibbard Lumber Co.

ST. LOUIS, MO.

52 Years in Business

We carry a large stock of dry

Hardwood Lumber

25 Different Kinds
Quick Shipment
Write or wire for Prices

We specialize Oak cut from Mild Texture Missouri Timber with thin sap both plain and quarter sawed.

We ship also from Sawmills direct; Red as well as Sap Gum and Poplar, both plain and quarter sawed Sound Wormy Chestnut, Cypress and Ash.

F. Huntington Smith
Canadian Representative.

Tustin Hardwood Lumber Co.

MEMPHIS TENN.

KILN DRIED AND AIR DRIED SOUTHERN HARDWOODS

We operate five mills and Memphis yard, specializing in KILN DRIED Sap Gum, Elm, Maple, Ash. *Send us your inquiries.*

Will quote low prices on following to points not embargoed:

4 cars 4/4 No. 1 C. & B. Qtd. White Oak.
1 " 4/4 Fas Qtd. Red Oak.
1 " 4/4 No. 1 Com. Qtd. Red Oak.
2 " 4/4 Fas Plain Red Oak.
5 cars 4/4 No. 1 Com. Plain Red Oak.
3 " 8/4 No. 1 C. & B. Qtd. Red Gum.
4 " 8/4 No. 1 C. & B. Qtd. Sap Gum.

Johnson Brothers Hardwood Co.

(OUR NAME IS EASY TO REMEMBER)

Sales Agents:
Arko Lumber Co.
Arkansas City, Ark.

Bank of Commerce & Trust Building
Memphis, Tenn., U.S.A.

Double Band Mill
Capacity
100,000 ft. per day

Manufacturers and Wholesalers

Southern Hardwoods

3,000,000 ft. dry stock on hand and 5,000,000 in process of drying—all thicknesses, ½" to 4", plain and quartered.

White and Red Oak—Red Gum—Sap Gum—Tupelo—Black Gum—Cottonwood—Salix—Willow—Pecan—Sycamore—Elm—Soft Maple—Magnolia.

We offer for quick Sale the following Bone Dry Stock:

3 cars 4/4 Log Run Hackberry.
3 " 4/4 Log Run Magnolia.
2 " 4/4 Log Run Sycamore.
5 " 4/4 Log Run Willow.
5 cars 4/4 FAS Cottonwood.
1 " 6/4 FAS Cottonwood.
5 " 8/4 Log Run Elm.
2 " 8/4 Log Run Hickory.

Wire us at our expense for quotations

The Talge Mahogany Co.

INDIANAPOLIS, INDIANA

BURLS

MAPLE WALNUT OAK REDWOOD

MAHOGANY

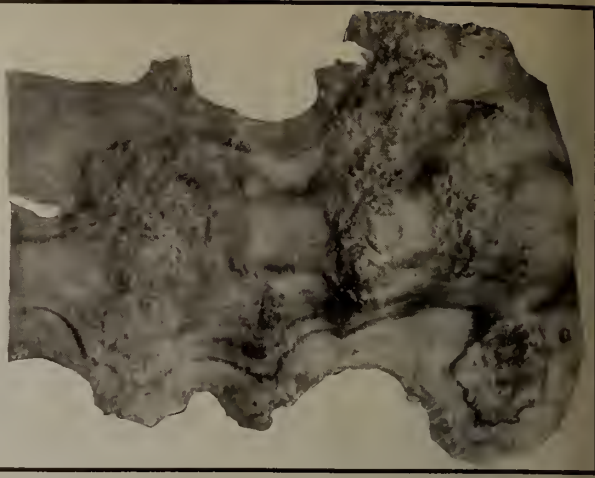
PENCIL STRIPE MEDIUM STRIPE BROKEN STRIPE
MOTTLE DRAWER BOTTOMS CEDAR FOR BOTTOMS

WALNUT VENEER

CURLY LEAFY STRIPE STUMPS BURL PLAIN

OAK VENEER

SAWED QUARTERED SLICED QUARTERED
PLAIN SLICED DOOR STOCK



F. T .DOOLEY, President. T. E. JONES, Secy.-Treas.

F. T. Dooley Lumber Co.

Inc.

MANUFACTURERS and WHOLESALERS
of

SOUTHERN HARDWOODS

Plain and Quartered Oak
Cypress, Gum, Ash
Soft Maple and Elm

Send us your inquiries

Memphis ∴ ∴ Tennessee

Hardwoods

We can furnish you immediately Factory Stock including all grades and thicknesses of

Walnut, Chestnut
Mahogany, Teak, Oak
Ash, Cypress

ALSO

VENEERS

Oak, Maple, Walnut and other Fancy Woods

The McLennan Lumber Co.

Limited

MONTREAL

Felger Lumber and Timber Company

MANUFACTURERS AND WHOLESALERS

NORTHERN AND SOUTHERN HARDWOODS

Main Office:
GRAND RAPIDS
373 Mich. Trust Bldg.

Southern Office:
MEMPHIS, TENN.

Yellow Poplar Lumber Co.

Manufacturers of Band Sawed

Poplar Plain Oak
Quartered Oak
Chestnut Basswood

Capacity 50,000,000 per annum

SPECIALTY: Monogram Brand Oak Flooring

CANADIAN ENQUIRIES SOLICITED

COAL GROVE, OHIO, U. S. A.

We Offer For Prompt Shipment

10	cars	4/4	No. 1 Common Plain Red Gum
5	"	4/4	No. 2 Common Plain Red Gum
2	"	4/4	FAS Plain Red Gum
1	"	6/4	FAS Plain Red Gum
1	"	6/4	No. 1 Common Plain Red Gum
1	"	4/4	Common & Better Qtd. Red Gum
1	"	6/4	FAS Qtd. Red Gum
1	"	8/4	No. 1 Common Qtd. Red Gum
2	"	4/4	Common & Better Qtd. Gum SND
2	"	4/4	Common & Better Qtd. Red Oak
3	"	4/4	No. 3 Oak
2	"	10/4	to 12/4 Oak Crossing Plank
1	"	4/4	to 12/4 Log Run Ash
2	"	12/4	Log Run Elm
1	"	6/4	Log Run Pecan
2	"	8/4	to 10/4 Log Run Pecan

Send us your inquiries, as this is only a partial list of the stock we have at our mill

"CLAYTON QUALITY" TENSA DETA SOUTHERN HARDWOODS

UTLEY-HOLLOWAY COMPANY

General Office: 1226 Conway Bldg., CHICAGO, ILL. **Band Mill: Clayton, La.**

Indiana

Quartered Red and White

OAK

1,000,000 feet of dry stock carried at all times

ALSO PLAIN OAK AND ASH

We manufacture all stock carried

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
GEO. H. FOOTE, Vice-Pres. & Treas.
JOSEPH WALTMAN, Secretary

Mills at EVANSVILLE, Indiana

SPECIALS!

For Immediate Shipment

QUARTERED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.

PLAIN SAWED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.
5 " 1¼" Common.

QUARTER SAWED OAK

10 cars 1" No. 1 Com. and Btr., White.
10 " 1" No. 1 Com. and Btr., Red.

Thomas & Proetz Lumber Company

No. 3400 Hall St. St. Louis, Mo.

GUM

Sap Red Tupelo Black

Prompt Shipments any Time

Cypress Cottonwood Oak
Ash Elm Beech Sycamore
Crating Fir Spruce
Yellow Pine

INQUIRIES SOLICITED

Manufacturers & Wholesalers

Cornelius Lumber Co.

Home Office—Arcade Building, St. Louis, Mo.
Northern Office—Lumber Exchange, Chicago, Ill.
Northwestern Office—Bremer Arcade, St. Paul.
Southern Offices—Tupelo, Miss., Memphis, Tenn.
Saw Mills—Drew, Miss., Osmeek, La., Lake City, Fla.

ATTENTION:

"Auto Body and Furn. Manfgs."

We are one of the few firms in the country handling

White Ash Exclusively

We sort it to meet all requirements. **Tough** texture and **Medium** texture. Can furnish **Special Widths** and **Lengths** one to four inches thick. Write or wire when needing WHITE ASH.

THOMPSON, KATZ LUMBER CO.

Memphis, Tenn.

Cable Address "TomKats"

SPECIAL—DRY STOCK

Ready for Immediate Shipment in Straight or Mixed Cars

PLAIN WHITE OAK

		Feet
4/4	FAS	4,992
5/4	"	1,875
6/4	"	4,935
8/4	"	200
4/4	No. 1 Com.	99,523
5/4	"	8,458
6/4	"	8,190
8/4	"	5,540
4/4	No. 2 Com.	26,756
5/4	"	975
4/4	No. 3 Com.	4,278

PLAIN RED OAK

4/4	FAS	27,643
5/4	"	437
6/4	"	855
4/4	No. 1 Com.	56,005
5/4	"	9,396
6/4	"	4,447
8/4	"	1,810
4/4	No. 2 Com.	31,812
5/4	"	2,817
4/4	No. 3 Com.	15,041

QRTD. WHITE OAK

4/4	FAS	22,651
5/4	"	243
6/4	"	1,852
8/4	to 16/4 FAS	2,175
4/4	No. 1 Com.	28,720
5/4	"	14,561
6/4	"	10,237
8/4	"	1,300
8/4	to 16/4 No. 1 Com.	3,795
4/4	No. 2 Com.	5,719

QRTD. RED OAK

4/4	FAS	6,297
4/4	No. 1 Com.	17,442
5/4	"	2,112
6/4	"	1,116
8/4	"	2,240
4/4	No. 2 Com.	6,108

POPLAR

4/4	No. 1 Com.	13,395
5/4	"	1,787
6/4	"	4,297
8/4	"	2,480
4/4	No. 2 Com.	1,715
6/4	"	2,167
8/4	"	1,440

PLAIN RED GUM

		Feet
4/4	FAS	4,912
5/4	"	2,193
6/4	"	2,610
8/4	"	902
4/4	No. 1 Com.	13,482
5/4	"	12,319
6/4	"	6,045
8/4	"	5,704

PLAIN SAP GUM

4/4	FAS	26,720
5/4	"	23,990
8/4	"	4,320
4/4	No. 1 Com.	21,984
5/4	"	437
6/4	"	1,170
8/4	"	4,420
4/4	No. 2 Com.	5,453
5/4	"	2,193
6/4	"	3,360

QRTD. RED GUM

4/4	No. 1 Com.	14,686
8/4	"	1,200
8/4	No. 1 C. & B.	10,548
4/4	No. 2 Com.	41

QRTD. SAP GUM

8/4	FAS	21,120
8/4	No. 1 Com.	7,240

SOUTHERN ELM

4/4	Log Run	11,317
5/4	" "	1,334
6/4	" "	34,172
8/4	" "	10,884
10/4	" "	23,692
6/4	No. 3 Com.	1,766
10/4	"	812

SOUTH'N SOFT MAPLE

4/4	Log Run	31,642
5/4	" "	2,356
6/4	" "	5,760
8/4	" "	26,212
10/4	" "	43,724
8/4	No. 3 Com.	40
12/4	"	4,500

WALNUT

4/4	Log Run	2,900
8/4	" "	990

WHITE ASH

		Feet
4/4	FAS	22,709
5/4	"	27,106
8/4	"	10,424
10/4	"	12,097
12/4	"	4,680
4/4	No. 1 Com.	37,980
5/4	"	17,587
6/4	"	4,888
8/4	"	11,540
10/4	"	10,487
12/4	"	495
4/4	No. 2 Com.	8,318
5/4	"	1,112
6/4	"	15,253
8/4	"	1,616
10/4	"	4,605
12/4	"	21,360
4/4	No. 3 Com.	4,391
5/4	"	75
6/4	"	450
8/4	"	3,630
10/4	"	490
12/4	"	9,780

CYPRESS

4/4	FAS	10,542
5/4	"	450
6/4	"	12,165
8/4	"	1,440
4/4	Select	30,921
5/4	"	5,827
6/4	"	52,819
8/4	"	8,020
4/4	Shop	37,343
5/4	"	1,125
6/4	"	8,383
8/4	"	9,214
4/4	No. 1 Com.	72,757
5/4	"	3,818
6/4	"	4,241
8/4	"	1,680
4/4	No. 2 Com.	36,729
5/4	"	3,500
6/4	"	14,040
8/4	"	600

COTTONWOOD

4/4	FAS 6-10"	14,636
4/4	" 11 and up	6,327
5/4	FAS	4,312
4/4	BB 13-17"	1,440
4/4	BB 9-12"	2,505
4/4	No. 1 Com.	38,249
5/4	"	4,400
6/4	"	144
8/4	"	896

WRITE OR WIRE FOR ATTRACTIVE DELIVERED PRICES

Baker-Matthews Lumber Co.

Memphis, Tennessee

West Virginia Oak

Thoroughly Dry, Accurately Sawn, Soft Textured, and Uniform in Color.

Write us when needing choice stocks. All lumber produced from virgin timber of large size and excellent quality.

Twenty Million Feet Hardwood Ready for Immediate Shipment

OAK

Yellow Poplar, Ash, Hickory, Beech, Chestnut, Basswood, Walnut, Maple

THE THOMAS HALL LUMBER COMPANY

Manufacturers

CHARLESTON, WEST VIRGINIA

M. BROWN, Canadian Representative. Address: 31 Sprucehill Rd., Balmy Beach, Toronto

Tallahatchie Lumber Company

MEMPHIS, TENN.

Manufacturers of

Band Sawn Hardwoods

Graded so as to be especially attractive to Furniture Manufacturers.

Careful attention to every detail of service.

SEND US YOUR INQUIRIES

Band Sawn Poplar, Plain and Quartered White and Red Oak— Quartered Red Gum, Sap No Defect

Below we offer, subject to prior sale and immediate acceptance, the following stock:—

ASH

4/4″	No. 2 Common and Better	10,000 ft.

BEECH

4/4″	Log Run	3,000 ft.
8/4″	Log Run	40,000 “
10/4″	Log Run	10,000 “
12/4″	Log Run	6,000 “

CHERRY

4/4″	No. 2 Common and Better	6,000 ft.

ELM

12/4″	No. 2 Common and Better	2,000 ft.

QRTD. RED GUM

4/4″	No. 1 Common and Better	22,000 ft.

QTRD. RED GUM SND.

4/4″	FAS	6,000 ft.
6/4″	FAS	18,000 “
6/4″	No. 1 Common	20,000 “
8/4″	FAS	28,000 “
8/4″	No. 1 Common	23,000 “

PLAIN SAP GUM

4/4″	FAS	18,000 ft.
4/4″	No. 1 Common	18,000 “
4/4″	No. 2 Common	12,000 “
4/4″	No. 3 Common	10,000 “

QTRD. BLACK GUM

4/4″	Log Run	32,000 ft.

HICKORY

6/4″	Log Run	5,000 ft.
8/4″	Log Run	8,000 “

MAGNOLIA

4/4″	Boxboards, 8″ to 12″	18,000 ft.
4/4″	Boxboards, 13″ to 17″	14,000 “

QRTD. WHITE OAK STRIPS

4/4″	1½″ to 2½″ Common	10,000 ft.
4/4″	4″ to 5½″ Clear	15,000 “
4/4″	2½″ to 3½″ Clear	11,000 “

QRTD. WHITE OAK

4/4″	FAS	52,000 ft.
4/4″	No. 1 Common	106,000 “
4/4″	No. 2 Common	40,000 “
5/4″	No. 1 Common	7,000 “

PLAIN WHITE OAK

4/4″	No. 1 Common	30,000 ft.
4/4″	No. 2 Common	20,000 “

PLAIN RED OAK

4/4″	FAS	59,000 ft.
4/4″	No. 1 Common	40,000 “
4/4″	No. 2 Common	30,000 “
5/4″	FAS	16,000 “

SOUND WORMY OAK

4/4″		60,000 ft.

POPLAR

4/4″	FAS Yellow	56,000 ft.
4/4″	No. 1 Common	220,000 “
4/4″	No. 2 Common	150,000 “

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STOCK LIST

QUARTERED WHITE OAK
- 3 cars 4/4" 1s and 2s.
- 5 cars 4/4" No. 1 Common.
- 2 cars 4/4" No. 2 Common .

QUARTERED RED OAK
- 5 cars 4/4" 1s and 2s.
- 10 cars 4/4" No. 1 Common.
- 4 cars 4/4" No. 2 Common.
- 2 cars 6/4" No. 1 Common and Better.

QUARTERED RED GUM
- 10 cars 4/4" 1s and 2s.
- 3 cars 4/4" 1s and 2s Fig.
- 2 cars 5/4" 1s and 2s.
- 2 cars 6/4" 1s and 2s.
- 15 cars 4/4" No. 1 Common.
- 2 cars 5/4" No. 1 Common.
- 2 cars 6/4" No. 1 Common.

QUARTERED RED GUM, Sap no Defect
- 5 cars 6/4" No. 1 Common and Better.
- 10 cars 8/4" No. 1 Common and Better.

ASH
- 4 cars 10/4" No. 1 Common and Better.
- 1 car 12/4" No. 1 Common and Better.
- 1 car 6/4" No. 1 Common and Better.
- 2 cars 4/4" No. 1 Common.
- 2 cars 4/4" No. 2 Common.

SAP GUM
- 10 cars 4/4" 1s and 2s.
- 20 cars 4/4" No. 1 Common.
- 10 cars 4/4" No. 2 Common.
- 2 cars 4/4" 18" up Panel.
- 5 cars 4/4" 13-17" Box Boards.

PLAIN RED OAK
- 2 cars 4/4" 1s and 2s.
- 2 cars 6/4" No. 1 Common and Better.
- 2 cars 10/4" No. 1 Common and Better.

PLAIN WHITE OAK
- 4 cars 4/4" No. 1 Common Plain.

COTTONWOOD
- 2 cars 4/4" 1s and 2s.
- 15 cars 4/4" No. 1 Common.
- 5 cars 4/4" No. 2 Common.

ELM
- 2 cars 4/4" Log Run.
- 10 cars 10/4" Log Run.
- 10 cars 12/4" Log Run.

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6 " 1 " No. 2 " " " "

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2 " 1¼" Fas Quartered Red Gum
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4 " 1½" " " " " "
1 " 2 " " " " " "
3 " 1¼" No. 1 Com. Qtrd. Red Gum

1 " 1 " Fas Plain Red Gum
6 " 1 " No. 1 Com. & Btr. Pl. Red Gum
3 " 1 " No. 1 Common Plain Red Gum
1 " 2 " " " " " "
3 " 1 " No. 2 " " " "

2 Cars 1 " Fas Sap Gum
2 " 1 " " " " 13" and up
1 " 1¼" " " "
1 " 2 " Common & Better Sap Gum

3 Cars 1 " No. 1 Common Sap Gum
2 " 1¼" " " " "
5 " 1 " No. 2 " " "
1 " 1¼" " " " "
1 " 1½" " " " "
1 " 2 " " " " "

1 " 1¼" Fas Qtrd. Red Gum, S.N.D.
3 " 1 " C. & B. Qtrd. Red Gum, S.N.D.
10 " 1½" " " " " "
7 " 2 " " " " " "
2 " 1¼" No. 1 C. Qtrd. Red Gum, S.N.D.

1 " 1 " No. 1 Shop Cypress
2 " 1 " No. 1 Com. "
1 " 1¼" 1s & 2s "
1 " 1¼" Select "
1 " 1¼" No. 1 Shop "
1 " 2 " 1s & 2s "
1 " 2 " Select "
1 " 2 " No. 1 Shop "
1 " 2 " No. 1 Common "

5 " 1 " Log Run Willow

1 " 1 " Log Run Elm
1 " 1¼" " " "
2 " 1½" " " "
1 " 2 " " " "
2 " 2½" " " "
2 " 3 " " " "

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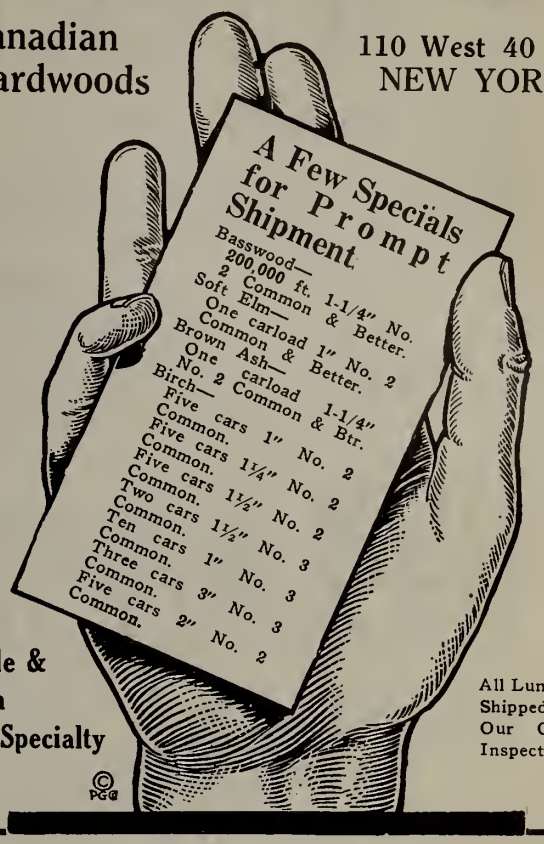
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Three cars 3" No. 3 Common.
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100 M 4/4 No. 1 & 2 Common	250 M 5/4 " " "	25 M 6/ " " "
70 M 5/4 FAS Winter Cut	175 M 6/4 " " "	20 M 8/4 " " "
65 M 5/4 No. 1 Common & Btr.	100 M 8/4 " " "	22 M 4/4 Cross Piled White
150 M 5/4 No. 2 Common	60 M 5/4 No. 1 Com. & Btr.	150 M 10/4 No. 1 Com. & Btr.
28 M 6/4 No. 1 Common & Btr.	50 M 6/4 " " "	50 M 16/4 No. 1 Com. & Btr.

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Preparing for Competition

The long heralded, much talked about business depression, with its consequent break in prices, does not seem to have arrived, nor is it likely to do so. The reasons why the future should not be viewed with alarm are too numerous and have been expressed too often in the columns of the "Canadian Woodworker" to need recapitulation. True the demand for many commodities has eased a little and a slight air of uncertainty pervades our business life. This state of affairs is not altogether unusual or unexpected at this season as July and August are usually quiet months—months of preparation for fall and winter business.

The race is not always to the strong. It is the well-trained athlete who generally comes out ahead. So it is in business. The manufacturer who is best prepared is the one who is able to successfully meet and over-ride competition. Whether or not we are due for a period of depression is problematical, and depends on conditions largely beyond our control, but there is one thing certain and that is that each day brings us that much nearer the time when supply will more nearly equal the demand and competition will be keener.

The far-seeing manufacturer is the one who is taking advantage of the present lull and is putting his plant in order, preparing for the time when the best methods and the most efficient equipment will be needed to command an adequate volume of business. At this period every woodworker should take counsel with himself, analyze his manufacturing methods, check over his production system and see if the rearranging of the present equipment so as to eliminate lost motion and excessive handling, the systematizing of prodution methods, the standardizing of manufacturing operations or the installing of some modern, labor-saving, production machines will not result in reduced manufacturing costs and increased production per man.

A writer in the house organ of a well known organization has outlined the present situation in a clear forcible manner, as follows: "To date, feverish demand has made it possible for any manufacturer, no matter how poor his manufacturing methods or how antiquated his equipment, to secure all the orders he could handle at a good profit, in spite of high manufacturing costs and regardless of competition. When supply has again caught up with demand—when the buying public comes back to earth—when all manufacturers are again competing for the same business, then it will be the concern that kept right on studying and analysing each operation, devising time saving methods, and replacing low production equipment with the best of labor saving machinery that will be able to satisfy the buyer who is getting more critical as to price, style, quality, delivery and other factors that determine the placing of an order.

"The 'stand pat' manufacturer who sees in the present uncertain outlook only another excuse for continuing his policy of using expensive, time-wasting old-style equipment, will soon be compelled to reduce the size of his profits when he finds himself in competition with progressive manufacturers who took time by the forelock and by taking advantage of every available means for increasing the efficiency of their plant and organization, secured greater production per man and at reduced cost."

Is the day of keen competition going to find you in a position where you will find it necessary to cut your profits to secure sufficient business to keep the factory running or will you be able to meet all legitimae competition on, at least, equal terms? The size of the plant will not count as much as the efficiency of its organization and equipment.

Winning Over the Employees

A well known American authoritty on industrial relations is responsible for the statement that employees do not want something for nothing, any more than the employer wishes to grant it. What he does believe in is for the manufacturer to give his workmen a square deal and do things for them. Make them feel that their interests are being considered and that an effort is being made to assist them both in their work and in their homes.

What is to prevent a manufacturer from occasionally bringing in a carload of coal, sugar or potatoes and distributing it in small lots at wholesale cost? This is only one suggestion. There are many other ways in which a manufacturer can apply his buying power and influence so as to benefit those in his employ. This is an honest, straight-forward attempt to assist in reducing living expenses. Such an attitude cannot help but win good will and co-operation.

Construction Details of Modern Home

Type of Frame Usually Adopted —Sequence of Construction Operations— Laying Out Rooms and Halls—Details of Framing Roof

By W. H. Shaw

To write a history of wooden construction in building would be to write a history of the country. The early settlers in the country came chiefly from parts of England, where wood construction was almost universal. They were familiar with wood; they knew how to use it; and they knew good wood when they found it. So they naturally went to the forests for the material for their homes, although stone and clay were to be found in practically every community. So satisfactory a building material did they find in the wood of the white pine forests for the building of their first crude homes, that in the days of prosperity when the stately Colonial mansions were erected with the greatest care, where no labor or expense was spared, the same materials was used.

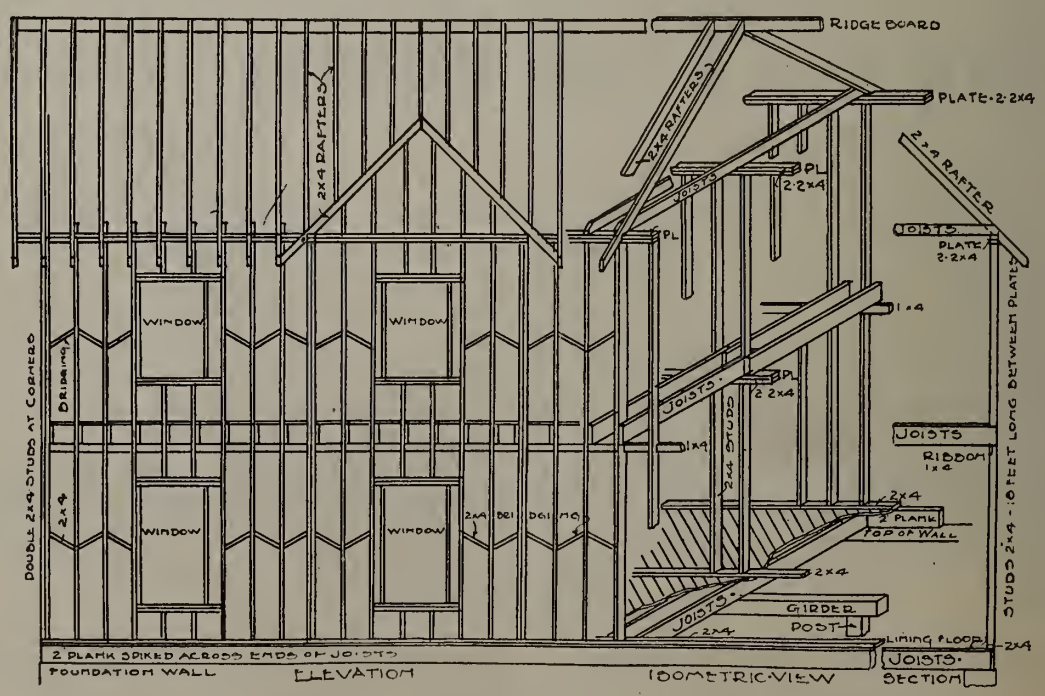
As is usual in early settlements, everything is influenced by the usage in the home-country. England was building homes of the Georgian type, largely of stone and brick. The colonial builders found their wood an excellent medium for carving the most subtle curves and holding a fine edge, even when exposed to the weather. So they copied the stately lines of the English mansions, developing the delicate moulding and carved motifs, adapting the classic orders of architecture to meet the requirements of wood and developing bit by bit what the discriminating call the Georgian Period of Architecture in America, but what to the general public come under the blanket-term of Colonial Architecture. So with the demand for houses to-day, when it is a case of need—real need, all the substitutes are passed up, and we are back to that first principle—wood construction.

What is known as the baloon frame is generally employed in the construction of the wood house of the present period. The fundamental principles of the construction are still preserved, yet the methods as to detail have undergone radical changes. In the early days intricate framing and numberless difficult joints were considered absolutely necessary, but simplicity is now the key note of construction details. In the methods illustrated the work, is shown, not as it might be under the very best practice, but as the modern workman would put it together if felt to his own devices and as would be acceptable in most localities.

The usual treatment is followed regarding the basement, viz., the posts, girders, and joists erected upon the foundation and the lining floor is laid in place ready for the frame. The next step is to spike a 2 x 4 in place about the outer walls directly upon the lining, as indicated on the accompanying section. The partitions of the various rooms are then outlined upon the lining floor in 2 x 4's. In each case where the partition has the same direction as the joists, the joists should be doubled beneath it.

Windows and Door Openings.

The studs are now erected; spaced 16 inches on centre and doubled at corners. No notice is ordinarily taken of the position of openings at this time either in the exterior or interior walls. There would seem to be some advantage in marking the position of doors and windows upon the 2 x 4 shoe before the studs are placed but it is seldom done. The studs of the outside walls are shown 18 feet long, this being the length commonly used where level ceilings are to obtain in the second storey. This gives 9 feet for the first

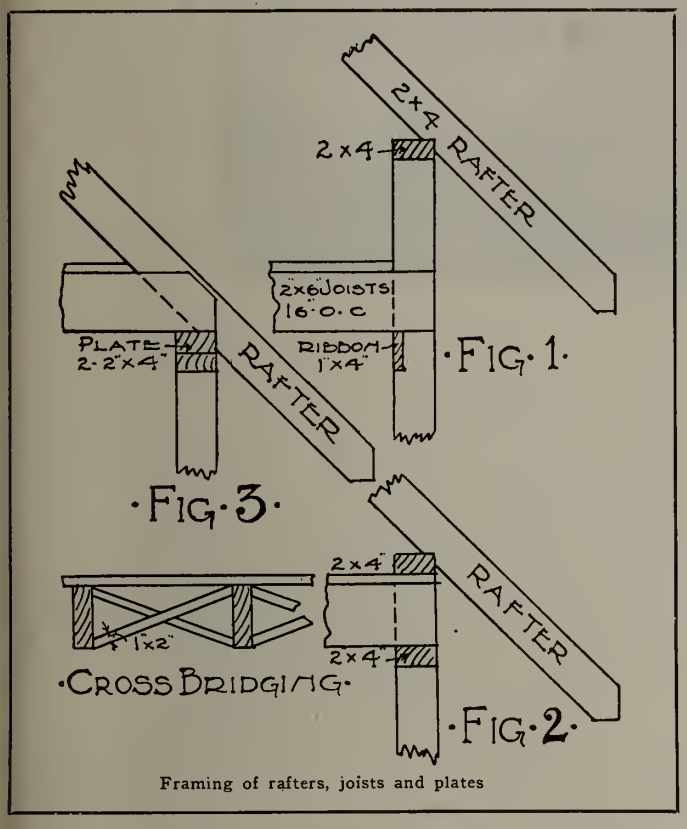


Details of baloon type frame

storey and 8 feet 5 inches for the second storey, both measured in the clear, without cutting the stud to waste.

The second floor joists rest upon a ribbon, as it is called, 1 inch by 7 inches, notched into these studs to keep the wall flush on the inside after plastering. See section. The joists may also be notched to receive the ribbon, but it is seldom considered necessary, the joists being carefully spiked to the stud..

The interior studs are cut in storey lengths only, with provision for a plate, consisting of two 2 x 4's



Framing of rafters, joists and plates

spiked across their upright ends, upon which rest the inner ends of the second floor joist. The interior studs of the second storey rest upon this plate, and continue up to a similar plate that supports the attic joists. See isometric view.

Details Roof Construction.

The rafters and other joists are framed to a double 2 x 4 plate spiked to the upper ends of the outside studs, the rafters being notched to secure a better bed and the corner of the joists are bevelled off in line with the rafters as shown on the isometic view. The upper ends of the rafters are spiked to a ridge board one inch in thickness and in depths as required by pitch of the rafters.

Where rafters coming from different directions intersect a hip or valley is formed and a hip or valley rafter is necessary to carry the load coming from both directions. This requires a strong timber deeper than the joists framed against it, to include the whole depth of their cut ends. The elevation shows a portion of the exterior with framing all in place. The studs are shown doubled at the corners, spaced 16 inches on centres, starting at the bottom from a 2 x 4 shoe and ending in a double plate of 2 x 4 at the top; on which rest the attic joists and roof rafters. The second floor joists are shown resting upon the ribbon and the flooring in place.

Short pieces of 2 x 4 should be cut to fit between the studs of all walls, as indicated, for bridging. As soon as the floor joists are in place they should be bridged with 1-inch by 2 inch cross bridging, as shown in figure. One line of bridging in a span of 14 feet or less is sufficient. Greater spans should have two or more lines of bridging.

Putting in Openings.

Window openings are shown with 2 x 4 doubled about them showing method of construction and support. These openings are cut in after the frame is up and should be carefully framed for strength and accuracy. The studs at either side of the window frame should be set to allow a weight pocket from 2¼ to 2½ inches wide. The blind stop, which is that portion of the window next to and underneath the outside casing, should always be wide enough to nail to the studding at the sides, holding the frame securely in place.

Two other methods of placing the rafters and attic joists are shown and a larger drawing of the first method described. Fig. 1 shows the attic joists supported upon a ribbon like that at the second floor level, with the rafters resting upon the plate at the top of the studding. This allows more headroom in the attic at the outer walls, but if the first and second stories are of the usual heights, requires extra long studs, which mean greater expense. It does give a greater height to the cornice and more space above the second storey windows, a feature to be desired. Fig. 2 shows the attic joists resting upon a single plate with an additional piece spiked to them above, on which the rafters rest. This requires no more material. Fig. 3 shown with a double plate, requires a little less framing in its erection and gives a little more height to the building.

Run Sheathing Diagonally.

The outside boarding or sheathing should be put on diagonally and should be dressed and matched, affording strength to the whole frame, as well as keeping out cold. It will be found that loose knots and knot-holes are in evidence after the walls are sheathed, unless a very superior grade of lumber was used. All such places should be covered with waste pieces of shingle, carefully nailed in place on the inside with short nails. Care should be taken that all portions of the frame are level and plumb, thus avoiding trouble when the more important finishing materials are placed in position.

All portions should be carefully nailed not only to insure safety but to avoid settlement and displacement so often indicated by cracked plastering.

Ship Building Plant Acquired

Capt. A. Berquist, a well-known tug operator and builder of Victoria, B.C., is repotred to have taken over a considerable part of the Port Ellice shipyards of the Foundation Company. The material purchased includes two of the large overhead gantrys, four ship-building ways, various electrically-driven saws and other ship-building plant and buildings. It is understood that Capt. Berquist intends building a number of tugs and barges.

The Point Ellice property is an excellently laid out ship-building site with four shipways and well equipped with sawmill, machine shops, blacksmith shop and offices. On these four ways the Foundation Company built ten of the twenty 3,000-ton wooden steamships ordered by the French Government.

An attractive, well planned bungalow

Two Cosy Bungalows of Approved Design

Extremely popular type of dwelling—Constructed to meet requirements of cold climate

THE bungalow, with its delightful lines and cosy appearance, seems to have come to stay, it is in fact steadily gaining in popular fancy. In sunny California, where the name "California Bungalow" originated, this type of dwelling is found in almost endless variety, ranging from a plain rectangular one-storey cottage, with wide verandah, to the more expensive, highly ornate home with its wide over-hanging roof with exposed rafters, attractive dormers, flowered pergola and convenient port cochere.

The accompanying illustrations and plans were taken from the plan book of the Canadian Aladdin Co., manufacturers of ready-cut houses, and are of two popular bungalow designs which embody many desirable features. The larger house has proved to be one of the most popular designs brought out by this company. In the illustration it is shown finished in stucco, but if soft, warm effects are desired, a shingle or siding wall may be employed.

Long, Low Lines Preferable.

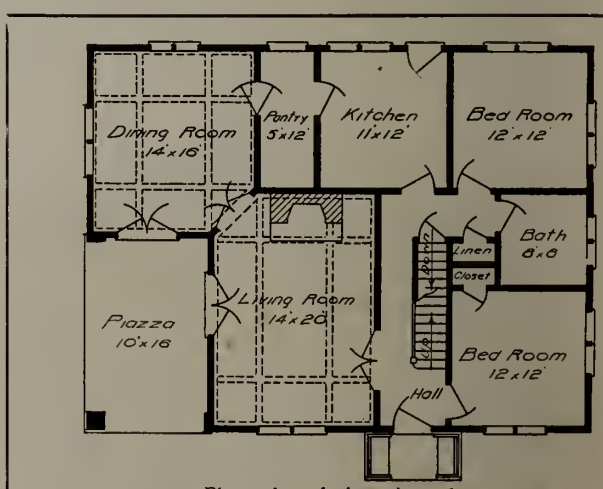
The long, low roof line with its impression of coziness and comfort, shaded piazza and the hooded entrance with its colonial benches and door, give an air of hospitality which cannot fail but to appeal to all who view it. One can readily see that the casement window, with small rectangular panes, is peculiarly adapted to a house of this type.

The floor of both piazza and porch are of concrete or flag stones. Entrance is made into a wide hall Here one gets an impression of spaciousness, for regardless of the way one may turn, the vision leads out through doors and windows and on into the surrounding grounds.

Access to the living room from the hall is made through a wide opening fitted with French doors. Here one finds a massive, dignified fire-place, beamed ceiling and doors opening on to the verandah. If resired, the fire-place may be constructed in the corner rather than along the wall. The dining-room is well lighted and ventilated and is provided with doors giving access to the piazza. This room woud be delightfully cool during the summer months.

A Very Convenient Arrangement.

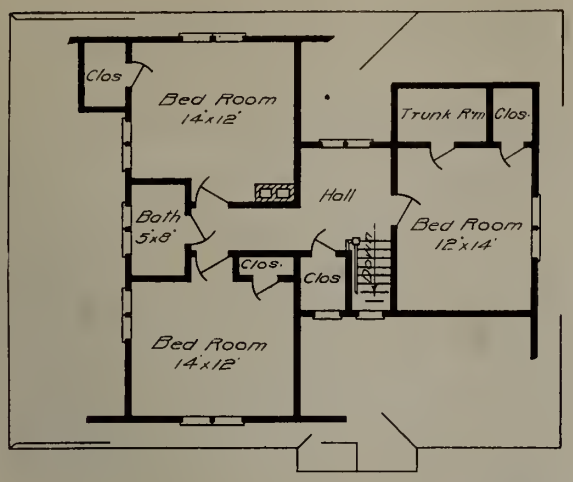
The dining-room and kitchen are separated by a roomy pantry. This is a very convenient arrangement as well as tending to prevent the odors emanating in the kitchen from reaching the dining-room.

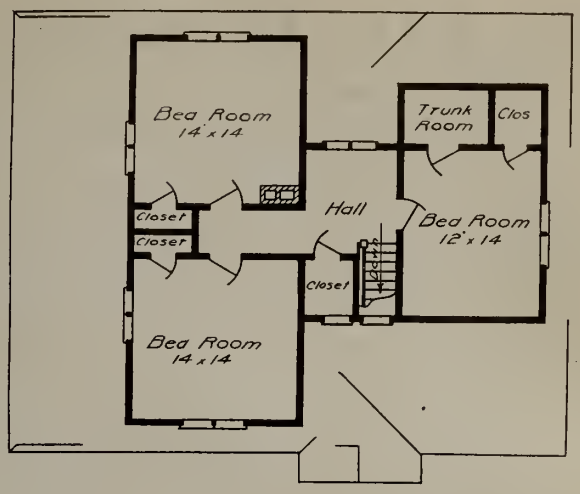


Floor plan of above bungalow

The rest of the lower floor is laid off to provide two bedrooms and a bath.

Alternating plans are suggested for the lay-out of the second floor. One has provision made for three airy, well-lighted bedrooms with spacious closets. The other gives the same accommodation, but by





Alternative second floor plans

reducing the size of two of the rooms it has been found possible to instal a small bathroom on this floor.

The second illustration is of a substantial, comfortable house built on less pretentious lines. In appearance it is very attractive. The verandah extends most of the way across the front but is constructed with a high ceiling so that an abundant supply of light and air is admitted to the front rooms. The shingle walls and the exposed rafter ends are in keeping with the best in bungalow design. The proportions of this building are such that one does not realize its size. A glance at the floor plan shows that it contains a number of good-sized rooms.

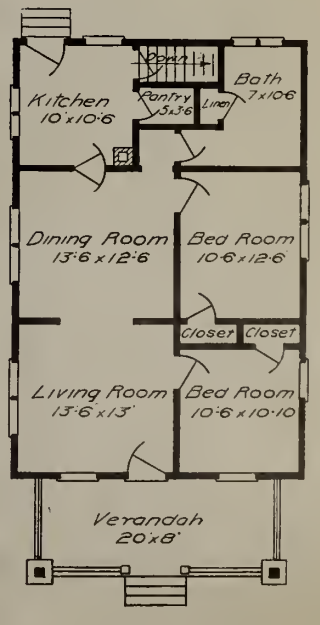
Keeping Down Construction Costs.

All waste space is eliminated, an entrance being made directly into the living-room. This is in keeping with the trend of modern home planning. With building material and construction costs high, expensive space is being conserved and costs lowered by eliminating or reducing halls and vestibules. A framed opening divides the dining and living-room. Here one could have an attractive colonade with such built-in features as a book-case and writing-desk.

One criticism of the living-room might be that a sufficient wall space has not been provided to allow a piano to be placed to advantage. One of the newer elements in modern home-planning is to see that suitable provision is made for all the more important pieces of household furniture. To put it in other words, the furniture is first visualized in position and the lay-out of doors and windows planned accordingly.

Ventilating the Kitchen.

The floor plan as shown allows for three fair-sized bedrooms, each with a roomy clothes-closet. The floor sizes as given are such that stock lengths of joists, etc., could be worked without any cutting, thus doing away with a certain amount of waste and saving the time required to cut these pieces to length. Having two windows in the kitchen means that this department may be kept reasonably cool during the summer as a movement of air may be induced by opening both windows. A transom above the rear door would also assist in securing adequate ventilation.



Less expensive bungalow with floor plan

Are You Boosting Publicity Campaign?

Furniture Manufacturers Endorse New Movement—Details of "Better Homes Campaign"—Outline General Conditions—Future Viewed with Confidence

A well-attended general meeting of the Furniture Manufacturers' Association was held in Toronto on Tuesday, July 27th. This was called in conformance with their policy of having regular meetings at stated intervals. About forty-four manufacturers were in attendance. Several interesting addresses were given on questions of interest and the work of the newly-formed publicity bureau was outlined.

Replying to an inquiry, the secretary, Mr. Cawkell, stated that the Western Canada Colonization Association, which had been recently formed in Western Canada, was well worthy of active support. The men connected with the movement were upstanding, practical business men and the movement itself has received the endorsement of many of the most prominent men in Canada. The object of this association is to populate the western farm lands and to assist all settlers going on the land by advising as to character of soil, etc., and furnishing other information of interest and value. It is an honest and intelligent effort to develop the West along practical lines, and should receive the consideration and support of the furniture manufacturers.

Outline of Business Conditions

James E. Ferguson of the cost accounting department, outlined general trade conditions with particular reference to the furniture industry. He stated that business conditions in general during the past few weeks have not shown any marked improvement. A spirit of caution pervades the market and there is reluctance on the part of buyers and consumers to take further steps, pending the clearing up, to some extent at least, of the present uncertain situation. The vibrations caused by the spring price cutting have not entirely disappeared and although talk of panic is scarcely heard now, there is being exercised a caution which will in itself help greatly to clarify the situation.

The iron and steel industry continues to be exceptionally busy, goods are hard to get and prices are continually advancing. Nails are now quoted at $6.25 base, and practically all items used in the industry are scarce. Lumber has declined somewhat, our figures showing a reduction of 3.8 per cent. in this group since last April. Quartered oak and gum show greatest decline and are likely to drop still further. Native woods are firmer. Plain oak is also easier, but not to the same extent There has been no report of easier prices on walnut and mahogany. Veneers of all kinds are still difficult to obtain.

Finishing materials are easier, shellac, oil and turpentine showing appreciable declines. The supply of finishing materials is good, little complaint of slow delivery being heard. It is expected that this group will get easier during the next few months. Glass shows no change. Larger shipments from Belgium are at hand, but these, while relieving supply to some extent, have had no influence on price. Packing materials are higher, largely on account of paper, which is likely to advance still higher. Textiles are still advancing and latest reports are not very promising. The present cotton crop is likely to be less than average. Spot cotton is quoted at 42c. Tapestries are getting higher each week. Bituminous coal is costing around $14.00 per ton.

Variations in Different Groups

The commodity number for July is 181.87 as compared with 181.54 last April. The weighted number shows a decrease of 2.89 per cent. in the prices of commodities since April. The groups of commodities as at this date show changes from last April as follows:

	Increase.	Decrease.
Lumber		3.8%
Glue	3.5%	
Hardware	2.5	
Finishing Materials		6.3
Glass	No change	
Packing	7.4	
Upholstering	3.1	

As indicating the activity of the industry during the past half year, the following figures show the relation of shipments to normal: January, 83.18 per cent.; February, 96.5; March, 116.6; April, 112.7; May, 103.16; June, 96.02.

At present indications point to a continuance of dullness for several weeks. July orders have been small and buyers are marking time. Crop conditions are good, and form the basis of an optimism which is gradually dissipating the doubts caused by the spring disturbances. Recent reports estimate the Western wheat crop at 300,000,000 bushels and, once this is assured, orders are likely to come in in such a manner as to satisfy all. There is no need for pessimistic thoughts of the future. This is a resting time and practically everyone is glad to have a breathing spell. The outlook is for steady business during the fall and winter.

Co-operate with Cost Accountant

The secretary advised the manufacturers as to the necessity of sending blueprints of all new lines brought out to the cost accounting department at Woodstock, Ont., so that Mr. Ferguson, in charge of this department, would be kept fully advised as to all new lines and designs that are being placed on the market.

Ralph Kilgour of J. W. Kilgour & Brother, Limited, Beauharnois, P.Q., was called on by the chairman, W. J. Anderson, to address the members, outlining the conditions which exist in the East. Mr. Kilgour said that trade conditions in the furniture industry in Quebec were very satisfactory. Business was a trifle quiet in the cities, but in the rural districts the volume of trade offering was remarkably good. He had no doubt but that the Eastern furniture dealer would enjoy a satisfactory fall and winter trade, and looked forward with every confidence to future conditions in Quebec.

R. A. Sproule of R. A. Sproule & Sons, Limited, furniture manufacturers, Ottawa, gave an account of the Ottawa woodworkers' strike, which has just been ended by the men returning to work under the old wage schedule. The two furniture factories in Ottawa were affected along with other members of the woodworking industry. He referred to the great advantages accruing to the furniture industry through

being able to meet together and exchange information, and to how fortunate the manufacturers were in having such an efficient organization.

J. A. Minchner of the North American Furniture Co., Limited, Owen Sound, Ont., gave an outline of the strike which had recently taken place in Owen Sound. He stated that it had been of brief duration and that the men had accepted the terms that were offered before they went on strike. A tribute was paid to the services rendered by the fairwage officer from Ottawa, who had advised the men to return on the terms held out.

Outline of Publicity Scheme

The chairman next called on Mr. Cawkell for a statement of the progress that had ben made in organizing the newly-formed Publicity Section. This department is to be known as the "Home Furnishings Bureau," and is to be an educational and advisory service for the attractive furnishing of Canadian homes. The services of this department are to be directed by Mr. Wm. Cawkell. T. Lyle Blogg has been engaged as advertising manager and the James Fisher Co. of Toronto are to act as publicity agents. Steps have been taken to secure larger and more suitable premises and it was anticipated that they would be in a position to actively undertake their publicity work by September 1st. The service will be broad and comprehensive in its scope, both the manufacturers and retailers will be consulted and the work conducted in the best interests of all concerned and with the greatest possible economy consistent with efficiency, bearing in mind that true economy can best be secured by efficiency.

James Fisher, of the James Fisher Co., Toronto, advertising experts, gave an interesting address, outlining the publicity work. He illustrated his talk with a large chart, which showed clearly the aims of the publicity bureau and its different fields of activity. The campaign is to be known as the "Better Homes Campaign," and is to be carried on by the Home Furnishings Bureau. The ideal aimed at is the "improvement of Canadian Homes," and the work will be carried on under the slogan "Better Homes Mean Greater Happiness."

Scope of Publicity Campaign

Work will be done in four fields—with the manufacturer, the traveller, the retailer and with the consumer. The work among the furniture manufacturers will consist of: (1) Talks to the manufacturers, showing the possibilities of the propaganda and what has been accomplished in other lines by advertising. (2) Letters to the furniture manufacturers, outlining plans and keeping them informed as to the progress of the campaign. (3) Inducing the manufacturer to use in all advertising and on letter heads, etc., the slogan: "Better Homes Mean Greater Happiness," so as to link the campaign together. (4) Encourage the manufacturers to get out booklets of their own for circulation among the public. (6) Suggesting that the manufacturers should post their artisans about the campaign so that they will take greater pride in their work.

Suggestions for carrying on the propaganda among the travellers consisted of: (1) Each manufacturer should call his representatives together and carefully explain the objects of the campaign. (2) The general committee should issue a booklet for the travellers, explaining how they can help further the campaign. (3) Ask the travellers to urge the dealers to put in "better homes" window displays. (4) Arrange a general meeting of furniture travellers and have addresses given, showing how they can help the dealer.

In the retail field the publicity campaign will be carried on as follows: (1) Using trade papers, letters and folders to explain the campaign. (2) Sending retailers folders, containing copies of advertisements used in magazines. (3) Assisting dealers through articles in furniture publications on "Improved Selling Methods" and "Window Display." (4) Educate dealers to improve their local advertising and to adopt the campaign slogan "Better Homes Mean Greater Happiness." (5) Supply dealers with cards and other material for window display. Prizes for best window display. (6) Call dealers together at the different centres and explain the objects of the campaign.

The propaganda to be carried on direct with the consumer will consist of: (1) Advertising in newspapers, farm journals and magazines, using the campaign slogan. (2) Preparing articles on "Home Improvements" that magazines and farm papers would be glad to publish free of charge. (3) Encourage magazines to boost home improvement by furnishing them with the cuts of the different classes of furniture for free publication. (4) A competition might be launched offering prizes for articles and essays on subjects connected with home improvement. (5) Encourage speakers at Women's Institutes to give talks on "Home Improvement," and furnish them with suitable material. (6) Encourage manufacturers to get out booklets of their own for distribution among the public, showing lines of better furniture. (7) Have general book on "Better Homes" prepared for circulation among the public.

At the conclusion of this address the meeting passed a resolution endorsing and approving the plans submitted by the Publicity Committee, which had previously met with the approval of the Executive Committee, which had previously met with the approval of the Executive Committee. This concluded a very profitable and successful meeting.

Where is Your Organization Weak?

A classification of business failures as compiled by Bradstreets follows:

Failures due to	Per Cent.
Incompetence	33.2
Inexperience	6.6
Lack of capital	30.3
Unwise credits	1.9
Failures of others	.9
Extravagance	.6
Neglect	2.4
Competition	4.2
Specific conditions	13.4
Speculation	.4
Fraud	6.7

An analysis of these figures is enlightening. They show that at least 82.5 per cent. of failures are due to shortcomings of personnel or faults of management in some form or other. The exceptions are failures of others, specific conditions and competition.

There would have been a different story if the management of these business wrecks had possessed those essential qualifications for successful management—knowledge of conditions, foresight and vision.

The successful executive must know the facts; from the facts he must plan with foresight, and further, he must have the vision to discern trends and possibilities that will lead to strength and growth.

A reinforced concrete brick-faced plant. In this particular building the left five bays, added after the original construction, were designed to match the older portion of the plant

A Better Way to Build Your New Plant

Fireproof Construction is Profitable Investment—Comfort and Convenience of Employees Should be Considered

By Frank D. Chase*

(concluded from last issue)

CONCRETE cannot be used as economically as steel for long spans, in spite of assertions to the contrary, and it is not economical as compared with either steel or timber construction for light loads. It is an axiom that the heavier the load and the shorter the span, the cheaper concrete is, compared with other types of construction.

Reinforced concrete requires extreme care in its placing, and "eternal vigilance" is the price of good concrete. It is only by means of a very efficient field organization, in both the mixing and placing of concrete, that results which one can be sure of can be obtained.

Combination of Different Types

In almost every industrial plant use can be made of more than one of the three types of construction described. It is frequently desirable to build a single building embodying all three types of construction, and the most efficient and economical building is the one in which is used the type or exact combination of types which will give the most efficient results for the least cost. In other words, it requires engineering judgment to determine which type of building is best suited to the purpose for which a plant is to be used. An intelligent architectural treatment of the buildings, suiting the style to the occupancy, can produce structures which are not only useful and economical, but beautiful as well. A steel structure can be built to-day practically as cheaply as one of wood. This is particularly true where cranes are to be used. If properly designed a steel structure is, of course, durable and rigid and will withstand any fires which ordinarily may occur within or adjacent to the plant.

Non-combustible roofs are desirable and may be made of gypsum or concrete tiles, upon which is placed a covering of "tar and gravel" or other roofing. Adjacent to any interior heat hazards only strictly resisting roof should be used, and on all sides of a building where other buildings are close by, wire glass in steel sash should be used, instead of plain glass. Flames which might penetrate the latter will be kept out by wire glass. If wood is used, heavy posts and girders and at least two-inch roof plank are no more expensive than a closer spaced, lighter construction. No substantial building should have a one-inch plank roof.

Fireproof Construction Preferred

A steel non-combustible building with tile fireproof roof does not ordinarily require the carrying of insurance other than for wood sheds, offices, etc. It is a simple question of mathematics to prove that the saving of insurance over a period of four or five years

*Frank D. Chase, Inc., Industrial Engineers, Chicago, Ill.

will pay for the additional cost of fireproof roof over one built of timber joists and with plank sheathing; and a fireproof building without insurance is preferable to a building which is built largely or partly of wood and which is covered by insurance. In other words, it is better to have a plant which will not burn than one that may burn, as we know that insurance does not pay for the loss of business and seldom replaces the plant. A fire is always a serious business loss, and when this danger can be avoided without cost, there is no excuse for inviting it.

The style or type of building will affect its success as an operating proposition, and is important as regards light, heat and ventilation, and will determine whether or not the plant is one in which men want to work and can work to the best advantage and with the least handicap of physical discomfort. State regulations are becoming more stringent yearly with regard to the conditions under which men may work, and there is no excuse for a dark and poorly ventilated plant, cold in winter and hot in summer. It is literally poor business, because the men are becoming educated to expect agreeable working conditions, and the plant which does not offer these conditions is becoming increasingly handicapped in obtaining men.

Equipping the Building

The entire mechanical system of industrial plants should be designed with two distinct points in mind—efficiency and welfare of employees. The question of proper heat, light, ventilation and fire protection is equally as important in a modern industrial plant as the building itself, and the co-ordination of such mechanical equipment with the building construction is of great importance. It is essential that such facilities be designed with regard to the particular requirements of the plant occupancy. Local legislation and provincial laws regulating such equipment should also be considered.

All modern heating systems should be designed with a view to flexibility in operation so that the coal consumption can be governed by outside temperatures. The use of a direct radiating vacuum heating system is recommended for low buildings, housing industries which do not encounter serious ventilating problems.

A hot blast indirect system of heating is necessary for buildings having very high ceilings, and in many cases a combination direct and indirect system is of advantage in localities having widely varying outside temperatures. A hot blast heating system is of additional advantage in that it can be utilized during the summer months for ventilating purposes. Hot water and gravity return systems should be restricted to buildings having comparatively small ground areas.

There is a wide difference of opinion among heating engineers in regard to the amount of radiation necessary for varying types of industrial plants. Heat distribution is not a mysterious nor a complex problem in a well designed plant, as the principal governing factors are the frequency of air changes necessary in each department, the relative glass area, the sealing quality of the window sash, and the conductivity of the walls and roof.

Some industries require more ventilation than others. As a rule a building which is properly designed, both architecturally and in its heating facilities, will afford ample ventilation through natural means. Mechanical ventilation, however, is necessary in some instances.

Installation of electric wiring for both lighting and power is governed by the "National Electrical Code," or in Ontario, by the Rules and Regulations of the Hydro Electric Power Commission, and such installations must be designed so as to afford proper fire protection and ample safety to employees.

Modern factory illumination is best accomplished

Interior of building shown on the opposite page. An example of flat slab concrete construction.

through so-called "general lighting systems," using units of from 75 to 500 Watt, type C nitrogen lamps, mounted on or near the ceiling. It is preferable to install single units of large wattage and mount them in reasonably high positions. Drop cords and individual local lighting should be avoided, except in extreme cases where particular operations require them. In some instances a combination of local and general illumination is of advantage. Special attention must be given to efficient reflecting elements that will concentrate the proper amount of light where it is most needed. Various industrial operations require different lighting intensities, and the determination of size, spacing and height of lamps is of the utmost importance.

The ideal arrangement of sanitary conveniences includes a main combination wash, locker, and toilet room with enough supplementary toilet rooms to accommodate the number of employees. Partitions separating the toilet rooms from wash and locker rooms should extend to the ceiling, and all toilet rooms must be provided with outside windows or ventilated skylights. Wash down closet bowls with split seats and flush valves are preferable, and the laws of most States specify that enameled iron trough wash sinks be installed with combination hot and cold water cocks and no stoppers, so that tempered running water can be used for washing purposes. Of all trades entering into the construction of industrial plants, that of plumbing is governed by the most rigid legislation, and the

Clear floor space has been gained by a combination of steel and wood roof construction

regulations in different States vary to such an extent that a careful study of each case is absolutely necessary.

Adequate fire protection is usually a profitable investment, even in fireproof buildings. The distribution of sprinkler heads should receive careful attention, as there are some industries where the breakage of a sprinkler would be a serious menace to finished stock which might be ruined by water. An efficient system of yard pipes, hydrants, hose houses, etc., is almost demanded for the proper protection of modern industrial plants.

Proper Handling of Plant Design

There is no kind of building occupied by man where money can be more easily saved or wasted in its design and construction than a modern industrial plant. So far from being a mere question of four walls and a roof, it calls for skill on the part of the designing engineer to obtain the required results at a minimum cost. There are a thousand and one details in designing and constructing such a plant where money can be saved or wasted without even the knowledge of the owner or purchaser. Specific instances might be cited to show where two buildings almost identical in appearance, varied in cost forty to fifty per cent., due to the difference in handling the details of design and construction. Examples also might be cited of buildings which were so inadequate for their purposes as to make operating costs far in excess of what they should be, and other examples might be given of excessive expenditures for buildings which were far too elaborate or expensive for the required processes. By careful design a nice balance between the expensive and cheap can be obtained to make the economical and efficient building.

The crudest way to build a plant, and one which formerly prevailed, is to give to contractors or steel shops instructions to design a plant and submit a bid. Careful study of the problem and intelligent competition are then difficult to obtain. Under such a plan, usually men are called in to help in designing whose sole object is to sell some material. This method is not, it will be admitted upon reflection, very efficient, and the results are usually disastrous to the man who pays the bills, although in many instances he does not even know that he is paying frequently for materials which are not suitable and which are costly. He gets a building, perhaps a good building, but not the one best plant to meet his operating needs.

The method of Frank D. Chase, Inc., in handling industrial plants, evolved through years of industrial development, is a complete service, though a logical and simple one. Always working with a client, it covers, so far as may be desirable, the items here discussed, including location, site, layout, and design and takes entire charge of the construction and equipment of the physical plant. This unification of effort and centralization of responsibility results in a close, harmonious and satisfactory relationship between owner and engineer and produces in a minimum time and at minimum cost a successful plant.

Studying Canadian Conditions

THE Imperial Trade Propaganda Organization, an association of British manufacturing interests for the furtherance of British business throughout the world, is making a strenuous effort to study conditions in Canada with the idea of presenting authoritative information before British manufacturers. To this end, Mr. Theo. Feilden, director-general of the organization and editor-in-chief of the Empire Mail, is on a tour of this country to secure the most reliable data possible in connection with Canadian conditions, financial, commercial and industrial. This information is intended to indicate how trade can be extended between the Mother Country and the Dominion and present an up-to-date and true picture of Canada's potentialities and opportunities. It is confidently expected that, as a result of Mr. Feilden's investigation, British capitalists will not be slow to recognize the possibilities for expansion of their businesses and investment of their capital. Mr. Feilden on his trip will accompany the delegates of the Imperial Press Conference.

The National Boiler and General Insurance Company, Manchester, England, have prepared a useful pamphlet entitled "Repairs to Boilers and Engines by Welding." The illustrations are particularly good.

Pianos and Phonographs for Overseas Trade

Dirth of Musical Instruments on British Market—German Manufacturers After this Business—Requirements of Trade Must be Satisfied —Profitable Field Awaits Development

Manufacturers of pianos and phonographs desirous of making permanent overseas connections should pay particular attention to Great Britain. True, a strong demand for musical instruments exists in other European countries, but the British market, alone, is capable of absorbing thousands of pianos and medium priced phonographs each year. This was clearly brought out during the investigations recently made in the Glasgow district by Trade Commissioner J. Vernon McKenzie.

This business, while available, will not be secured without competition, and it will be necessary for the Canadian manufacturer to produce instruments that satisfy all the requirements, in regard to design and other details, of the British trade. The volume of business offering would warrant the production of special overseas lines. At the present time the German instrument is beginning to come into competition with Canadian and British-made pianos, and there is stated to be but little prejudice against the first-named article.

Large Orders to Be Had

One leading British piano-importing house, with head office in Scotland, will handle a considerable number of Canadian-made pianos during the present year. One of the owners of the business stated to the Trade Commissioner that he had met buyers from all over the world during the last few weeks who could "absorb" at least 2,000 Canadian pianos if they could be guaranteed deliveries at the prices prevailing at the present time. Of course, to secure all this business early delivery would be advantageous, but there would be a good chance to secure a considerable proportion by deliveries some months or a year hence, if only a specific date for the delivery of, say, 50, 100, or 500 pianos could be settled upon and rigidly adhered to and the price guaranteed.

It is interesting to note that the British importer referred to got in touch with these piano buyers at the Canadian Industries Fair, which was held in London in June. He met there buyers from nearly all the British Dominions, and also from a few foreign countries, Greece in particular. The Greek firm does not ask for credits, but is prepared to pay c.o.d., and even willing, in case of early deliveries, to arrange a credit in London. This importer points out that Canadian manufacturers are not likely to come into direct contact with a large number of these potential customers, unless they meet them in the United Kingdom. These buyers in the majority of cases have not thought of looking to Canada as a source of supply.

Efforts Others Are Making

One of the leading German firms at present placing their products on this market is Ernst Kaps, of Dresden, who has been in the piano manufacturing and exporting business since 1858. His circular, issued to the piano trade, is apparently being sent broadcast throughout the civilized world, and a copy which has reached the office of the Trade Commissioner for Glasgow is an example of good advertising which might well be followed by Canadian exporters of other lines as well as pianos. This sheet shows seven cuts of very handsome models, and they are much more in accordance with British design than practically all Canadian pianos. Under each model the size, wood and the nature of the finish is given in four languages —German, French, Spanish and English. At the bottom of the sheet appears this paragraph in English:

"All grand and upright pianos are overstrung, have 7¼ octaves from A to C4, finest ivory keys, gold enamelled iron frame, metal wrest plank, patent checaction, etc. Slight variations from the drawings are reserved. Copyrighted."

This paragraph appears at the top of the sheet in German, in French on the left, and in Spanish on the right.

Must Conform to Requirements

One particular difference between German and English pianos on the one hand, and Canadian pianos on the other, is that the former have that part of the wooden frame at each end of the keys rounded, while the Canadian-made pianos—at least those that are being sent to this country—are squared. In addition, a study of seven cuts as shown in Kaps' advertisement to the trade, will show that the panelling is much more artistic than seen in many Canadian-made pianos. It may be mentioned that this piano is being sold here at just about the same price as Canadian pianos of similar quality, though how long it will be before this price is lowered when the Germans reach a larger production and get back more closely to a pre-war basis, cannot be foretold.

Piano importers urge very strongly that Canadians take note of certain points in German as well as English piano models, and in order to build up a large and permanent trade in this way, adopt whatever the buyer here demands or prefers.

It may be mentioned here that 300 Canadian pianos from one firm will, in all likelihood, be imported into Scotland during 1920. The Canadian makers manufacturing this piano have very wisely allotted a percentage of their factory output to this territory, and are rapidly adhering to this plan, despite temptations which may arise owing to any demands from the Canadian piano-buying public. The representative of another well-known Canadian company recently made a business tour throughout several of the leading Scottish cities, and reports that he was able to place pianos very readily with Scotch retailers, their only complaint being that they could not get larger deliveries.

It seems to be the concensus of opinion of the trade that the pianos which can be sold here to the best advantage should be placed on the retail market at about £115, or considerably less if possible. A Canadian exporter of gramophones recently showed to the trade here a large number of very artistic models running from £35 to £40 to more than £100. He has been very widely informed that the best selling models should be from £40 down to about £25 for cabinet machines. Table models are much cheaper and more popular.

Production System for Woodworking Plants

Keeping Records of Work Going Through Different Departments—Convenient Form of Chart Giving Full Information—Foreman Responsible for Reports—Trucking System Important Item

By L. F. Simpson*
(Last of series)

In fulfilling its proper functions it is necessary for a production department to, at all times, know how the various component parts are progressing through their different stages of manufacture. In order that this information may be immediately available and may be used to advantage a "Record of Work in Progress" should be kept.

Let us start with the veneered parts passing through the veneering department and follow the course of construction of the cabinet. (In a previous article we intimated that we were applying this production system to the manufacture of phonographs, but that the same principles could be adapted to any line of woodworking). The panels, doors, tops, motor boards, etc., are built up in the veneering department, properly seasoned and sent to the machine or mill room. At the end of each day's work a report is made out by the foreman covering the quantities of panels, doors, etc., made up or worked on during the day. This report is made in duplicate on a 5 in. by 8 in. form, the original going to the production department and the copy to the factory superintendent. In the production department all information received from department reports is filed so as to be accessible for immediate reference and comparison of each day's output. A convenient and efficient method of keeping close tab on production is to have these reports entered each day on a large chart or black board similar to the one shown in the accompanying sketch. Where the wall in the office of the production manager is suitable, it is common practice to have this chart painted on the wall.

Let us examine this chart for a moment. If you follow the departments from left to right as shown by the headings you will follow the cabinet through its different stages until finally packed, ready for shipment. From the veneering room the work goes to the

*General Machinery Co., Toronto.

VENEERING DEPT. — PRODUCTION MILL

WEEK OF	MODEL-No 2								No 3								No 4								No 5							
PART No	DESCRIPTION	MON	TUES	WED	THU	FRI	SAT	WEEK TOTAL	TOTAL	MON	TUES	WED	THU	FRI	SAT	WEEK TOTAL	TOTAL	MON	TUE	WED	THU	FRI	SAT	WEEK TOTAL	TOTAL	MON	TUE	WED	THU	FRI	SAT	WEEK TOTAL	TOTAL
1	TOP OF LID																																
4	TOP FRONT PANEL																																
6	RH GABLE																																
7	LH GABLE																																
8	BACK GABLE																																
9	MOTOR BOARD																																
15	GRILL																																
16	TONE MODIFIER																																
17	DOOR																																
18	BOTTOM																																
29	HORN																																
1	TOP OF LID																																
4	TOP FRONT PANEL																																
6	RH GABLE																																
7	LH GABLE																																
8	BACK																																
9	MOTOR BOARD																																
15	GRILL																																
16	TONE MODIFIER																																
17	DOORS																																
18	BOTTOM																																
29	HORN																																

PART No	DESCRIPTION	No 2								No 3								No 4							
		MON	TUE	WED	THU	FRI	SAT	WEEK TOTAL	TOTAL	MON	TUE	WED	THU	FRI	SAT	WEEK TOTAL	TOTAL	MON	TUE	WED	THU	FRI	SAT	WEEK TOTAL	TOTAL
1	TOP OF LID																								
2	TOP MOULDING																								
3	TOP RAIL																								
4	TOP FRONT PANEL																								
5-A	MD FRAME END																								
5-B	MB FRAME SIDE																								
6	RH GABLE																								
7	LH CABLE																								
8	BACK GABLE																								
9	MOTOR BOARD																								
10A	FRONT LEGS R																								
10-B	FRONT LEGS L																								
11	LEGS REAR																								
12	RAIL BELOW DOORS																								
13A	CENTRE SHELF																								
13B	" "																								
13C	" "																								
13D	" "																								
14A	GRILL FRAME TOP																								
14B	" " BOTTOM																								
14C	" " SIDES																								
15	GRILL																								
16	TONE MODIFIER																								
17	DOORS																								
18	BOTTOM																								
19	SILL UNDER MB																								
20	SHELVES																								
21	BOTTOM SHELF																								
22	SIDES RC																								
23	PACKING SILL																								
24	FRONT STRIP RC																								
25	BACK " "																								
26	GLUE BLOCKS FOR BS																								
27	SIDE STRIPS RC																								
28	BEAD																								
29	HORN																								
30	KNOBS																								
31	FRAME FOR HORN																								
32	GLUE BLOCK FOR HORN																								
33	LID SUPPORT BLOCK																								
34	MB SIDE SUPPORT																								
35	STRIP FOR HORN																								
36A	MB CLEATS S																								
36-B	MB " L																								
37	BLOCKS FOR RC FRONT																								
38	ANGLE GLUE BLOCK																								

Figure 1. Sketch of Production Chart

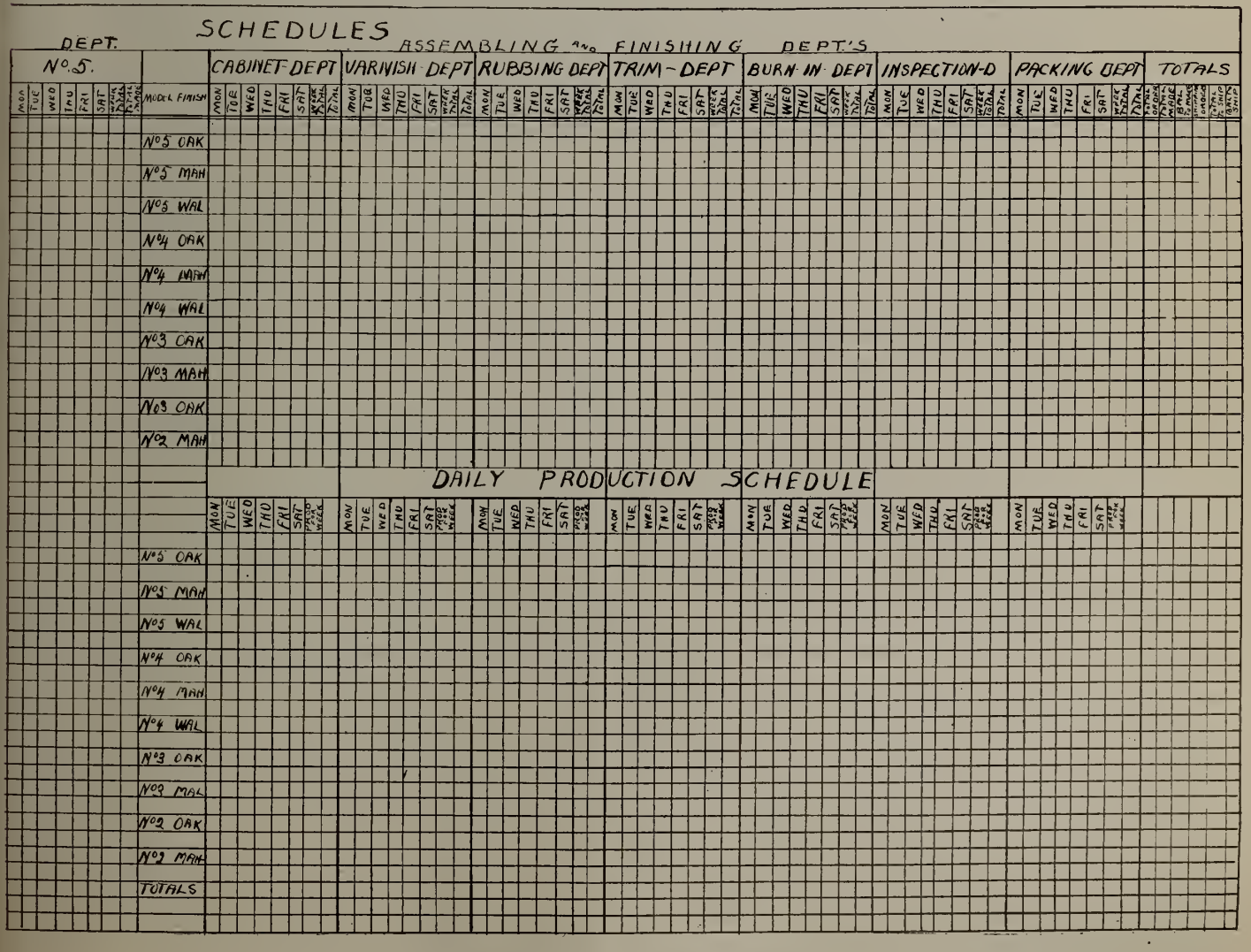
machine department where it will be noted that the work done and quantities of parts are recorded, at all times, from the breaking out saw to the final inspection. A 5 in. by 8 in. card, known as a word card, is used, and in Fig. 2 it can be noted the kind of information that is recorded and used in keeping records of production. If at any time a quantity of any particular part is to be rushed through a part lot work card is made out which follows the special order to its completion. The original card bearing the number of pieces sent on stays with the larger lot. One work card covers only one kind and one lot of any part. As all work is inspected before leaving this department the total number and kind of items produced during the day's work is recorded on the inspector's report, from which production records are obtained.

After being inspected, all the parts are passed into the stock room. Here a record is kept and requisitions made for all stock issued to the cabinet room. The different parts are usually issued in sets of 25, 50 or 100 or in sets comprising all the parts required to make up a sub-assembly or cabinet.

A sub-assembly might be composed of either the two back posts and the back gable of the cabinet or the two front posts, the bottom, centre and top rails or some such units that can be assembled together more conveniently and quicker by one lot of men, because one man does not have to handle so many parts and therefore makes fewer unproductive movements. No doubt there are arguments for and against this method, nevertheless it has worked out to good advantage in cabinet assembling.

A record of these sub-assemblies is kept by the foreman for this information. These all go into the complete assembly of the cabinets, various groups of men doing one operation. For instance, one group would set up the skeleton, such as the gables, posts, rails, etc., the next would add the motion boards and horns, another would place the record shelves and so on until the cabinet would be completed in the white. Each case is numbered at the first operation or when the skeleton is set up and this number is the means of identifying a particular cabinet throughout the various departments. All component parts such as tops, doors, fronts, etc., bear the same number as the cabinet to which they belong. The report from the cabinet department, made out by the foreman, would indicate the total days production of cases absolutely completed, the superintendent getting one copy and the production department the original.

The cabinet after being thoroughly sanded and cleaned passes on to the finishing department. Oak finished cabinets go directly into the fume room to be thoroughly saturated with ammonia fumes then sanded, stained, dried, sanded again, varnished, dried, sanded a third time and finally waxed. During all these operations a record is kept by the foreman and his assistant, and a report made to the production department each day. The same record record is kept of walnut, mahogany and the different finishes as



Original size twenty feet by six feet six inches

Showing trucks with racks for handling small parts in finishing room

they pass along through their particular process of finishing.

All cases requiring satin finish are passed on to the rubbing repartment, where, in the same systematic way the tops, doors, cases, etc., may be rubbed by groups of men, with the foreman keeping the record as the parts pass along and reporting each day the results. Oak finished cabinets pass directly from the finishing department to the trimming department where doors are hung, tops located, and all trimmings put on, motors installed, and in the same way a record is kept by the foreman and reported each night.

When all parts are assembled and practically ready for final inspection they pass to the burning-in or touching-up department where all scratches or other marks, caused in handling cabinets while passing through the different operations, are removed. Again the foreman is responsible for the report of his daily production and advises each night his results to the production department.

The cabinets, touched up and practically ready for shipping, is finally inspected, the motor tested and any defects repaired. The inspection is done entirely by the inspection department who keep tab of the numbers of the cases and make a report each night. This is the final operation on the cabinets and they are then passed on to the shipping department when they are packed ready for deliveries. In the shipping department a record is kept of all cabinets received, with their individual numbers and the numbers of all shipped out. Shipments are made on written shipping orders from the production department.

A very important phase entering into the course of the cabinets through the factory is the handling or trucking from one operation to another and from department to department. Much time, and therefore money, can be wasted without the proper facilities for carrying cabinets or parts from one place to another. One instance of where good trucking facilities help materially is in the varnishing room, where so many parts have to be hand'ed and handled carefully so many times. The tops, doors and cabinets all have to be varnished or stained separately and taken in and out of the drying room. If then, each part is carried individually, a man looses more time travelling from one place to the other than he actually spends on productive work. To overcome this loss trucks properly equipped with racks may be constructed at a reasonable cost that will pay for themselves in a very short time. Trucks shown in the accompanying photo will enable one man to handle 10 to 100 times as many parts, and an ordinary laborer will answer as trucker as your expensive varnishing man. This naturally will assist materially to increase production and lower costs. Ordinary four wheeled trucks or better still elevating or lift trucks, with suitable platforms, are a great convenience as well as saving time in handling parts in the white through the machine room and on into the cabinet shop.

An organized inspection department of comparatively few competent men will add materially in saving the time of the workmen in the assembling department. If for instance all component parts making up the cabinet are inspected before leaving the machinery department, for dimensions and quality, your cabinet makers will not have to fit pieces, nor cull them out, at least to the extent that they would without inspection. Of course the inspection department does not do all the inspection. Each foreman is held responsible and must see that his work is done in the best possible way. In a large factory it is impossible for one man to cover every thing even in his own department.

In the machine, cabinet, final finishing or touching-up departments, inspection is required. It is also well to inspect all motors before assembly into cases. One man, the chief inspector, covers all departments and is responsible for his daily reports in each case, made out on a special form and sent to the production department.

WORK CARD

DATE ..... M.O. No. .....

Pcs. Ordered ..... Pcs. Started ..... Pce. No. .....

DESCRIPTION .....

OPERATION	DELIVERED	DATE	SIGNED

No. Sent On						
Date						
Bal. Due						

RECEIVED	INSPECTOR
No. Rec'd	Date Inspected .....
Date	No Rec'd .....
Signed	No. Rej .....
	No. Accepted .....
	Signed .....

STOCK ROOM

Date Rec'd ..... Bin Loc .....

No. Rec'd .....

This card to stay with main lot and not to be turned in until order is completed. In case of "Rush" or "Part Lot" shipment the foreman shall issue card marked RUSH or PART LOT and enter quantity on this card.

Figure 2. Details of work card

Value and Application of Standards

Units for Measuring Accomplishment and Efficiency Termed Standard Hour —Used to Compare Productive Value of Men, Machines and Plants—Industry Should be Standardized

By James J. Martindale*
(First of series)

That which is set up and established by authority, custom, general consent, or performance, as a rule for measure of quantity, weight, extent, value, quality or performance, is known as a standard. Many such standards were set up years ago. The ancients had their cubit (20.63") and digit (.729"), while we measure length in feet or inches. The Egyptian hon equalled an approximate volume of 29.2 cubic inches. Sacajawa, the intrepid Indian girl who piloted Lewis & Clark across the continent, told them the "Big Water" (Pacific Ocean) was so many "Moons" or "Snows" away.

On the North American Continent, athletic records have been the measure of standards in sport for a number of years. In 1888 a standard of ten seconds for the 100 yard dash was set up by P. Westing and since that time one has to be in the ten second class to be selected for competition in any of the crack events at that distance. A. C. Kraenzlein, that wonderful Penn athlete in 1898, set a mark of 23-3/5 seconds for the 220 yard hurdle which has stood until to-day. J. P. Jones of Cornell in 1913 ran the mile in 4 minutes 14-2/5 seconds, and this standard has not been exceeded as yet. Geo. Goulding, the Canadian, probably the most wonderful walker who ever lived, established many records, one of which is the one-mile walk in 6 minutes 28 seconds.

Invaluable as Applied to Industry.

All manufacturing results should be measured by standards in order to determine the degree of accomplishment. Many plants to-day have rather complete standards set on their activities, but there are hundreds, perhaps thousands, of establishments where standard times and standard hours are unfamiliar and undefinable terms.

Standards of to-day may last for years, yet owing to change in methods or improvement in operation they may have to be set up anew. The athlete is continuously bettering his performance. This is due to a number of causes such as a better breed of athlete brought about by improved living conditions, greater knowledge of fool values and the best way to raise the child to manhood. It is also partly due to better training methods and the knowledge of the one best manner in which to run, jump or hurdle which manner is based upon the past performances of the champions.

A standard on sanding phonograph cabinets or the operation of a glue machine or squaring saws will probably be representative for many years to come unless some radical change in methods or equipment take place. Such a mark once set will allow of a daily or payroll period, or monthly period comparison to be made of the output of the particular activity and such a comparison is a just one, as it is based upon facts and study.

Standard Hour Comparative Basis.

The Olympic games' results can be used as a mark to equal or better in all countries of the globe. In the same way manufacturing accomplishments translated to standard hours is a figure comparable to a similar standard hour figure of a plant in another country.

The monthly production of packing industry in Canada where various kinds of meat are packed can be measured in one figure—namely, standard hours. The output of a sister concern operating in the United States and packing the same kinds of meat can be converted to standard hours. Thus a just comparison of the accomplishments of the two plants is obtainable. A comparison in canned meat by gross or dozens, or boxes is not just. This is so because the standard times set on the vairous operations necessary to can meat will take into consideration all essential factors controlling the work in each country. The multiplication of quantities of output, in various kinds of meat, and the standard times applying to the respective classes of output furnish a result in standard hours.

In a certain wood shop making chairs the production department received considerable censure due to the fact that the output of a sister shop on chairs was somewhat greater. Upon investigation it was ascertained that the second shop did not make all the chairs under discussion—certain details of construction were carried out in another plant. If both shops had been on a standard hour basis and the output had been measured in standard hours, comparisons could have been conveniently and justly made. Upon investigation it was shown that the first shop was turning out more production, but before this information was obtained there was considerable disturbance and jealousy.

Figure Representing Efficiency Obtained.

Having the relation of the standard hours of output to the actual hours of work, an efficiency per cent. can be obtained which is a figure comparable to the efficiency per cent. of a similar plant.

There is no real obstacle to the development of standard times in practically every department of a shop and the consequent obtaining of standard hours and efficiency figures applying to each department and the plant as a whole. These figures are a true measure of accomplishment. They form the basis of praise or censure—raise in pay or discharge. They show up weak points in the chain of production and measure the results due to the application of an intelligent remedy.

Unfilled business can be translated into standard hours and charged to the various departments. If a certain department is running 80% efficient and the standard hours lined up in new work is 16,000, then the actual hours of work ahead of this particular activity is 20,000. With a department payroll of 50, the time required to complete this output is approximately 8 weeks.

Presuming it to be essential that the department in question make delivery of its part of the factory output in five weeks—the necessity is immediately apparent to radically increase the production of this particular

*James E. Morrison Co., Industrial Engineers, Detroit, Mich.

department or cancel some of the business or put the burden of "kissing off the customer" on the sales department.

Transportation Systems Standardized.

For many years transportation on rail has been standardized. This was undoubtedly necessitated by the demand for safety as well as interchangeability of rolling stock. The equipment of the passenger car to-day is of a standard nature from the wheels to the roof covering. Each road, it is true, may vary its models to suit its own particular conditions, but in general the size, weight and kind of wheels, axles, trucks, journal boxes, etc., are standardized for various types of rolling stock. Track construction is quite similar on the various roads. The weight of rail and the disposition of ties and depth of ballast are practically the same on the New York Central, Pennsylvania and other high-class railroads of the country.

Safe running time is standardized. The famous Detroiter of the Michigan Central Railroad on its flight across Ontario from Windsor to St. Thomas, has a schedule time of 118 minutes for 109 miles, and it is seldom that this speed is not made. The Broadway Limited of the Pennsylvania and the Twentieth Century Limited of the New York Central have a standard running time between New York and Chicago. The fact these trains, as a rule, make their schedule is evidenced by the reliance placed upon their arrival at destination by the big business men of the country, to whom minutes are of importance.

Industry must be standardized. This is an easier job than the standardization of railroads, yet it is a big job. It has been postponed because of the failure to realize the enormous possibilities existing in its accomplishments. The North American continent is the birth place of the real industrial engineers, and this is his work whether he be in professional life or the member of a manufacturing organization.

Warm Weather Has Effect on Production

Efficiency of Workmen Greatly Reduced thus Lowering Output---Circulation of Cool, Dry Air—Varying Temperature and Humidity Gives Best Results

Every summer industrial production is cut down by the coming of hot weather, a loss which is preventable, according to a medical expert, writing in the New York Times Trade Supplement, who adds that in the present state of diminished output no effort ought to be spared to prevent waste, and he points to what has been done in this direction in the cooling of stokeholds of ships.

It must first be recognized, he says, why hot weather at once reduces the output of work. The skin is a sensitive organism supplied richly with blood vessels and nerves. These nerves are so arranged that they respond to changes of temperature by opening or closing the small vessels of the skin. When the weather is cold the small vessels are kept shut and the blood is driven inward, so that little heat is lost. When the weather, on the other hand, is hot, the small vessels are opened wide and the skin flushed with blood. Heat is thus lost and the bodily temperature kept cool. In addition, in hot weather the sweat glands become active and the evaporation resulting cools the skin still further.

"It is manifest," continues the expert, "that if the hot person is working in a room which is enclosed, or in a factory which is 'airless,' the atmosphere will be unable to absorb heat from the body. If, in addition, the room is damp the perspiration will not be absorbed. There will, in consequence, be a further effect of heat, and the small vessels will open still wider in an attempt to bring still more blood to the surface.

"The immediate effect of this on the worker is that he feels profoundly uncomfortable, and is, moreover, rendered weak. Blood cannot be present in bulk in two places at once. If it is congregated in the skin it cannot be congregated also in the brain and muscles. Hence there is a sense of weariness and exhaustion. If the process is carried further still this condition may become serious and lead to what is called 'heat apoplexy.'

"Now it is manifest that a man whose bodily effort it is to cool himself and whose blood is mostly in his skin is not likely to do good work—or, indeed, to attempt to do it. This state of matters has often been put to the test and the 'summer fall' of output is a commonplace in many industries.

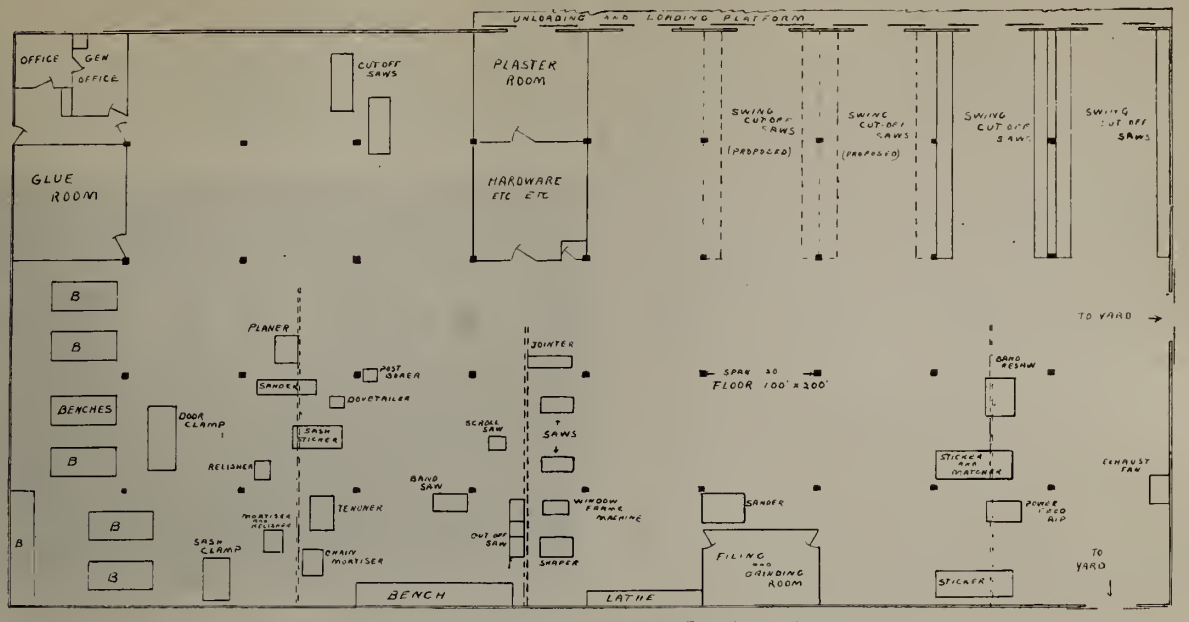
"Cooling depends on two main factors—humidity and air currents. The ordinary thermometer measures the temperature of the air. The wet-bulb thermometer determines the humidity and gives an important measure to the facility with which the body can be cooled by sweating. Further information is obtained by the use of an instrument known as the 'Kata thermometer,' which measures the rate of change of temperature— as the human body does. As a result of many experiments it has been found that a desirable working atmosphere should be, first, cool, rather than hot; dry rather than damp; diverse in its temperature in different parts and at different times rather than uniform and montonous, and moving rather than still.

"The explanation lies in the fact that the moving cool atmosphere stimulates the skin and carries away the heat. There ought, therefore, to be in every shop and office a number of connections with the outside air. The shape of these must necessarily vary. They may have to be windows, but this is only a makeshift at least. A good type in large buildings is produced by openings between the wall and roof.

"If previous experiments have been carried out there should be no difficulty in arranging fans in such a way that a fresh and stimulating atmosphere can be produced at short notice without any hurricane effect. Thanks to modern inventions, fans of all kinds are available, so that it is comparatively easy to have the cooling arrangements made perfect—especially in shops and offices where the employees work in fixed positions."

A saw with only one-third of its teeth doing their work, is equal to one with teeth five or six inches from tooth to tooth. Of course, it depends on the size of the saw.

When a man is hammering with a sledge hammer on the end of a piece of wood which is stuck in the moulding machine, it is as well to keep out of range of the cutters in case one of them flies off.



Layout of ready-cut house plant at Peterboro, Ont.

Specializing in Ready-Cut Houses

First Unit of Large Peterboro Factory in Operation—Careful Planning and Extreme Accuracy Demanded—Initial Output Two Houses Per Day

The three main factors entering into the construction of a home are time, labor and material. It is claimed that these items may be conserved by having all the lumber items for a house cut to accurate sizes at the mill or factory, as embodied in the ready-cut method of house-building. The principles involved, viz., the standardization of parts and the cutting to size and machining of all pieces at the factory are not new, as they have been employed in steel construction work for many years. It is more a question of adapting these principles to wood construction and educating the general public to the savings and advantages that may be effected by their adoption.

The ready-cut method should not be confused with the portable or sectional house idea. The two are entirely dis-similar in construction. In sectional or portable house work, the house is built up in sections which are nailed together at the factory. The sections are shipped out and assembled and bolted together on the site. In the ready-cut house idea each piece is cut to size and length, bevelled or notched, as required, at the factory. The carpenter does not have any cutting or fitting to do, but simply follows instructions and assembles the pieces as directed. In appearance and construction the ready-cut house does not differ from the type of building regularly adapted for residential purposes. Ready-cut houses may be built in all wood, brick veneer, stucco and wood or brick and wood.

Modern Factory Put Up

The Canadian Aladdin Co., Limited, with head office at Toronto, Ont., recently completed the first unit of the large factory which they contemplate constructing at Peterboro, Ont., for manufacturing ready-cut houses. In addition to the Peterboro plant, this company operates branches at St. John, N.B., Brantford and Guelph, Ont., and Vancouver, B.C.

The new factory is a modern, up-to-date woodworking plant equipped with the latest, labor-saving, production machines.

The first unit is a one-storey building, 100 ft. x 200 ft., of frame construction, with heavy concrete floors. The ceiling is high and the whole floor well lighted by a bountiful supply of natural light. The equipment is carefully spaced so that a large volume of work may be put through without over-crowding or confusion.

The site consists of about 13 acres, with excellent trackage facilities. A siding, 700 ft. long, runs through the property and gives connection with the C. P. R. and C. N. Rys. The factory is located on one side of this track and a large warehouse is to be constructed on the opposite side. The siding also facilitates the handling of the lumber and other material.

Individual and Group Drive

Electricity is the motive power employed, both individual and group drive being used. A steam plant has been installed to heat the factory and dry kilns. The refuse from the factory, which is conveyed by a Sheldon shavings exhaust system to a large concrete vault in the boiler house, will be used as fuel. The dry kiln, which adjoins the boiler house, is a single-compartment, progressive type kiln, 20 x 40 ft., and was installed by Sheldons Limited of Galt, Ont. This is a general-purpose kiln and may be used for both hard and softwoods.

The factory equipment consists of the following machines: 4 Cowan swing saws (4 others to be installed later); 2 Cowan cut-off saws with sliding table,

Yates moulder and matcher, Cowan power feed rip saw, American triple drum sander, Cowan 4-sided moulder, Cowan band re-saw, 16 in. jointer, 2 cabinet saws, 1 C.M.C., 1 Cowan, 2-spindle shapers, Yates band re-saw, Kelly portable electric router for stair stringers, etc., Cowan post borer, Cowan belt sander, 12 in. lathe. Smith & Phillips window frame machine, sash dove-tailer, sash and door relisher, planer, sash clamp, door clamp, chain mortiser and screw veneer presses, together with the necessary motors. The filing hoom is completely equipped with rolls, anvil, band saw grinder, circular saw gummer, automatic knife grinder and special grinder for Shimer heads. The lay-out of these machines is shown on the accompanying sketch.

Work to Standard Plans

A large number of what might be termed "standard plans," have been prepared covering a wide selection of houses and bungalows, ranging from the humble summer cottage to the more pretentious permanent residence. A saving may be effected by working to one of the standard designs, but, if desired, special plans will be worked up to suit the requirements of the purchaser. In this case a small extra charge is made to cover the cost of drawing the plans and working out the details.

The engineering department prepares these plans and also prepares detailed drawings, showing the size and other particulars of each individual item entering into the construction of the house. Each piece or group of similar pieces is numbered or otherwise identified. From these detailed drawings a list of material is made up, which accompanies the drawings to the factory. Smaller lists are then prepared and given to the stock cutters and others who are responsible for preparing the material. As each item on the smaller lists is got out, it is bundled and the house or design number, quantity and size of pieces and identification number or name is plainly marked. Each item is ticked off as finished. The material for each house is kept seperate. Thus all confusion and errors are avoided.

Jigs and Gauges for Accuracy

The material is all worked to very accurate sizes. Such items as joists, 2 x 4's, etc., are dressed to

Cowan sash sticker and dovetail machine in Peterboro plant

standard dimensions, so that all calculations will work out correctly. Steel tapes, jigs and gauges of different kinds are used to insure absolute accuracy. The framing, jack rafters, siding, flooring and other items are cut to sizes, and bevelled if required. The only material that is sent out in random lengths is baseboards, picture mould and similar mouldings, which, owing to the variation in thickness of the plaster, could not be cut to fit.

When the ready-cut material arrives on the job, the work of the carpenters is all laid out for them. They simply have to consult the blueprints and directions, which are furnished, select the material as

Cowan chain mortiser and tenoner in Canadian Aladdin factory

designated by the numbers or other identification marks, and begin erecting the building. Everything is planned and prepared for them. Thus there is no time lost in making calculations, measuring, laying out work, sawing, fitting, etc. The building operations become merely a matter of following instructions and assembling the ready-cut material.

The capacity of the new plant is two complete houses a day. With the installation of 4 additional swing saws, the output can be increased to 4 houses. This form of construction is also applied to garages, barns, stores, in fact to all kinds of buildings now made of wood.

Wood Construction of Shamrock IV.

"The wonderful strength of carefully selected, well-seasoned and properly disposed wood" is emphasized by the designer of Sir Thomas Lipton's yatch, "Shamrock IV" as quoted in an article in a recent "Scientific American" which gives the leading characteristic of this craft.

Although "Shamrock IV" is of practically the same displacement as the cup defender "Resolute," it carries 25 per cent. more canvas or 10,800 square feet, as against 8,650 square feet for "Resolute." "Shamrock IV" is a boat of great initial stability capable of carrying a huge spread of canvas—its spread of sail reaching 170 feet above the deck—and this ability is due, according to its designer, to the "wonderful strength" of the wood. The hull is sheathed with three layers of mahogany, two layers inch thick, placed diagonally in opposite directions at 40 degrees to the vertical, and an outer layer 5/8 of an inch thick, placed longitudinally, the whole evenly distributed. The deck is of birch veneer, 5/8 of an inch thick and the hull is stiffened against distortion by running birch veneer bulkheads at each web frame from the bilge to the deck along each side of the hull. The hull is also stiffened longitudinally by a series of wood longitudinals, about 2½ inches square in section.

The mast, two feet in diameter, is of wood and hollow, as are the other spars. The topmast truck is 145 feet and the top of the clubtopsail 170 feet above the deck.

Working Interior Trim from Fancy Woods

Would it be Profitable to Edge and Face Core with Expensive Stock?—Moisture Content of Material Known Within Narrow Limits—Method Outlined Readily Adapted to Stair Work

By Chas Cloukey

The first and perhaps strongest inducement to adopt the practice advocated in the following paragraphs would be a shortage of the necessary material. At the same time, however, it is generally possible to procure a fair to large supply of veneers in almost any kind of wood required. The handling of this kind of work calls for but two thicknesses of veneer, ¼ and 1/16-in.; the edgings, backbands, stops and such small mouldings would have to be taken from solid lumber.

In the very small mouldings it is possible to substitute some other wood, in many cases, without detracting from the appearance of the work. If the work is to be stained and finished at the mill, such substitution may be carried farther than if the work is delivered in the white. I am not advocating the substitution of cheaper woods for the purpose of saving on the cost, but to enable the mill to complete the work when it has exhausted the supply of lumber, without incurring the serious delay necessary to order an additional supply.

May Mean Big Saving

The second consideration of veneering trim is that of economy. There was a time not so long ago when the price of choice woods was higher in proportion than the cost of labor. And it may be so today if the labor is especially efficient or the job is big enough to make a "quantity production." The methods employed in handling veneering of this kind can easily make the difference between profit and loss on a large job. So let us take up the various illustrations one at a time and see how we would go about veneering them in case we had a large job of this character.

In sketch A we have a plain square-edged casing which has a ⅛-in. veneer on the edges and a 1/16-in. veneer on the face. Suppose we use a common pine, cypress or chestnut core. We plane it to ⅞-in. thick, joint one edge and rip to the net width of the core on a smooth saw. Our edge veneers are ripped to ⅞-in., and the clamps filled with the casing cores and edgings. When they come out of the clamps they are run through the pony planer to 13/16-in. thick and the face veneer applied.

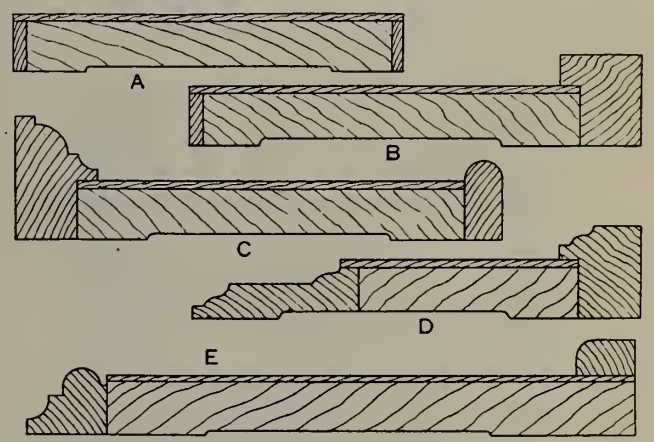
There are many millmen who will say that it is not practical to veneer one side of any solid piece of wood, as it will surely warp out of shape. But a good many millmen have had to back up on some of their old beliefs and accept methods which are calculated to make woodwork behave itself.

Condition of Stock Important

In the first place, the veneer and the core should be of the same humidity, or nearly so; there should not be more than three points difference. By that I mean if the veneer has 7 per cent. moisture, the core must have not to exceed 10 per cent. humidity. If the veneer were thicker, then the difference in moisture would have to be less, as the veneer would not become so nearly saturated with the glue moisture.

To insure a nice straight job, cut strips of wrapping or, better still, building paper and glue on the back side of the casing at the same time that the veneer is applied to the face.

When stacking the casings in the veneer press it is best to turn the faces together and the backs together, as the faces of the cores have been planed level and the backs may not be entirely so. When the casings come out of the press they should be piled on sticks at least ¾-in. thick, and the top of the pile



How expensive woods may be conserved

covered to keep the top layer from curling. If possible, they should stand a week or more for drying and distribution of moisture before going to the sticker.

If the work has been accurate up to this point, especially in regard to the uniform thickness of the core, the sticker will have a very nice job indeed. The top knife should not take off more than 1/64-in., and if this will not remove the feed-roll marks, use smooth rolls for feeding. If there are no smooth rolls for your machine, take some hard maple or birch and turn up some that you can put on in place of the corrugated ones. They will do the work in a surprisingly satisfactory manner; try it. This will leave a little more than 1/16-in. to come off of the back of the casing if it is to finish to 13/16-in. sanded. It is necessary to take a good cut off of the back on account of getting under the paper. No knife will hold an edge for any length of time and cut in paper and glue, but cutting under it is a different matter and does not dull the knives quickly.

Must be Dry Before Dressing

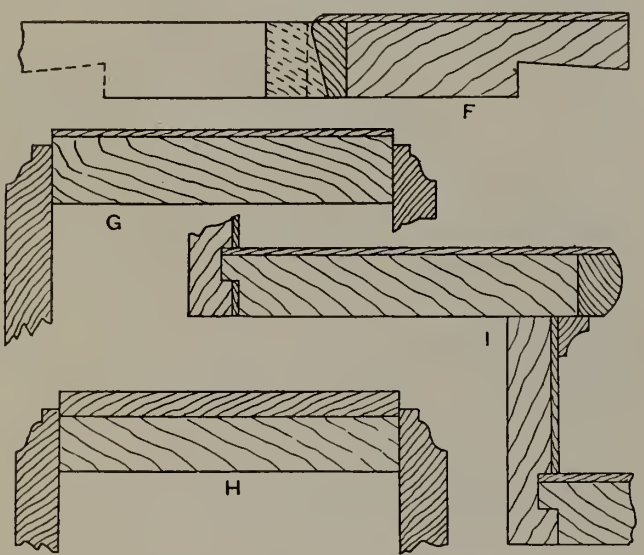
If these casings bend or curl as they come out of the sticker, it is a sign that they have not stood long enough after coming out of the veneer press, so that the moisture is not equalized throughout the piece. The cuts on the edge of the casing will have to be very light—say about 1/32-in.—just enough to trim the face veneer and surface the sides. If this work cannot be done with reasonable accuracy it will turn out to be a botch job and an expensive one. There is nothing really difficult about it; just plain, careful

work, which should be planned out before starting the job at all.

Sketch B shows a casing with backband, which is similar to the first one except that it requires but one edge veneer. This casing is not so particular in regard to width, as the veneered edge can be run next to the fence and the casing brought to the required width by the outside head, as in ordinary runs.

Sketch C shows a head casing in connection with cap mold and fillet. This is one of the simplest forms of veneered casings and does not require the care and skill of either of the foregoing patterns, as it is necessary only to apply the veneer on the face and the paper on the back, to make it ready for the sticker, providing it is straight enough to start with. In case there is much crook in the length, one edge should be straightened on the jointer before putting through the sticker. When jointing this one edge care should be taken so that the jointed edge will run next to the inside of the moulder and the top head knife cut with the grain of the veneer.

It might be well to stop right here and say that when running material which has a 1/16-in. veneer on the face, through the molder, the surfacing knife



Details of stair and interior trim construction

should be back-beveled to insure against tearing out any cross-grained places or lifting blisters.

Judging Width of Paper

Sketch D shows a modified case of veneering in which a wide edge strip is used in order to make the molded edge of the casing. The treatment of this pattern is not different from that of B except that the face veneer is not applied clear across and the paper on the back should not be wider than the veneer on the face. This is important, for if we wet the back of the edge strip with glue and do not do so on the face, the back will swell and that will make the casing cup on the face before we can get it to the sticker. Neglect of these details will produce bad work and spoil so much material that a profit will be impossible.

I neglected to say that the head casing C, would have to have return miters on the ends to hide the core. But in many first-class jobs this is required anyway, so as not to show the end wood.

Sketch E is a base detail and is handled like C except the veneer may be skimped a little at the bottom and still be covered by the shoe. All of the base patterns which the Standard Molding Book shows as being made out of a solid piece with a molded top, may be made like E with the molding made in a separate piece, except the plain round edge and the flat bevel top. These will require an edge strip glued onto the core before the face veneer is applied.

Do not forget to put the paper on the back of the base, for the wider the board the more necessary it is to put the same amount of moisture on both sides of it at once.

Sketch F shows the method of veneering window stool. This should be put up with waterproof glue. If the stools are narrow, considerable time may be saved on a large job by putting in the edging double width, as shown in the drawing; then veneer over the whole and rip in the middle.

Working the Door Jamb

Sketch G shows a simple form of veneering door jambs, and this method applies only where the core or backing is of the same wood as the face or of a wood so similar that the small amount showing back of the veneer would not be discernible. For instance, a quartered-oak face can be glued to a common-oak back, or even a chestnut back, if the work is to be stained a dark color. A walnut face may be applied to a red or black gum back if attention is paid to selecting the color of the back. Birch may be used to back up mahogany if the work is to be finished in the mill. Selected red birch may be used with a cherry face, if selected for color to match. Figured gum will go with Circassian walnut, and so on.

Sketch H shows a jamb with thick veneer, which is necessary where it is not possible to use the thin one shown in the previous illustration. In H it would not be necessary to paper the back of the jamb on account of the thickness of the veneer, but it will be all the more important to see that the two pieces are equally dry when glued. However, they must not be too dry. They should contain at least 5 per cent. moisture, or one may swell up more than the other in coming to a normal moisture content, which will be from 5 to 8 per cent., according to the weather and the climate. Oak and white pine will naturally absorb almost exactly the same percent of water by weight, but the pine will swell more than the oak. Therefore, if oak and pine are glued together when both contain only 2 per cent. moisture, the pine will expand more than the oak when they both go to 7 per cent., as they will in damp weather, and they will assume a curve, with the pine on the convex or "hump" side. So the preventive process is to have them as nearly normal as possible when they are stuck together.

Used to Advantage on Stair Work

Perhaps there is no other part of millwork which lends itself to economical veneering with greater facility than stair-work. A look at sketch I will show, with very little comment, how it can be managed. The treads are handled like the window stools, except that they are so wide they cannot be veneered in pairs. The risers and wall strings are handled like the base, and the newels may be veneered in the boards and corners mitered.

When the details shown have been mastered it will be an easy matter to veneer the material for ceiling beams, case-work, mantels and so forth. It may not be necessary to say that the face veneers for casings and other wide veneers should be ripped before

ripping the narrow ones for the edges, although the edges will be applied before the faces. In this way it will be possible to use up the veneers very closely.

If the glue man on the job is not one of experience, he should know that it is necessary to exercise a great deal of care in this kind of work, to see that the edges of the veneers are properly covered with glue and that the edges of the face veneers are under sufficient pressure to insure a joint. It is on this account that I advocate putting the work in the press with the faces together. Careless work in the glue room means many dollars spent in repairing the poor work after the defects have time to "season out."—Veneers, Indianapolis.

Do Your Band Resaw Wheels Need Grinding

Wheels Must be Kept True for Satisfactory Results —Lower Wheel Requires Special Attention

By J. D. GeBott

In preparing this article it is the desire of the writer to bring to the attention of manufacturers operating large or small band mills, the vital necessity of keeping the band wheels in proper condition.

Two of the main features in the successful operation of a band mill are that the mill be kept in perfect alignment and the wheels kept true and in good running order. A machine working on dirty lumber should have the wheels faced off at least every ten or twelve months. Some times a mill will run a longer period, depending largely on the cleanliness of the stock and the hardness of the metal used in the manufacture of the wheels. Then again, scrapers improperly adjusted to the face of the wheels will cause them to wear much faster than the natural wear of the saw.

The lower wheel is usually in poorer shape than the upper one. Nearly all the dirt from the stock drops between this wheel and the saw, thus working away the face of the lower wheel much faster than that of the upper wheel. As most of this wear is on the front edge, the front of the wheel becomes considerably smaller than the back, thereby allowing the saw to run slack on the tooth edge, causing it to lose its efficiency, so that it does not stand up and do the work as well as if the wheels were true and in proper working condition.

When examining a machine to see if the wheels need attention, the usual practice is to look at the upper wheel only, because this is the easier one to get at. If one will examine the lower wheel as well, it will ,probably, be found to be worn two or three times as much as the upper one. When it is found that the top or upper wheel needs grinding one can easily imagine the condition of the lower wheel.

The wheels on a band-mill wear in two places only—on the extreme front edge and where the back of the saw rides on the wheel. These two spots will be found to be low. The back part of the wheel seldom wears as the saw should not run on this part. This being the case, it is necessary to keep the back of the wheel face down to the same size as the front, so that measuring with a steel tape-line, both edges are exactly the same. Some filers and operators prefer to have a slight fullness in the centre of the face of the wheel. This is not objectionable if run in the proper place. Usually a perfectly flat wheel is preferable. Machines having the upper wheel of steel, it is best to have a slight crown as steel wheels are more or less liable to show hollow if ground perfectly flat. This is owing to the contraction of the spokes. On large double-cutting band mills a little crown can be left in the centre of both whels as the saw remains in the same position on the wheel at all times, whereas with a single cutting saw, the blade is gradually worked forward on the wheel as the saw is ground narrower.

To make a good job of grinding band wheels, it is essential that a good grinder be provided and that it is set square and level with the wheel. Level the lower wheel and see that there is no lost motion in the boxes as the shaft should lift firm against the bearings when the strain is on the blade. In practice it is best to grind the lower wheel first. Be sure and see that the grit and dirt is all cleaned off before grinding is started and then grind down the high places first.

When grinding the upper wheel it is essential that the straining device be locked so that there is practically no vibration in the wheel. Strain the saw the same as for sawing. If a blank blade is used, it should

The GeBott band wheel grinder

carry the same tension. All top wheels should have inside scrapers. These can be readily arranged from the upper journal bolts by having them made long and extending down to the inside of the wheel, then turned in and flattened so as to allow a brush or stiff piece of leather to be attached. This will keep all sawdust from collecting on the face of the wheel, and will tend to keep the wheel clean and in perfect appearance. When this is done, there is no dirt to fall from the wheel when the machine is stopped to change blades.

The wider the saws, the more attention must be given to the condition of the wheels. This is in order to get a good cut out of the blade. If the wheels are not in perfect shape, the saw has a tendency to run ahead with a wide over-hang, thus losing a certain part of its cutting capacity. If this occurs one might as well run a narrower blade, as the saw must be kept back on the wheels in order to keep the tooth edge stiff when entering the cut. This is very often the cause of bullheads. The work of the saw filer and the operator is greatly facilitated when the wheels are kept in first-class shape, and in addition more stock will be cut and the work done will be of a higher order.

Advertising Manager for Home Furnishings Bureau

At the general meeting of the Furniture Manufacturers' Association the appointment of T. Lyle Blogg as advertising manager of the newly-formed Home Furnishings Bureau — an educational and advisory service for the better furnishing of Canadian homes— was confirmed. Mr. Blogg is to supervise the advertising which is to be done in connection with the publicity campaign being launched by the furniture manufacturers. He brings considerable publicity experience

T. Lyle Blogg, Toronto, Ont.

to bear on his new position, as he was in charge of the service department of the Hugh C. MacLean, Limited, trade journal publishers, for about six years, in the service department of J. Walter Thompson Co., advertising experts, for one year, and had full charge of the publicity work and dealers' co-operation service of the Pathe Freres Phonograph Co., of Canada, Limited, for a year and a half. Latterly he was assistant art director with Grips, Limited, Toronto. He will assume his new duties on Sept. 1st.

Mr. Blogg is very enthusiastic about the work of the "Home Furnishings Bureau." The possibilities ahead of the bureau are almost unlimited and with the whole-hearted co-operation of the manufacturers and dealers the industry stands to reap untold benefits from aggressive, educational publicity. Early in his work Mr. Blogg plans on taking a trip through several Ontario centres, consulting with both dealer and manufacturer, as the new bureau aims at close co-operation with both branches of the furniture industry.

National Hardwood Inspectors in Canada

John E. Banks, Toronto, chief inspector of the National Hardwood Lumber Dealers' Association in Ontario, is well-known to lumber users. He has been connected with the lumber business for the past ten years and was formerly employed by G. Elias & Brother, Inc., of Buffalo, N.Y., and later by the Hugh McLean Lumber Co. of the same city. Mr. Banks has been identified with the inspection staff of the National Hardwood Lumber Dealers' Association for the past year and a half, being first stationed in the Buffalo market and shortly after being transferred to Toronto, of which market he has now charge.

Arthur G. Bowler, who is in charge of the Quebec District, with headquarters in Montreal, became a National Deputy Inspector in December last. Mr. Bowler was born in 1891 and commenced his connection with the lumber business in 1907 as yard inspector for Parker & Page Co. at East Cambridge, Mass. In 1914 he left that firm to take charge of the yard of the New England Lumber Co., at Charlestown, Mass., He was in the service of the U. S. Government as an inspector of propellor wood for a year during the war.

Before a man can be a first-class machinist, he must live through many years of patient and thoughtful work.

John E. Banks, Toronto, Ont.

Arthur G. Bowler, Montreal, P. Q.

The Forest Products Laboratory at Madison, Wis., which recently celebrated its tenth anniversary.

Successful Celebration at Madison, Wis.

Extensive conservation of the national wealth of wood through more efficient utiliation was the keynote sounded throughout the recent decennial celebration at the Forest Porducts Laboratory at Madison, Wisconsin. Over 200 visitors from all parts of the United States were present, representing every line of wood-using industry, including 59 wood-using associations and companies, 18 lumber manufacturing associations and companies, the Deans of 12 Forestry schools, the United States Forest Service, and other visitors and friends. They came to pay tribute to the laboratory's ten-year record service to American industry.

The Forest Products Laboratory is a government institution of industrial research in wood and all wood products maintained by the United States Forest Service in co-operation with the University of Wisconsin. In this work 220 engineers, wood technologists, manufacturing specialists and assistants are employed in developing new uses for wood and improving present manufacturing methods. Investigations and experiments are undertaken both independently and for individuals and companies on a co-operative basis. Results obtained are disseminated through co-operative reports, commercial demonstration, correspondence, government bulletins, mimeographed circulars, articles in the trade press, and practical instruction courses given at the laboratory.

The programme continued with inspection of the work and exhibits of the laboratory. Guides in charge of small parties showed the visitors the various lines of endeavor in which the laboratory is saving millions of dollars a year to the people of the country. Following the inspection trip was a period of recreation, consisting automobile tours around the city, boat rides, and swimming.

Because you have rubbed a file over a saw, it does not follow that you have made it a better cutting tool.

Can you coil a band saw four times?

Do Not Figure bv the Thousand

W. D. Burr

The mounting price of raw material and the increasing wages paid to employees of box factories emphasize more than ever the fallacy of making prices on boxes at so much per thousand feet. Manifestly a box containing a small amount of lumber requires a greater amount of labor per foot of lumber than one of larger proportions. So it is with a box made of thin material, as compared with that manufactured of 13/16" lumber. Each additional item, such as resawing, cleating, nailing, printing, stapling, boring, matching and the like, increases in direct proportion as the sizes of the boxes decrease.

The consumer is particularly interested in the cost per box, not in the cost per 1,000 feet. The practice of quoting prices on the latter basis is a relic of the past—of the period when lumber values were low and labor was cheap and plentiful. It affords an imporper comparison, it magnifies the spread in price between a large box of simple, heavy construction without extras, and the small well-finished box of more complicated design. So long as the practice continues, just so long will it be difficult to secure a proper price for the box of more expensive construction.

Why not give this subject due consideration and change the practice to meet the new conditions with which the box manufacturer is now faced?

The first airplane propeller of red gum that was ever used commercially was attached to a stranded machine nead Madison, Wis., by the Forests Products Laboratory. An accident had caused the aviatrix guiding the plane to descend in a hay field, and the revolution of the propeller blade while speeding through the timothy caused about six inches to be broken from the ends of the blade. A hurry-up call was sent to the laboratory, and one of the experimental propellers of red gum rushed to the scene. It was attached, and the flight continued. The red gum blade is, apparently, a commercial possibility.

Is Rigid or Elastic Container Preferable?

Exhaustive Tests Indicate Elasticity Desirable Feature—Utilizing Strapping to Best Advantage—Improved Manufacturing Methods Required

By Malcolm W. Hill*

The shipper is interested in the box which combines lowest first cost with maximum reliability under export shipping conditions. A theoretically perfect design would be that in which the materials and the stability of the contents were all so related to each other that all would reach their final state of endurance at the same moment, or collapse of box and contents take place at the same time under a breakdown test. To determine these relations practically is your problem—some tests made something over a year ago which were most interesting and gave matter for serious thought along the lines of reinforcing with metal binding.

Because the type was available by the hundreds, the No. 3 canned goods box packed with 24 No. 3 cans of pumpkins were used in the experiments. The boxes were all allowed to drop measured heights on a concrete floor and in such a manner that they struck on a corner, which was the most severe treatment we could give them. The cases weighed 70 lbs. each, measure 1.6 cu. ft., and the cans fill but 59.3 per cent. of the space within the case, which does not give the internal resistance that another commodity might, but the relative findings should not be affected as the cases and contents were all similar shape and weight except in materials and construction and the types of binding used, which covered all the most well-known makes in commercial use.

The standard commercial canned goods box without straps was given a 6-inch drop and then a 12-inch drop, when the contents spilled, with two bands this same type box stood three 30-inch drops before breakdown, then, note this carefully—by adding a third strap at right angles to the other two or around the ends of the box, this commercial box stood seven 9-ft. drops before spilling the cans. An export box treated the same way, stood a 6-in., a 12-in. and an 18-in. drop unbanded before breakdown, with two bands it stood three 42-in. drops before a board broke, but contents remained intact. It was then dropped from the 9-ft. height, and on the second drop spilled. It stood seven 9-ft. drops after the third band was added. The most important conclusion to be drawn from this test is that the weaker box by the addition of a strap costing a little over a cent placed at right angles to the others stood up about as well as the more expensive export box. These tests illustrate the fact that the very rigidity and hardness of the wooden boxes built to stand heavy loading under compression need additional aid to stand sudden shocks which are delivered at angles other than vertical to the faces of the box. During 1913 a case was tried before the I. C. C. where comparative tests of wooden and wire-bound boxes were made by dropping similar sized boxes 4 ft. and there also the most elastic wire-bound box held its contents after the rigid box had split open. It would seem, therefore, that a certain elasticity in design should be striven for in box design for the lighter loads and this can be acquired by using thinner material with perhaps lighter and more flexible fastenings.

It appears to me that the field for export containers of newer types is very wide, and combinations of standard wooden box designs with reinforcements of light steel angles and punch pressed shapes riveted to the lumber will form a very stable structure with little chance of collapse and with a minimum of weight for cubic capacity. From study of the plants of the box makers, talks with the packers and shippers, and finally from reports from the receivers on the delivery end, we have a lot of very valuable information about boxes and their good and weak joints that will be of great use in the future in designing containers for our export trade.

How to Apply Strapping

To offset shrinkage in wooden cases attempts have been made to stretch strapping so tight that with thin lumber the members are pressed or sprung inwards, with the idea that as the drying out proceeds the spring will take up some of the slack in the bands. This was tried successfully with boxes of special design where the tops and bottoms were slightly narrower than the sides and thus allowed of some movement without interference. Boxes strapped under tension with nailless strapping and placed near a steam radiator for several months remained tight though the lumber was thoroughly dry. The same type boxes were drum tested by Forest Products Laboratory, with the result that the bands worked not towards the ends but towards the middle of the case. With nailed strapping where thin lumber is used it must necessarily be located near the ends to get solid wood to nail to, and here the first stretching is the only means to get the bands tight, and here the bands will festoon if the moisture content of the lumber is too high. As a suggestion for taking up the slack in this last case, it was found that by placing tops and bottoms with a space between the boards that nailing the strapping down between these boards tended to tighten the bands, particularly where a slot-punched type of strapping was used.

The lock corner box has not been as useful in the past as it might have been, partly through poor glues, but the war work resulted in developing many waterproof glues which can be had at commercial prices.

It seems to me that for the more valuable export goods the well built chest type export box with a screwed on battened cover or hinged lid will have served a great need. I have been informed that many such chests of English manufacture have been treasured items of household furniture for many years in some countries, and no doubt the resale value of such a case will be considerable if it is well built and survives its first duty as packing case without serious injury. In case of actual examination by customs officials such a case will offer much less trouble than a nailed one, and will come off with very little damage.

As a matter of business promotion our box makers should be in a position to advise their clients as to the type and the design of export boxes best suited to

*Address before N. C. Pine and Shook Manufacturers' Association, Baltimore, Md.

their requirements. There is no doubt that with export boxes the better drying of the lumber will pay both the mill and the client. The moisture controlled kilns have reduced losses of material in some kilns from 30 per cent. to less than 2 per cent. and study of this subject is so well worth while that it's only a matter of time before the high prices of timber and labor will make this and similar efficiency work absolutely necessary. In connection with the improved glues, the study of laminated construction for export boxes is well worth while.

To laminate lumber for export boxes to the necessary thickness for heavy duty and get thus a minimum of weight with a maximum of strength and toughness will go a long way toward the solution of the problem of excessive tariff charges. The costs of the glueing process has been much reduced by the new methods of manipulating the waterproof glues in which whole stacks of plywood can be glued up at one time. Owing to the demand for better waterproofing, the lock-corner box properly glued and reinforced will make a case which with care could stand actual immersion without damage and offers a valuable field for research. Any buyer of boxes in quantity today can well afford some scientific study in connection with his box requirements and try to determine just what combination of wood and steel will get his shipments to their destinations with a minimum of cost and yet give satisfactory service to his customers. He must try to strike general averages and remember that it is not efficient to box his goods so strongly that they would be pulverized within the case before it would break down.

Standardizing Material

No definite rules for thickness of lumber can be specified to cover all cases, the only thing that can be done is to group the woods into classes that have strong and weak physical properties. The accepted rules for thickness and nailing and the other standard procedure in box building and fastening up should all be reconsidered when the export box is concerned as the very vital matter of strapping the export box may entirely alter the relationship of the materials and rules for the box that is not required to be strapped. It is quite probable that in a short time the use of both nailed and nailless strapping on the same case will be a common occurrence, as both have some features of merit that the other does not possess.

The relation between the first nailing up of a box and the later placing of strapping has not received the attention that it should. The spacing of nails and the later nailing of strapping should be thought out, as in a busy shipping department this saving will mean thousands of dollars annually and less damage to cases through careless nailing.

The matter of clinching nails is too often neglected also the great benefit from driving nails at opposing angles. Another matter worthy of thought in connection with export boxes is the use of screws in covers and in thin board sides. A hand drill with hard wood will enable the packer to use screws without any danger of splitting the thin material if care is used, where nailing would be disastrous. Woods practically unfit for nailing can be used with the drilled screw hole method.

If every person was given what he wanted, would this be a contented world?

Orient Looking to Canadian Box Industry

The following is extracted from a report recently received from Vancouver, B. C.: Among the numerous opportunities offering in the market of the world for British Columbia's forest products, none is of a more attractive or more promising character than the demands now being made in the Far East for all kinds of wooden boxes, needed for the export of the various products of that part of the world. During the past few months enquiries have been reaching the Department of Trade and Commerce at Ottawa and local offices, putting forward the requirements of the Orient in this respect. Orders have already been placed for huge quantities of these boxes, but seemingly, with other sources of supply shut off through different reasons, this province is now being regarded as the best equipped to handle this trade.

A short time ago orders reached the manufacturers of boxes here totalling well over a million and a half boxes. These orders did not all come from the Far East, some of them coming from South Africa and other parts of the world. In an endeavor to meet the sudden demand upon them, the orders were distributed among the various factories in the province, but even this means was not sufficient to meet the needs of the situation and many factories had to accept orders to fill as they were best able.

The mere fact, however, that local factories were able to undertake this sudden rush of business has given this province one of the most far-reaching pieces of advertising it has received for many a day, as has been revealed since then, by the numerous enquiries received from other parts of the world, beside those involved in the previous batch of orders.

China, Java, the Straits Settlements, Ceylon and India are now in the market looking for large quantities of these boxes, for the export of their various products, mostly tea and rubber. One firm is anxious to place an order for 50,000 and it is estimated that for the season of 1920 alone the market will require no less than 4,000,000 boxes.

Alder for Cigar Boxes

There is a steady growing demand for alder lumber It is used for cigar boxes, pulley making, and furniture. Recently there has sprung up a demand for alder from the manufacturers of musical cabinets. Alder takes stain well and is an excellent substitute for mahogany for the cheaper grades of cabinets. Alder is a valuable wood, which up to this time has not been regarded of any great commercial value. It is found growing in damp, low ground and attains a diameter up to 24 inches and in some instances larger, but generally smaller. In western Oregon and Washington there is quite a percentage of land covered with alder, some of which is of considerable commercial value. Small portable mills would provide the most economical plan for conversion. Up to this time alder has been generally regarded as an excellent fire wood.

The fence of a saw bench should be regulated accordingly to the saw. If the saw cuts correctly it should be parallel with it; if incorrectly, it shoud be arranged to correct the regular cutting of the saw.

The technical press is of much importance in any country, as it circulates the knowledge gained by years of experience in all the industrial arts.

Machinery & Equipment

Improved Glue Heater

Most users of animal glue have been convinced that to secure the best results it is necessary that the temperature of the glue be maintained within very narrow limits. High temperatures or repeated heating weaken and destroy the glue so that it quickly loses its strength and adhesiveness. The best, and in fact the only practical method, is to mix sufficient glue each day for the day's work and keep it warmed to a temperature of about 135 deg. Repeated experiments and tests have clearly demonstrated that the best working temperature for animal glue lies between 125 deg. and 145 deg. As soon as the heat reaches the latter figure the glue begins to deteriorate and the higher the heat

Cincinnati Glue Heater

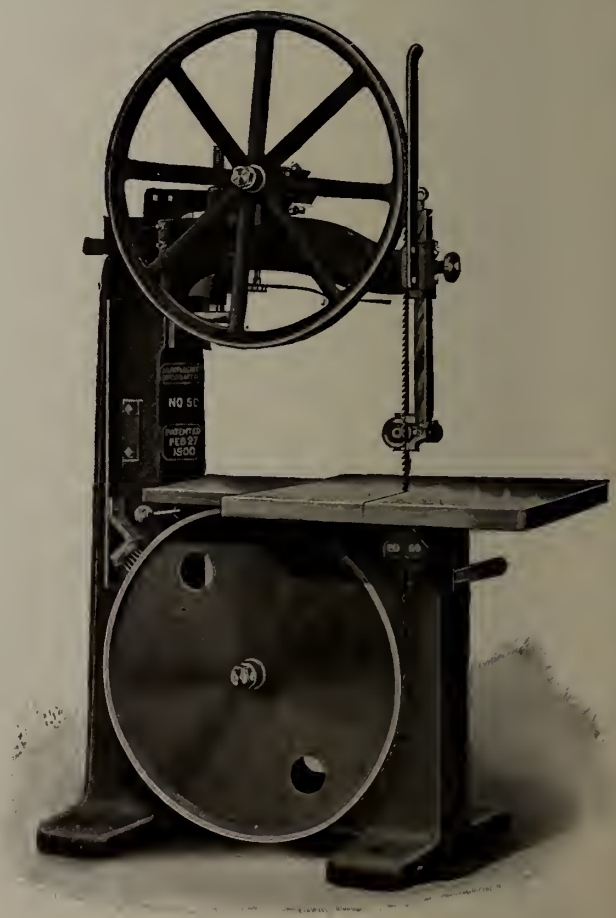
the greater the deterioration. It is difficult for many glue users to tell when their glue has reached th correct temperature and still harder for them to maintain that temperature when once ascertained. The glue heater shown in the accompanying illustration is so designed and proportioned that the temperature of the glue cannot rise above the correct figure. This is not a jacketed heater, the water being contained under the glue chamber. No heat controllers or other safeguards are necessary. The whole secret lies in the fact that the heating surface has been scientifically reduced to a point where it cannot conduct sufficient heat to overheat the glue. The material used is copper. Full particulars may be had from the Cincinnati Glue Heater Co., Cincinnati, Ohio.

Shurley-Dietrich, 1914 Post Boy

The Shurley-Dietrich Co., Limited, Galt, Ont., manufacturers of knives and saws, have recently placed on the market a new band saw, which has some unusual features. The most noticeable point is that the blade is made with two long points or prongs which extend in slots right through to the tips of the handle. This design reinforces the handle so that should the saw fall and strike on one tip the steel blade will take the blow and the point will not be broken. This construction gives a good balance, right hang and comfortable grip. The blade is of Jessop's high-grade steel. The makers will be glad to send circulars describing this and other saws.

Efficient Band Scroll Saw

The accompanying illustration shows a band saw taken from the "Lightning" line of J. A. Fay & Egan, Co., Cincinnati, Ohio. The frame is a single cored casting. The square form is designed to reduce vibration, permitting the machine to be run at a high speed. The table is 29" x 33" and may be tilted 45 deg. to the right and 10 deg. to the left of saw. Wheels 36" in diameter, with 2" face. The lower one is solid, giving greater momentum for heavy cuts. Upper wheel has



J. A. Fay & Egan Band Saw

lateral and vertical adjustments. Roller saw guides are used. The straining device is their well-known "knive edge balance" and is very sensitive. Its action is instantaneous, which should result in fewer broken

blades. A resawing attachment may be secured that will enable boards, as wide as 12" and up to 4" thick, to be resawed. Power required 3-5 h.p. or 7½ h.p. if the resawing attachment is used. Speed 600 r.p.m. Bulletin No. 4 fully describing this band saw may be secured by writing the above-mentioned firm.

Saw guards may be a bit in the way when you want to make a record day's run; still they have saved many men from very serious accidents.

White paint should be used on the walls of the finishing room. It will make the department brighter and enable more work to be produced. Never use cold water paint or white-wash as it is bound to peel off.

Two-Quart Dry-Type Glue Pot

The Westinghouse Electric & Manufacturing Company has placed upon the market, an addition to its line of electrically heated dry type glue pot, in a two-quart size. This glue pot is solidly constructed consisting of a glue vessel of copper contained inside of a steel case. The glue pot may be easily removed for cleaning. This vessel fits snugly, making a perfect

Westinghouse two quart glue pot

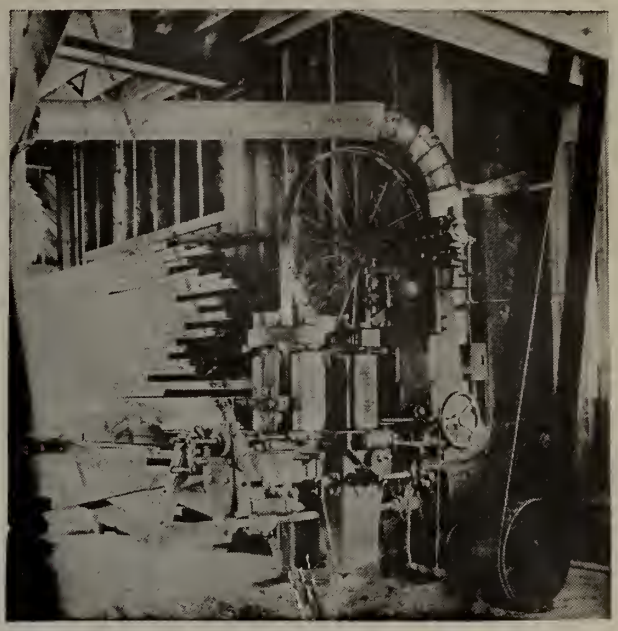
thermal contact with the heating element. The water bath is eliminated and with the dry-type glue pot the current can be applied continuously without any danger of the heater burning or the glue becoming overheated. The single-heat constant input heater gives the correct working temperature to the glue for continuous operation of the dry-type glue pot. Full particulars may be secured from the Westinghouse Electric & Manufacturing Co., Pittsburgh, Pa.

Well Equipped Planing Mill

The Sheppard & Gill Lumber Company, Toronto, Ont., have just completed the construction and installation of an up-to-date planing mill and equipment. This firm, which is composed of L. B. Sheppard, H. L. Sheppard and E. I. Gill, purchased the lumber yard formerly conducted by W. & R. Smith, and have added the planing mill to enable them to handle the large volume of building material required in their section of the rapidly-growing Danforth district.

The mill is a two-storey frame building 48 x 54. The lower storey where the heavy machines are located, has a smooth concrete floor. The upper storey is used chiefly for storing sash and doors, which are stocked in large quantities. One corner of this floor is fitted with a couple of work benches and a C.M.C. No. 317 variety saw, and is used for odd jobs.

The equipment on the mill floor consists of modern production planing mill machinery—the sash and doors are brought in by the carload—and includes the following items: Yates C. 3 moulder, Yates A 4 fast feed moulder and matcher, C. M. C. self feed rip saw, Yates 4 in. band resaw and a Yates No. 137 emery



A Yates resaw in Sheppard & Gill plant

stand. These machines are all new and of the latest design.

Electric power is used, with an individual drive for each machine. Two shavings exhaust systems are employed—one to collect the sawdust and the other to carry away the shavings from the stickers. Separate storage vaults are provided for each material. The layout of the machinery is such that a large volume

Yates fast feed planer and matcher in Toronto planing mill

of work may be handled. The machines are placed crosswise of the building, so that stock may be fed in one side and carried away through doors on the opposite side. The latest style profile heads with milled cutters are used and everything provided for the efficient handling of all the work that offers.

Upholstering and Trimming

Is Buttoned Seat More Lasting?

Chesterfield Growing in Popularity—Design Hard to Improve—Is Buttoned or Loose Seat Better Construction?

The Chesterfield is without doubt one of the most popular pieces of upholstered furniture. Various other styles in many shapes and sizes are put on the market in an endeavour to create an impression among customers that they constitute the very last word in upholstery, but while these designs come and go, the Chesterfield, with its dignity, charm, comfort and saleability, remains, says a writer in "The Cabinet Maker and Complete Home Furnisher." Both the shape and name are familiar to the public, and from the manufacturer's point of view the Chesterfield always constitutes sound selling stock. It may be used in varied surroundings, and in almost any setting or period furnishing, provided it is covered with a material suited to the particular scheme of which it forms a part. Leather-bound in the city man's club, the director's office, or the library, upholstered in silk for the drawing-room, or chintz for the boudoir, it looks well in a variety of positions: rigid against the wall, crosswise for the drawing-room, or made to specification to fit recesses and angles.

The style is always pleasing, and such satisfactory effects are difficult to obtain from any other shapes, but there are Chesterfields and Chesterfields. Many designs evidently intended by the framemaker and upholsterer to represent this style are merely ugly reproductions, not worthy of the name, for a correctly proportioned and well upholstered Chesterfield is very hard to beat from the point of comfort and appearance.

Plain or Buttoned?

It should be mentioned at the outset that a buttoned Chesterfield is far superior in appearance to one which is upholstered plain, as well as being softer. In spite of the greatest care exercised in the selection of springs, the quality of materials, and other details, the resiliency of upholstery is considerably lessened when it is covered plain. The reasons for this are obvious. A certain amount of strain must necessarily be given to the outer fabric to allow for the stretch and give of the material. A plain covering, if not strained quite, may become slack, causing a fulness that gives an inferior appearance to the work.

In buttoned upholstery this danger does not exist. A slackness or fulness is imparted to the material and gathered up into regular pleats by the formation of the buttons, and therefore the full resiliency of the first stuffing stage remains. Another important factor too often sacrificed for the sake of economy in material is seat space. To be really comfortable a seat must admit of free and easy movement of the body. The sitter should be at liberty to lounge or recline instead of being forced into an upright position by a seat that is too narrow or a back that is too full. The height of the seat is also important. If too high much of the resiliency is lost. A low seat that allows the sitter to stretch his legs at full length is much more comfortable than a high one.

The Turks are generally credited with being lazy people. Whether this is true or not, the luxurious comfort of their divans would at least justify the assertion. These are made with seats but a few inches from the floor, and of ample width, sometimes consisting of a series of cushions with a fixed bolster at either end, and without any backs.

Has Changed Slightly

The modern Chesterfield differs slightly both in form and construction from that produced a few years ago. The frames of the older models were heavy, solidly constructed pieces, shaped to conform to the design of the finished article. The modern frame, while amply strong and durable is designed to secure lightness as well as strength so that many of the braces and rails, used in older frames, are omitted.

The general lines and the comfort and luxuriousness of the original piece have been retained but there is this difference; in former years springs were not used to the same extent that they are today so that the earlier settees depended on an abundant use of curled hair for their resiliency. Hair is endowed with lots of life and elasticity but it is doubtful, if used by itself, that it gives a more enduring seat than when springs are employed. Certainly at present prices it would be a much more expensive form of construction.

To-day the Chesterfield is coming into its own as the very acme of good taste and comfort. It is in good demand and in spite of the comparatively high figure at which it is sold, it is finding its way into all classes of homes.

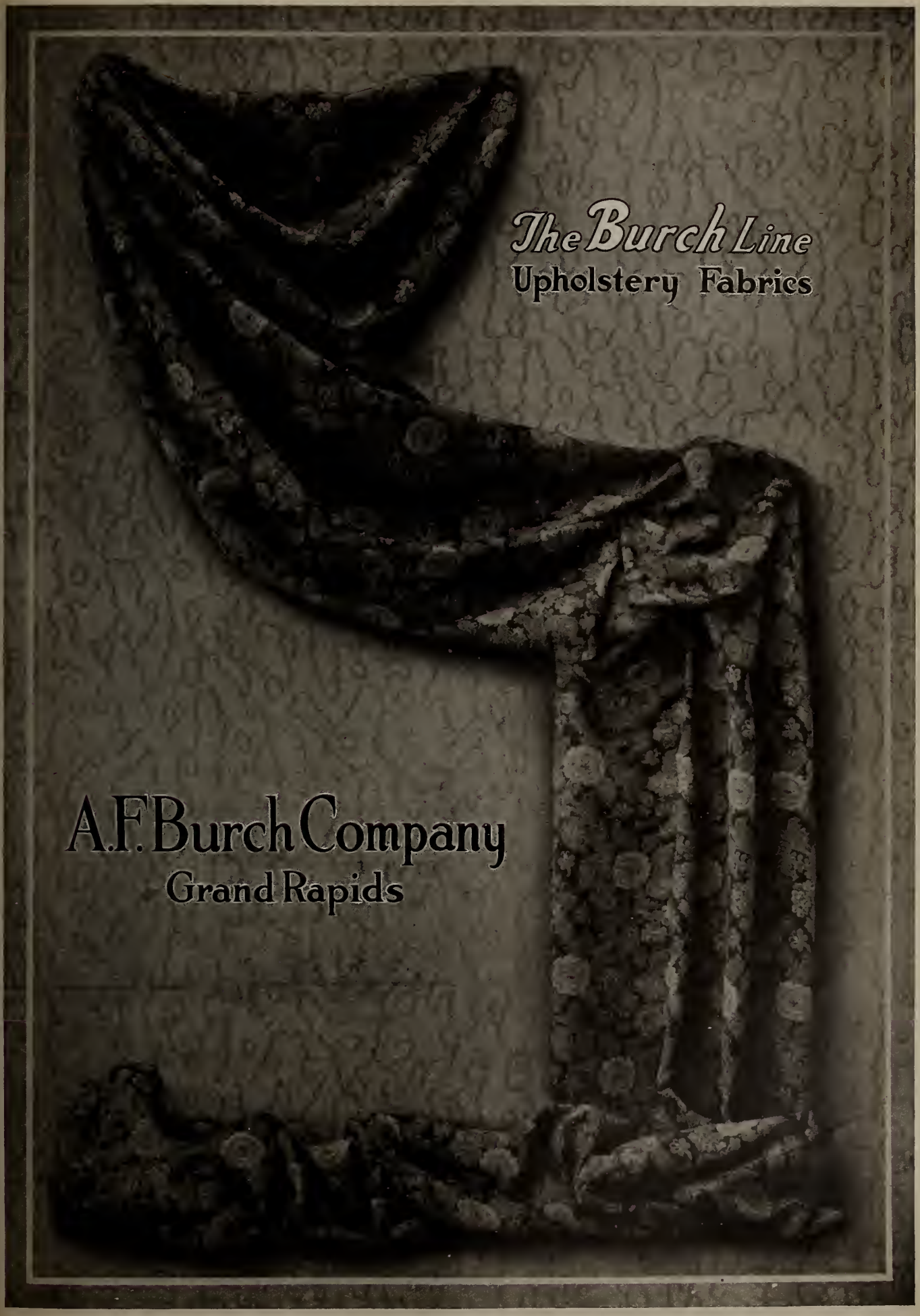
Plan That Doubled Production

Reduced Labor Turnover and Increased Output—Different Forms of Bonus—Shop Committees Adjust Complaints

By dealing intelligently and squarely with labor, Fayette R. Plumb, Inc., Philadelphia tool manufactories, have more than doubled production, reduced working hours and cut down the yearly turnover of the company's workmen 75 per cent. By a system of representative government, combined with a series of welfare features, all unrest and discontent in the working force, two-fifths of which is foreign born, has been eliminated—striking evidence that there is a solution for the labor problem and that, when found, it checks present-day soaring costs.

"Our policy of a square deal to our workmen is the most important single factor in our success," says William D. Plumb, works and employment manager and brother of Fayette R. Plumb, the president of this company, which has factories in Philadelphia and St. Louis.

"There is no getting away from the fact that ap-


The Burch Line
Upholstery Fabrics
A.F. Burch Company
Grand Rapids

plication of the Golden Rule to business is as essential as it is in our private lives.

"In handling labor problems, I endeavor to put myself in the place of the workman and look at things from his viewpoint. I have worked in every department of our factory, and so have my brothers, Fayette R. and Joseph H. Plumb, and we know what the workman is up against. When there is a doubt, the workman is given the benefit of it. Though it costs a little here and there to keep such a policy in effect, we are more than repaid in better work, more faithful employees, and a greater output."

Instruction for Foremen

Instruction of foremen and minor executives in the real principles of the business in which they are engaged, Mr. Plumb considers a vital force in the fight for increased production. When a workman understands that every minute he loafs and every time he spoils a piece of work he is not only cutting into the company's profits but his own prosperity, he begins paying stricter attention to bettering his work.

A large blue-print chart has been posted throughout the factory. It shows, in a way that each workman can understand, how a production of 3,000 tools per day means an income which is insufficient to pay the cost of materials and operaton. It also shows, in contrast, how a production of 12,000 tools per day brings an income which pays all expenses, allows the company a fair profit, and leaves a wide margin for distribution in the form of wages.

Practical demonstrations have been given to show foremen how one lagging department in the factory will cut down the profits of the entire establishment as effectively as though every department were on a par with the lagging one. Workmen are shown why one defective tool sent to a customer places an obstacle not only into the paths of the sales forces, but in the path of the workmen himself when he goes to draw his salary.

Three forms of bonuses have been introduced:

(1) A "perfect work" bonus of 10 per cent on all piece work rates, subject to deduction for careless work.

2. A monthly attendance bonus of 10 per cent, half of which is for not losing time, and the remander for maintaining the standard of a good workman. This bonus has reduced absenteeism from 125 workmen a day to 13 a day.

3. A high cost of living bonus of 30 per cent on the base pay of the worker, payable weekly, with no obligations atached.

A further boost to production has been given by a form of instruction to less experienced workers in the grinding and polishing departments. Seven such workers are placed under the supervsion of a "gang boss" who is experienced and knows the work thoroughly, and by thus splitting up the force in these departments into "gangs," every man has the benefit of direction and consultation with skilled men.

There has been a slight reduction rather than an increase n the working force during the eight months that the production has gone up 100 per cent. Weekly working hours have been cut from 52½ to 47½ hours.

The Employees' Representative Committee has been a potent instrument in driving discontent from the factory. Formed experimentally in October, 1918, its work was so effective that in May, 1919, the committee became a permanent Plumb institution.

It is composed of twelve representatives of the employees (elected by secret ballot semi-annually), and four representatives of the company, appointed by the president with a power of three votes each. Each member of this committee is charged with constant and careful observation of the department in which he works, with the view of making recommendations to the general committee, which meets bi-monthly.

Complaints by workmen are submitted first directly to the foreman or superintendent, and, failing settlement satisfactory to the worker, they are carried to the works manager. Appeal may be taken from his decision, in writing, to the Employees' Representative Committee, where action by a majority vote is final. Should the committee be unable to agree on a majority vote, the complaint is taken before four members which the Representative Committee picks from its number, sitting in conference with the president, secretary, works manager and. comptroller of the company. A majority vote is final in this Committee of Final Adjustment.

No individual complaints have yet been made which have not been settled satisfactorily before reaching the Representative Committee, and at no time has the Representative Committee failed to reach an agreement.

Applicants Personally Interviewed

The system of employment, in effect, has as its main purpose the hiring of men who are suited for the kind of work which the factory has to offer, and the placing of these men in jobs for whch they have some natural adaptability.

Among the purely welfare features of the factory are an athletic association, which divides itself between athletics and entertainments; a form of free sick and death benefits carried by the company, a cafeteria and dining room; club rooms for the evening recreation of employees; a ten-minutes' rest period durng the morning; a school in Americanization for the 200 foreign born workers, and a plant magazine.

The Plumb company was organized in 1856 and is one of the oldest and best known tool manufacturing concerns in the United States.—American Furniture Manufacturer.

"You have been cutting mahogany on this saw bench," said the amateur Sherlock Holmes, as he looked at the red dust.

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Standard Paint & Varnish Co., Limited

Windsor, Ontario

THE FINISHING ROOM

Fine Finishes for Different Woods

Georgia Pine and Sycamore Best in Natural—Close Grained Woods Require Little Filling—Light Transparent Stain for Delicate Grains

By John N. Moore

Securing good lumber is one problem, making it up into good furniture is another, and finishing it, something altogether different. The last coat is the final touch of perfection which may make or mar a sale. Furniture, nowadays, has to be good all the way through, from cutting the lumber to finishing the ttable, chair or what not. One cannot skimp any point along the line and build a permanent good will. We gain our final knowledge through long experience and through failures corrected. Successes also figure in the practical and final determining of best methods.

The same finishes should not be used over light woods as prove successful on the darker. When you apply oil over Georgia pine, in the bare wood, it darkens it, therefore, it must receive a protecting coat of shellac varnish, the same being true of maple. In the old days we used to finish it up in oil, which was at that time considered the best method, but at best, it was only a cheap, easy job, and time and better understanding has emphasized its disadvantages, for it spoiled both grain and color.

Natural Finish for Yellow Pine

Yellow pine has, of course, a beautiful grain, particularly that, found in the hard growth. In the old days we used to use hard or yellow pine in cheap grades of furniture. It looked very well for a time, but later would turn dark and it became difficult to restore its original beauty of grain and color. Better than oil is a coat of brown japan, which gives a little color and accentuates the beauty of the grain, but the natural wood preserved by shellac and given a coat of finishing varnish gives the best job. Japan, however, should be thinned down with benzine and rubbed well into the wood. The first coat wiped off but the succeeding coat should be left to stand. Orange shellac gives some color to the wood, but when you want to keep the color and grain exactly as it comes, white shellac brings best results. The former may have better body, which accounts for its presence on hard pine and on all cheap work.

The first thing required of any finish is a smooth surface, free from dust and markings, even from pencil or finger marks. Unless the varnish is more or less colored the slightest mark will show up in the finish, therefore, you are assured much better results by taking pains to see that the surface is clean and bright.

Securing a Colorless Finish

If you want a colorless finish, apply a first coater of white or bleached shellac, using denatured alcohol to make it pretty thin. If nails are used see that the holes are puttied up with a good filler or wood lead thinned with yellow ochre or chrome yellow. Be sure that your filler matches the wood. It can even be a little darker, as for the passing of time the wood slightly darkens while the filler or putty holds its original color. Where shellac is used you sandpaper the first coat with No. 0 paper. Remove all dust and then apply a good grade of pale interior finishing varnish, slightly thinned with turpentine. After this has become absolutely bone dry, say after two days has elapsed, sandpaper with No. 0 paper again and dust off. The intention in this case being merely to remove the gloss. Fine curled hair or steel wool will do even better than sandpaper.

After this preliminary work give the surface another coat of varnish just as it comes from the can, not diluted in any way, and this coat may be rubbed or more coats applied if desired, the number of coats being determined by the use of the work you wish to turn out. A rubbed finish usually requires three coats of varnish, the last coat being required to rub with pumice stone and water, or oil. After this polish up in the usual manner. The above can be followed or the last coat may be flowed and left, providing the varnish is A-1 a fine lustre will result.

Natural Most Suitable for Cherry

A finish process of this kind reveals the pine in its most attractive form, yet there are many finishers who think that a dull or rubbed finish looks as well or better. Hard Georgia pine seldom needs any filling, the liquids used being surfacers rather than fillers. The above are light colored woods and there are others which come between the very light and the very dark woods. Cherry, for instance, is one of these, and is very attractive, we might say, the most beautiful when finished in the natural, but, as a rule, is stained to match other woods, mahogany being, probably, the best "camouflage." A burnt sienna stain is generally employed for this process, but there are aniline stains of rich mahogany color to be employed where a deeper and richer tone is desired.

Cherry is also one of the woods which must be made smooth and perfectly even. It, too, must be free from marks as must all surfaces upon which you desire a perfect finish. Cherry is a close-grained wood and requires only a surface filling. The same process can be followed as detailed for hard pine and maple.

We believe shellac to be the first so called surfacer and filler. First shellac and then a varnish finish is the usual process for cherry, the same as maple. Some prefer an oil stain, some water, some say that the latter is apt to leave a lap, which, of course, mars the finish, but care in application will remove this feature. If a lap should occur you can wet the edge of the lap and also that of the adjoining or unstained part.

Sycamore Takes Fine Finish

Another very beautiful wood is sycamore in the quarter sawed. It should be left in the natural. It has a very beautiful grain, wonderful markings, a very individual color and, when properly finished,

surpasses most other hard woods in its beauty, which is of a very quiet nature and quite unlike the strong contrast in features of oak, chestnut, ash, etc. Quarter sawed woods always give better effect than those which are plain sawed; they both, however, have the same color.

It is a good rule to follow never to stain sycamore, but finish it up in the natural the same as you would maple with a thin white shellac, then a varnish. We believe that on maple and birch that a water stain should be used, especially where the natural finish is desired, although some finishers show a preference for a spirit or chemical oil stain. All of these woods have very delicate markings, and do not take stains very readily unless it is a transparent one, otherwise, if a heavier stain were used the grain would be more or less obscured.

If you should use a pigment stain wipe it off well in order not to hide the natural beauty of the grain. In speaking of birch there are of course the white and red, the latter having a sort of curly growth and is very fine. Birch is often used to imitate several other woods, but, when finished in the natural, it is very beautiful and entirely satisfactory. There are some finishers who will tell you that birch is ruined by staining, but a great deal depends upon the finisher and his skill in his work.

No filling is really required on close grained woods. If, in order to counteract the action of water and the grain upon the stain, it is deemed best to use a paste filler which can be tinted to soothe the color that you want in the finish. Two and one-half pounds of paste-filler may be put in good condition for use with the addition of one-half gallon of liquid. The batch is to stand about 24 hours after application for the filler to set. Sandpaper well and then apply your priming coat which should be thinned to match the ultimate finish color. Use a like pigment for this purpose. After 24 hours sandpaper well and flow on a full coat of a good, high-grade polishing varnish, after this polish and finish in the usual manner.

Suggestions for French Polishing

Have Pores Thoroughly Filled—Knack in Forming Pad or Rubber—Dipping-up or Refilling of Pad—Consistency of Polish.

After carefully cleaning the wood of all superfluous filler, which is best done by means of odd pieces of canvas, hessian, or any coarse material, the corners and quirks of mouldings may be cleared of any remaining filler by the aid of a pointed hardwood stick. The filler in the pores must be allowed to dry, and if possible, 24 hours should elapse before polishing is commenced, says a writer in an English publication. Should it be inconvenient to allow the full 24 hours, it is a good plan to arrange that the filling of the pores shall be the last job before closing down in the evening; this will give at least 12 hours for the drying process.

On the thoroughness with which the preliminary processes are carried out depends the ultimate result, for, if the pores are not thoroughly filled and allowed full time to dry, loss of "body" or thin appearance, due to the sinking in of the pores, is bound to ensue. There is nothing mysterious about the matter; it is obvious that with any substance conveyed by means of a liquid that liquid must eventually evaporate, and that, after the evaporation and consequent drying of the solids, contraction or shrinkage must take place It stands to reason that if this shrinkage does not take place before a coating of polish is applied it will afterwards, with dire results to the polished surface.

Standard Wood Fillers Being Used

The pore-filling medium generally employed by English polishers is plaster of Paris moistened with water and rubbed into the pores by means of a piece of rag. Any surplus plaster after the drying is completed is removed by glasspapering with fine glasspaper, the cutting surface of which is toucehd with a little oil. As plaster is white, and likely to show white in the pores, a good plan is to color it with rose-pink when it is to be used for mahogany, or Vandyke brown should the wood be walnut. This plaster of Paris filling is gradually giving place to the proprietory brands of woodfillers as sold by the leading polish supply houses..

The polishing process proper may now begin. This, as generally understood in Europe, is the application of a solution of lac or shel-lac—the solvent being methylated spirit—by means of a pad or rubber, as it is technically called, and which is covered by a piece of linen rag. There are two methods in actual practice and one or other of these is employed, according to the nature of the work, class of trade or particular market for which the goods are destined.

Forming Pad or Rubber.

In the case of work of the cheaper class the pad or rubber will be made of cotton wool or wadding covered with a piece of linen rag of fine texture, such as a piece of white linen shirting. The rubber is made by selecting a piece of wadding that will fold into the size suitable for the job and drawing the edges towards the centre, being careful to keep the front portion or toe pointed, whilst the bulk of the cotton wool is drawn to the hinder portion or heel. The face of the rubber must be perfectly level; if it is not it will be found impossible to polish a flat surface with it. The pointed formation of the toe and the flatness of the surface are the two things to watch in the making up and subsequent use of the rubber, for, no matter how shapely a rubber may be when starting work, after a little use it will be found that it conforms to the shape of the hand. After shaping the wadding into a rubber, a piece of fine linen is stretched across the surface, the surplus rag being twisted round the top of the heel of the rubber and thus forming a grip for the hand when working. As the face of the rubber must be kept flat, it naturally follows that the rag covering must be without creases.

Filling or Dipping-up.

To fill the rubber with polish, hold it face upwards in the left hand and with the right hand turn back the covering rag, pour an even amount of polish over the whole surface from a bottle that has a cork with a groove cut down the side to form a sprinkler. This will prevent waste and save uncorking the bottle every time a fresh supply of polish is required. After replenishing, or "dipping-up," as it is technically called, the rag is restretched across the rubber with

the right hand, the surplus rag once again twisted round the heel and the rubber is ready for use.

A word of warning to the novice will be helpful: whilst it is necessary to remove the covering rag, the surface of the rubber itself should not be interfered with. After it is once made, a rubber should be kept in shape as long as possible. All that should be necessary for quite a long time will be to press the face of the rubber flat on the back of a piece of used glasspaper for the purpose of spreading the polish contents of the rubber evenly and at the same time keeping the face flat. So jealous are professional polishers of the shape of their rubbers (which, as we said before, gradually assume the shape of the hand) that it is the hardest thing in the world to get them to loan a polishing rubber, as they fear that in other hands the original shape may be spoiled.

On commencing the polishing proper it will be found that the pores that were apparently filled have in the drying opened somewhat. This can be remedied by "dipping-up" with a very thin shellac solution, a thin polish consisting of one part polish to, say, ten or twelve of methylated spirits; this will reduce the color to about that of brandy. With this thin polish a small quantity of flour pumice powder can be ground into the pores, which will quickly be filled again by this process.

Considerable Skill Required.

To the novice the handling of the rubber will be a matter of some difficulty at first, and before trying his 'prentice hand on a serious piece of polishing it is recommended that he first break his hand in on a piece of worthless wood; if this is done a great deal of disappointment and a considerable amount of washing off will be saved; for polishing, and we mean polishing and not the wood-spoiling that sometimes passes for polishing, is a highly skilled trade and by no means the easy process that it appears to the layman. This is not written to deter the novice, but rather that he should appreciate the difficulties he is bound to meet and encourage him to overcome them.

The first thing to remember is that a good grip of the rubber is essential. Let the whole of the rubber sink into the palm of the hand and the three centre fingers of the hand extend to the point of the rubber, whilst the thumb and little finger grip the sides; all the fingers and thumb should be as near the face of the rubber as possible without quite catching the surface of the wood in the course of polishing. If the rubber is held in this way a good grip can be obtained. Whilst holding the rubber press the face firmly on a disused flat piece of glasspaper, and, when quite flat, transfer the rubber to the work in hand with a gliding motion; do not dab it flat down, and should it be necessary to take the rubber off again, say, for refilling or "dipping-up," it must not be lifted direct off the work but removed with a gliding motion. A little practice as suggested on a useless piece of wood will soon acquaint the novice of the necessity for this. It is not an unusual thing to see a novice talking to a companion with the rubber resting on and almost stuck to the work.

Thin to Suit Wood and Work.

As soon as the rubber is in contact with the wood it must be kept in motion, partly to prevent it sticking to the work, but mainly to carry out its purpose—that is, to spread a thin film of shellac or polish over the whole surface of the wood.

How thick or how thin this coating of polish is will depend on the class of work and the varying porosity of the wood. We are often asked how much polish will be used in polishing a certain article of furniture? It is impossible to make a general assertion on this matter that will apply to the methods and conditions of each different workshop; therefore the costs of materials required for polishing can only be obtained by careful supervision and issue of polish stores.

There is plenty of scope for this, for with polish at its present price it is foolish to leave jars and drums unstoppered day after day, bottles uncorked and unused, glasspaper lying on the floor to be trodden on. A little attention in this direction will soon pull down the polishing costs. It may be interesting to some of our readers to note the covering capacity or shellac varnish applied, of course, by brush. One gallon shellac varnish covers 400 sq. ft. first coat applied to smooth pine; second and subsequent coats, 500 sq. ft.

Value of Co-operative Advertising

Co-operative advertising can accomplish for an industry, or a group of industries, all that advertising can accomplish for the individual producer. It can enlarge and stimulate the basic market by creating new users. It can spread a seasonal demand into a longer and more uniform demand. If the commodity to be sold has any points of superiority it can, by communicating these features to the public, win a larger share of the total business. It can reduce the cost of selling by supplementing personal salesmanship and making it more effective. It can reduce the unit cost of production by causing a larger volume of goods to be produced. It can improve the esprit de corps of merchants, salesmen, clerks and workmen by awakening an increased consciousness of the importance of their industry, and by bestowing upon them a better prosperity. It can correct misunderstanding by telling the truth. It can foster good will by pointing out services and policies of mutual benefit. It can educate the consumer to be a more discriminating buyer and set up trade-marks for the buyer's protection. It can promote standardization and dependability by developing new incentives for uniformity in quality.

When we know that co-operative advertising has widened markets, stimulated industry, stabilized selling, improved merchandise and lowered costs; when we know that it has been used to make us take better care of our eyes, live better, read more good books, put more money in the bank, and give more to the church; when we know that it has brought businesses and business men closer together in a spirit of comradeship and mutual service, I do not think that we can then doubt that co-operative advertising is not only a powerful sales force but a social service as well.—Printers' Ink.

Unique Use for Knot Hole

That a use has been found for the knot hole, which is regarded generally by lumbermen as about as much value as the squeal of the hog, is vouched for. Chicago packing houses are said to use all of the hog but the squeal but a Yankee going this one better, is said to have found a use for the knot hole. Taking a piece of board one inch thick which has been cut off in some factory because of the knot hole which the piece contains, the Yankee squares the pieces with the knot hole centered, sets it upon a ½-inch wooden base, glues the two together, smooths the surface of the piece and gives it a bath of varnish. Behold, the piece is a wooden novelty suitable for the desk as a receptacle for paper clips, fasteners, pins, or the like!

How Moisture Aids in Varnish Drying Kiln

Eliminaton of Thinner Does not Harden Varnish—Conditions Necessary for Successful Drying—Development of Varnish Drying Kiln.

——By Harold Sutton———

Varnish is used so much for so many purposes that every finisher should have a practical acquaintance with this material. How many finishers can tell, offhand, how varnish dries? How humidity aids in quick drying, when a kiln is employed, and what troubles occur when a second coat is applied before the first is dry?

To understand how varnish dries it is first necessary to know the ingredients of which it is composed. The three main ingredients in any good varnish are; gum, oil and some form of thinner. usually turpentine or some light petroleum product. The thinner is used merely to render the gum and oil liquid so that it may be applied quickly and easily. It does not serve any other purpose. The varnish dries by the elimination of the thinner and by a chemical change, brough about by the oxygen in the air, which hardens the gum and oil.

Necessary Drying Factors

Thus it is obvious that to dry varnish quickly and efficiently requires warmth to eliminate the thinner and fresh air (oxygen) to cause the hardening of the gum and oil. That being the case the finishing room must be warm and must have a good circulation to carry off the fumes thrown off in evaporating and also to provide a steady supply of oxygen. Warm fresh air is, then, required to dry varnish under ordinary conditions.

The term "ordinary conditions" is used advisedly in the above paragraph, for it is meant to apply to air drying under natural conditions, which requires twenty-four, forty-eight, seventy-two hours or even longer to secure a thoroughly hardened surface. Modern production methods have found that the slow air drying of finished goods, retarded the even, steady flow of work through the plant, so desirable where high production is aimed at, no resort was made to artificial means for hurrying the drying of the varnish and other finishes.

Development of Varnish Kiln

Naturally the first recourse was made to a heated room. It was figured that raising the temperature would hasten the evaporation of the thinner thus cause quicker drying. What was the result? After twenty-four hours of heat the varnish seemd to be stickier and tackier than when it went in. It may have had a slight skin on the surface but was far from dry. No doubt it was thought that this poor drying was due to the fact that the air became saturated with the fumes from the thinner and was unable to carry off any more thinner. Perhaps a little investigating and experimenting was done and it was discovered that oxygen was needed to effect the chemical change which causes the gum and oil to harden. At any rate ventilating was resorted to.

Did they fare any better when they ventilated the drying kiln? Yes they did. They found a lovely hard surface next time they opened the kiln but the trouble was that it was only the surface. The current of warm air hardened and sealed the surface before sufficient oxygen had reached the bottom of the coat. This meant that the surface drying must be retarded sufficiently to allow the oxygen in the air to reach and harden the under part of the coat first thus drying it from the bottom out, giving a hard well-dried surface. It was found that the introduction of moisture gave the desired result.

Automatic Controlling Instruments

The next step was to provide automatic humidity and temperature controlling instruments so that today we have the modern varnish drying kiln, with its forced circulation of warm, moist air. The drying conditions in this kiln are automatically controlled as to humidity and temperature. As these controlling instruments are subject to adjustment, practically ideal drying conditions may be secured and maintained.

The makers of the best types of varnish drying kilns have gone a step further and have included an air washing system that thoroughly cleans the air, before it goes into the kiln, removing all dust and other impurities. When this is employed the dried varnish surface is free from dust and specks.

A hygrometer or wet and dry bulb thermometer may be used to determine the relative moisture content of the air. A plant recently visited was carrying a temperature of 110° on the dry bulb and 100° on the wet bulb and were getting good results. It was found that the varnish was dried thoroughly in an eight or ten hour period. The adoption of the humidity controlled kilns to the drying of varnishes and finishes has been one of the big factors in increasing the production of the modern finishing room.

Finishing Tenessee Red Cedar

Tennessee red cedar is used largely for cedar chests and other similar articles. The grain is a beautiful shade of red, the sapwood white and the knots a very deep red. In order to bring out the beauty of this color combination a natural finish is usually given. The usual method is to give a coat of white shellac, sand, two or three coats of varnish and rub to an egg-shell gloss. If a deeper shade is desired the wood may be oiled before shellacing.

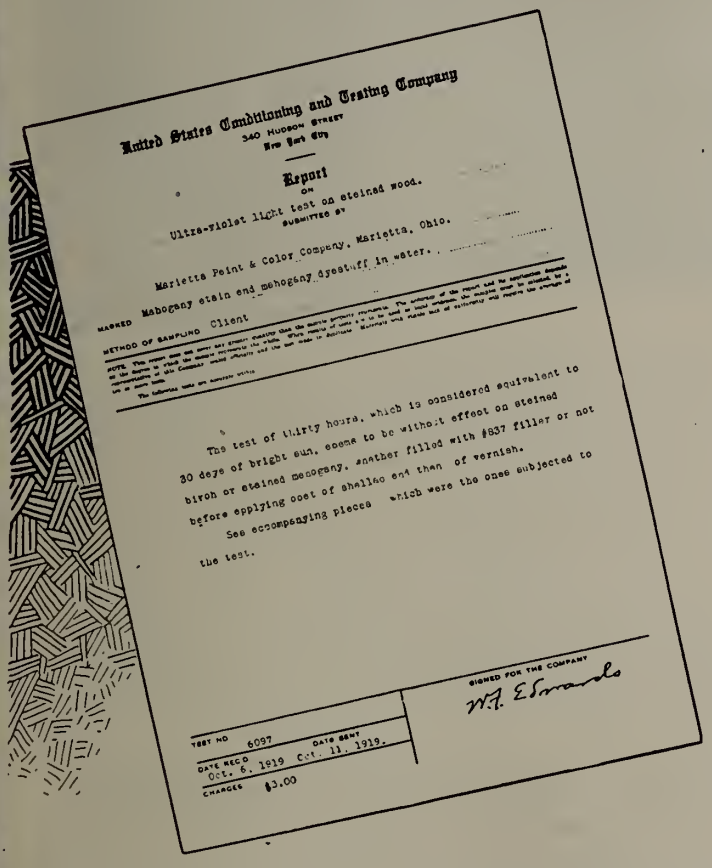
Shortage of Piano Actions in England

At the present time there is a very active demand for all that is produced (in the piano trade), but it must be remembered that there is what may be termed an artificial shortage of actions. At any rate, their scarcity is more marked than is that of any other article used in pianoforte manufacture. When actions can be bought freely on the market, as desired. we shall look for some distinct changes in piano prices. There will be more competition among the makers themselves, and their numbers will increase, for we are constantly aware that men—some dealers, and others ex-contractors—are only held back from commencing manufacture by the practical impossibility of securing actions and factory accommodation. Foreign actions may be imported; but this would not reduce prices directly, for on information given to us, they, at the present time, cost more than English actions.

MACO

MARIETTA WOOD FINISH SPECIALISTS

The New Principle Non-Fading Stain



United States Conditioning and Testing Company
340 Hudson Street
New York City

Report
On
Ultra-violet light test on stained wood.
Submitted by
Marietta Paint & Color Company, Marietta, Ohio.
Marked Mahogany stain and mahogany dyestuff in water.
Method of Sampling Client

The test of thirty hours, which is considered equivalent to 30 days of bright sun, seems to be without effect on stained birch or stained mahogany, another filled with #837 filler or not before applying coat of shellac and then of varnish.
See accompanying pieces which were the ones subjected to the test.

Signed for the Company
W. T. Edwards

Test No 6097
Date Recd Oct. 6, 1919
Date Sent Oct. 11, 1919.
Charges $3.00

Thirty days of bright sun fails to change this non-grain-raising stain. See facsimile of report on test made by the United States Conditioning and Testing Co. herewith.

Maco is neither a water nor an oil stain, but has the virtues of both without their faults.

It has the non-fading quality of a water stain, the non-grain-raising quality of an oil stain, and can be filled directly over like a spirit stain.

A tremendous saver of toil and trouble, to say nothing of money.

Write for folder and sample panel

The Marietta Paint & Color Co.

MARIETTA, OHIO

© James Burton, N. Y.

The "Corsair," owned by Mr. J. Pierpont Morgan.

Why the "Corsair" sailed on time—

IN JUNE, 1919, Jim Fraser, just back from France, took off his uniform and went to work for the Electric Floor Surfacer Company, 149 West 36th St., New York City.

Three weeks later he was made foreman. "Because," as Mr. Campbell, the manager, said, "when you give Fraser a job it's done on time."

When J. Pierpont Morgan's big steam yacht "Corsair" was mustered out of the Navy her decks were badly scarred from hard service in foreign waters. Mr. Campbell contracted to re-finish the "Corsair's" decks and turned the job over to Fraser. "The 'Corsair' sails Friday? Three full working days. That's easy," said Fraser. But—

Those three days it rained. Not until Thursday afternoon did it start to clear. And the "Corsair" was to sail next morning.

That hot July night the deck-watch on the "Corsair" saw a stubborn fight against Time.

Under the white glare of the deck lights Fraser and his little crew worked feverishly—all night long their sanding rolls, covered with fast-cutting "Speed-grits," whirred at 1750 R. P. M., grinding down the scarred deck surface.

At 7:10 Friday morning, the job was finished and Fraser, with his weary crew, left the yacht.

At eight o'clock the "Corsair" sailed—on time!

"A tough job," said Fraser. "That deck was scarred from loading shells, splotched with oil and grease and water-soaked from the rain. Some job—but 'Speed-grits' Garnet Paper is *some* job-speeder."

'And I've got *some* workmen," added Mr. Campbell with a smile. *Good workmen know the difference.*

Send for "The Difference Book"—Address

RITCHEY SUPPLY COMPANY

154 Pearl Street (CANADIAN DISTRIBUTORS) **Toronto, Canada**

Or send to Manning Abrasive Co., Troy, N. Y., U. S. A.

Speed-grits

comes in the following varieties:

GARNET PAPER
GARNET CLOTH
GARNET COMBINATION
FLINT PAPER
EMERY CLOTH
EMERY PAPER
METALITE CLOTH
HANDY ROLLS
GRINDING DISCS
DURITE CLOTH
DURITE PAPER
DURITE COMBINATION
DURUNDUM PAPER
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Manning Speed-grits

Reg. U.S. Pat. Off.

Don't say sandpaper—say Speed-grits

Manning Speed-grits

Look for this trade-mark on the back of every belt, sheet or disc.

The above photograph shows the Nichols Equipment installed in the works of the Votey Organ Company, Garwood, N.J. These dryers may be used to turn out automobile bodies, furniture, pianos, talking machines, etc., in as many days as it formerly took weeks, and the finish is better, for it is dried scientifically, from the inside out.

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1—It will easily triple the output of your finishing rooms.

2—It will decrease congestion in your factory.

3—It will decrease the investment in goods necessarily in process.

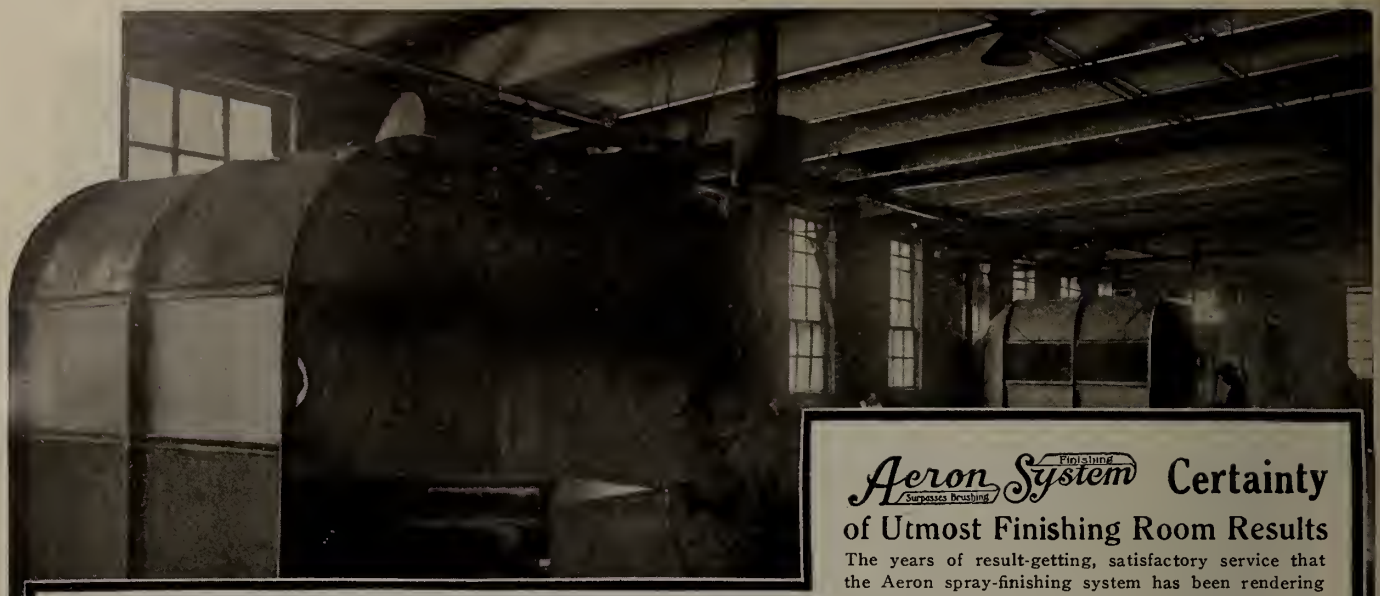
4—It will enable you to make more prompt deliveries.

We will analyze your particular conditions and then make you a proposition on an equipment that we know, from our extended experience, will save you time and money, as well as improve your product.

We guarantee fully the efficiency of the equipment as well as its mechanical construction. Every installation has been successful. There are hundreds of concerns to whom we can refer you.

A. S. NICHOLS COMPANY, 33 W. 42nd St. NEW YORK CITY

Manufacturers of Dryers for Lumber, Veneers, Glued Stock, Varnish, Paint and Enamels, for both high and low temperature work. Also sole agents for "Zenitherm" insulating material for the making of rooms for both high and low temperature drying.



Aeron Finishing System — Surpasses Brushing

Certainty of Utmost Finishing Room Results

The years of result-getting, satisfactory service that the Aeron spray-finishing system has been rendering the wood and metal-working industries, gives to each new installation of this equipment an assurance of the utmost in quality, speed and economy.

No matter what type, size or grade of product you manufacture, nor with what kind of finishing material you coat it—the Aeron System undoubtedly is now being used on work of the same or a similar character, and will be most certain to make it possible for you to do the highest grade of work at a big reduction in costs.

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A cleaner and more uniform coating of every material is applied—there are no brush marks, thin spots or fatty edges.

Work is made absolutely healthful and safe—all fumes are completely removed.

Equipment is kept in the best working condition at practically no cost.

The Aeron System is sold on a strictly guaranteed basis, and every installation followed up by a competent service organization.

Write and let us send on more definite particulars.

The DeVilbiss Mfg Co. 3718 Detroit Ave. *Toledo, Ohio, U. S. A.*

Painting your buildings with Aeron System PORTABLE PAINTING EQUIPMENT means a big saving in time, labor and confusion.

High Grade Stains and Fillers

In our Stains you will find the highest possible color values—they are positive—they are permanent. Manufactured in quantities from the best quality raw materials.

Wood Fillers also that have been tested under the most difficult of varying circumstances and found satisfactory.

Eliminate trouble in your finishing department by using these tested materials.

WRITE FOR PRICES

The
Edward J. Shannon Company
CINCINNATI, OHIO

Veneers and Panels

Making the Veneer Room Efficient

Layout of Equipment Effects Production—Heat, Light and Location Important Factors

By R. N. Y.

When fitting up a veneer room or installing new equipment in this department, it is advisable to give a considerable amount of thought to the lay-out of the machines and the manner in which the work will proceed, while being veneered. The production of many veneer rooms is low simply through the poor lay-out of equipment. This is not always due to neglect but is sometimes due to the inability of the men responsible for the installation to visualize the work of this department and thus see the stock going through with a minimum of confusion and handling and the elimination of all unnecessary or unproductive work.

The ideal glue room is what every factory owner should aim at having. It might be well to consider what constitutes the ideal veneer department, taking it both from the standpoint of production and also of labor requirements. These items are the lay-outs of equipment, an adequate supply of natural light, preferably from a northern exposure, plenty of heat, more particularly if animal glues are used, proper ventilation of both glue room and drying room so that all moisture is carried off, and modern labor-saving veneering appliances.

Causes for Defective Work.

Most of the trouble encountered when making veneer products either in the glue room or from defective work can be traced to either one or more of the factors of light, heat, ventilation or not making the best use of the equipment on hand. It often seems to be taken for granted that any empty nook or corner of the factory is good enough for the veneer department in choosing this location few, if any, of the above factors are considered.

Many manufacturers make the mistake, for it is a mistake, to attempt to do veneered work in the basement of the plant. The chief objection to a location of this kind is that moisture or dampness is usually present to a greater extent in the basement than in any other part of the building. This moisture results in more or less trouble all through the veneering process. It has been proved in actual practice that the work done on the lower floor is more inclined to warp and twist than where the product is veneered on one of the other floors. This is due entirely to the dampness which is encountered in a basement. The logical place for this department is on the second or third floor. Other advantages of the upper location is that it is easier to secure plenty of light, is usually easier to heat and can be ventilated much more readily.

Type of Floor Effects Product.

The floor of this room should come in for a little attention. It is advisable wherever possible to have a wood floor, such as maple or birch, in the veneer room. One often finds that a cement floor has been laid for this work. A floor of this kind is usually more moist than a wooden one. A piece of veneered work stacked as high as from 4" to 6" from a cement floor, will often absorb enough moisture in twenty-four hours to cause it to warp and twist to such a degree that it is rendered practically useless.

We now come to the heating of this department. The writer has visited many glue rooms and found heating arrangements of all kinds both good and bad. Probably the worst of these is the overhead system, that is, where the coils are arranged on the ceiling above. This method not only gives a very unequal distribution of heat, especially where needed most, that is, near the floor where the forms of veneered stock are built up, but also makes it a most unpleasant department in which to work. A forced hot draught or blast system is often encountered. The success of this arrangement depends largely upon the method of installation. If the outlets are such that the warm air is forced directly upon the surface of the veneers that are being glued, trouble is sure to arise. This warm air, will, upon striking the freshly-glued surface, cause a skin like coating to form over the layer of glue. Should this skin form, it will interfere with the adhesiveness of the glue and will likely cause blisters or loose veneers. If this type of heating is used, it should be so arranged that the warm air will circulate evenly around the room and at the same time not blow directly on the stock in process of manufacturing.

Most Suitable Heating Arrangement.

The most suitable arrangement is the ordinary form of steam pipe placed around the walls at the bottom near the floor, thus resulting in an equalized temperature in the lower part of the room where the heat is needed. With an even temperature in the glue room, the glue does not set so rapidly, thus giving more time to build up the stock before rushing it into the press.

In a suitable temperature and under ordinary conditions a skin will not form or the glue should not set under fifteen minutes. When animal glue is used the temperature should be maintained at about 85 degrees. Should it fall below this point, there is a tendency for a skin to form quickly due solely to the lower temperature.

A reliable thermometer should be provided and hung about 3' or 4' from the floor. There is often a variation in the temperature of from 5 to 10 degrees between the air at a 3' level and at a 7' level. Thus if the thermometer is placed high up on the wall the true working temperature of the room is not ascertained. The difference in temperature between the two levels is more marked in winter than during the summer.

Eliminating Lost Motion.

When arranging the equipment, it should be placed in such a manner that the stock will proceed directly through from one operation to another with a minimum of confusion and handling. Thus it would go through the spreader to the press and from there into the piling and drying rooms. If the press and glue

spreader are separated or on different parts of the floor or if the press and drying room are on different sides of the building, it can readily be seen that it will require a lot of additional handling in moving the work to and fro. The same applies to the glue mixer or cooker. It should be as near the spreader as possible. The ideal installation is probably where the mixer or cooker is placed on a platform above the spreader and the liquid adhesive fed to the rolls by gravity.

It is the attention to these. what may seem to be, small details, that often makes the difference between the veneer department which turns out a fair quantity of quality stock and the same department in another plant, which produces a smaller quantity of poorly veneered work. Not only that but it is much easier to secure and retain good workmen when you provide a convenient well-equipped place for them. This latter item often has much to do with high production.

Is the Plywood Auto a Probability?

New Fields Opening Up for this Valuable Commodity—Automobile and Railway Car Manufacturers Possible Users—Development of Waterproof Glue Gives Impetus to Industry

By Lawrence Ottinger*

I have been travelling around the country quite extensively since the war ended and I am reminded of school days when I read that 'All Gaul is divided into three parts.

Our population seems to be dvided into three parts, viz., men who are going to build panel plants, those who are building panel plants, and those who have built panel plants. I am probably not giving you any news when I tell you that the number of new plants is simply enormous, to say nothing of the plants heretofore devoted to other lines of manufacture who have turned their production into panels. I refer to such enormous concerns as The American Car & Foundry Co., Pullman Palace Car Co. and any number of furniture concerns. This undoubtedly means that within a certain period of time, and from present indications, not so very far distant, there is going to be a large over production of panels if they are to be consumed exclusively in channels of previous consumption. In other words, if the consumpton of panels is to be restricted entirely to furniture manufacture, wagon building, store fixtures and phonograph cabinets, the productive capacity will soon be very much greater than normal consumption. One may thus reach the conclusion that panels must find additional fields, or our happy days will soon be ended.

Of the new fields opened by the waterproof proposition perhaps the automibile field has developed more rapidly than any other. There are now two panels plants whose entire autput is devoted to the manufacture of plywood wheels and those wheels are now going into automobiles and are apparently very satisfactory. For tops there is already a tremendous demand. One concern, as you all doubtless know, is making a very large production of waterproof plywood tops. Half a dozen large automobile body builders are using plywood in the manufacture of ribs, roof beams, and other curved braces formerly made of lumber, and find the plywood construction much stronger, light and cheaper. The process is, of course, to make panels in the curvature required, in good widths, cutting these out to the sizes desired.

Three-Ply Automobile Bodies

Probably the most interesting development in connection with automobiles is the use of plywood for the building of the whole body to replace the metal. Some very large concerns have built experimental bodies with a fair measure of success. There is one concern that has built a five passenger Sedan body weighing 120 lbs. which is just about one third of the weight of an aluminum body of the same cubic capacity. One concern in Buffalo is said to be in active production of a body made completely of plywood, although I have not personally seen it. I have seen a bus body, with a double deck, built of plywood practically throughout and weighing about twenty per cent. less than a single bus body of the same size under the old form of constructon.

We have had many requests from engineers connected with large automobile concerns for information concerning bodies made of plywood compared with bodies made of metal, and there have been a good many questions asked such as the ability to stamp out sizes and shapes, but I shall not go into further detail on this subject. However, I can not see any reason why the automobile industry should not take a tremendous quantity of waterproof plywood in the future for the same reason that plywood was adopted for aircraft construction, because it is the material which has the greatest strength per unit of weight. In this connection the gasoline situation is important, with 50 cents a gallon confidently expected. It takes more gas to pull a 5000 lb. car than it does to a 3000 lb. car.

Panels for Steamship Construction

The next important probable source of consumption is in the trans-Atlantic steamer, and in this connection the European seems to be far ahead of the American. We have received from abroad inquiries for hundreds of thousand of feet of plywood to form the partitions between the cabins of passenger steamers. These panels are usually wanted in from 5/8 in. to 1 in. in thickness and average about 5 ft. wide and 6½ to 8 ft. in length. The English want gum, the French birch and the American shipbuilders are not particular as to the kind of wood, it being remembered that all of these panels are heavily painted. When the Leviathan was converted to transport service, it was found that the partitions were made of waterproof plywood three ply with a 7/8 in. pine core and ¼ in. mahogany faces. The latter seemed to be either Cuban or Phillipine mahogany.

The next important demand for waterproof plywood is refrigerator industry, and a number of these plants are either buying waterproof panels or buying waterproof glue and laying up their own panels. They

(Continued on page 99)

*United States Plywood Corp., New York.

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

THE OHIO VENEER COMPANY

Importers and Manufacturers

Foreign and Domestic Veneers and Hardwood Lumber

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Send us your enquiries and orders. We guarantee good service.

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AMERICAN WALNUT VENEER

Long Wood and Butts

QUARTERED WHITE OAK VENEER

Sawed and Sliced

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Litton Veneer Co.

Manufacturers

American Walnut, Figured Gum, Sliced Quartered Oak, and all Kinds of Figured Woods

Walnut and Quartered Oak Lumber

Office and Mill

ROCKFORD - ILLINOIS

Panels and Rotary Cut Veneers

Considering the present large demand for high-grade cabinets and the extreme scarcity of good panels, it may interest you to know, Mr. Manufacturer, that we now have in stock, and can make immediate shipment of, a very large quantity of both three and five-ply panels for talking machines in either

Mahogany, American Walnut, Quarter Sawed Oak

We also have for immediate disposal a large supply of birch and gum panels adaptable for shelving.
We are in position to take orders for future delivery. Order now for holiday trade.

We have just received a big shipment of single ply spruce for horn stock. Write us for prices on cross banding and core stock.

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Fifty-two years of making and finishing the right kind of product has resulted in service of that character becoming not only a trade asset and the basis of a National reputation, but a veritable business habit. Our endeavor has for so long been to never deviate from the standards of 100 per cent. excellence as laid down by those who founded this business, that it is practically a matter of impossibility for us to vary the quality of our goods without a complete reorganization over to a high-speed, quantity basis.

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It is recognized by the discriminating trade that our service incorporates not only goods of the highest possible excellence, but thorough understanding of the customer's requirements in order that his share of our always choice selection of goods may be precisely what he prefers.

Our knowledge of customers' needs and our ability to exactly meet those needs, recommend our service to you as a careful and experienced buyer.

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OAK MAHOGANY CIRCASSIAN MAPLE

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BIRCH POPLAR CHERRY WALNUT GUM

VENEERS---*the better quality kind*

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ROTARY, VENEERS, POPLAR CROSSBANDING AND SHEET STOCK,
WALNUT BUTTS AND SAWED QUARTERED OAK

Your orders will be filled exactly as you specify and we can assure prompt shipment from our large reserve stock. Let us hear from you.

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Afforded by the best equipped Veneer Warehouse in Chicago, A very complete stock of

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"Peerless" products are standard everywhere and you are always exercising Safety First in using them. Try us next time.
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We specialize in large size poplar veneers as we have extra fine poplar logs. We can cut veneer up to 10 feet square.

Our walnut veneer cannot be beat, both in plain and figured wood.

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CARRYING

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1,000,000 Feet
QUARTERED RED GUM
to select from

WE Respectfully solicit your inquiries

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Specialize in

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For Service and Quality try

HENRY S. HOLDEN
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Wide Veneer

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Quartered White Oak
Sawed Veneer
12″ and wider

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Both Sliced and Sawed Quartered White Oak Veneer, Sliced Walnut Veneer, and Rotary Cut Poplar Cross Banding

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Mahogany, Walnut
Birch, Ash, Poplar

Rotary, Sliced or Sawed in all Thicknesses

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Send for Samples

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MANUFACTURERS OF

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OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

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Stock Sizes for Immediate Shipment. All Woods. All Thicknesses. 3 and 5 Ply or made to your specifications

We are Chicago agents for WOCO FIR PANELS, and carry a full and complete line in all stock sizes and all thicknesses at our Chicago warehouse for immediate shipment.

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SUPPLYING HIGH GRADE

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IN ANY SIZE, THICKNESS
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Immediate Shipment on all Stock Sizes in Walnut, Plain Oak, Birch, Mahogany, Etc.

Buyers of Veneers and Panels

will find it to their advantage to purchase from the manufacturers and dealers whose advertisements appear in this publication. They are progressive firms—the leaders in the business, which is a guarantee of good service and prompt attention to orders.

Give your business to the man who will spend his time and money to get in touch with you. He deserves it—if his stock and prices are right.

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

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Exclusive Manufacturers American Walnut Lumber and Veneers

ON account of the freight congestion and the possibility of a very serious car shortage, we suggest you anticipate your Walnut requirements and get in your supply for the next few months as soon as possible.

Write us for prices on Lumber and Veneers. *"PENROD SERVICE" Satisfies.*

INVESTIGATE

P.-J. SERVICE

For high-grade rotary cut veneer, that is smooth and evenly cut and dried by mechanical means to any percentage of moisture desired.

We also operate large band mills where all kinds of southern hardwood lumber is cut from own own tract of timber in the very heart of the Saint Francis Basin District, Arkansas.

PENROD-JURDEN COMPANY

Mills at Helena and Penjur, Ark. General Offices: Memphis, Tennessee.

Is the Plywood Auto a Probability?

(Continued from page 90)

have not gone ahead as quickly as might have been anticipated, probably because the same condition has existed with them as with us, tthe ability to sell all they can make regardless of cost, construction or competition. It is very probable, however, that when the market is again a buyer's market, the refrigerator which is made of plywood and is therefore lighter and of better appearance will change the construction used in this industry materially.

Railway Car Manufacturers Hesitant

Car builders have gone into waterproof plywood to a considerable extent. They are a little slow in taking hold of it, because a good many of them have replaced plywood on car ceilings because of the poor result which they have had with panels made with non-waterproof glues and have substituted fibre, linoleum or other similar materials. Some of them are using plywood and using waterproof glue. The aircraft people are fairly active, particularly the flying boat or seaplane manufacturers, and as this country's program for aircraft will be of considerable size this year, there is quite a demand from this source. A sixty million dollar appropriation is expected. The German 'Albratross" which was sent to this country was made entirely of metal and although it was wrecked it showed wonderful strength in parts of its construction. Some are of the opinion that plywoods will not be the material used for aircraft construction in the future, but as far as our country is concerned, this is a long way off.

There are innumerable minor fields which have adopted waterproof plywood in an experimental way which include wire reel manufacture, sporting goods manufacture, outdoor top manufacture and one of the most unique is shoe manufacture. Our firm supplied a quantity of plywood to a concern which has made up its shoes of part plywood construction including soles and heels, the soles being made of five ply 3/8 in. birch and being so inserted in the shoe that when they wear out, they can be replaced by the wearer in a few minutes.

Returing to the furniture, piano, phonograph and similar trades, a very large number of manufacturers are using waterproof glues for jointing and veneering. The ability to use the glue cold, without having to heat the wood, together with the low cost of the glue compared with the hide glues has caused iits adoption in a very large number of plants. In the piano trade, and particularly the action trade, the waterproof quality has been the determining factor. Many of the larger door manufacturers are using waterproof glue for their outside doors and some on their entire production.

Producing Increased Volume of Veneers

Plant of Veneer Manufacturer Extended—Native Woods Worked Up Into Attractive Stock—Every Effort Made to Keep Down Manufacturing Costs

With a daily output of from 100,000 to 125,000 feet of material, the reorganized veneer plant of the National Lumber & Veneer Co., Indianapolis, Ind., is said to be among the finest on the continent. This plant was recently enlarged and new equipment added with a view to increasing the output and in some measure coping with the volume of business that is offering. The raw material is received at one end and progresses by the most direct route to the warehouse and shipping departments.

The output is confined chiefly to native American woods and comprises such lines as such as sawn and sliced plain and quartered oak, sliced walnut, half round and butts, cut on the half round. and poplar and gum-rotary cut. The manufacture of the veneers requires a heavy installation of modern veneer manufacturing equipment. The sliced stock is cut on a 16 ft. Capital slicer, while a special veneer saw takes care of the sawn product. A 125" Capital veneer lathe handles most of the rotary cut veneers and a special combination half-round and rotary machine works up the butts and half-round stock. The drying is done with the aid of two mechanical dryers 12 ft. by 120 ft. The stock enters green and wet at one end and after travelling the length of the dryer emerges dry and flat at the far end.

The equipment is all electrically driven. A boiler is installed and is used to heat the vats, dryers and buildings. A conveyor system is being installed to carry the bark and other waste material, suitable for fuel, to the boilers. The buildings are carried on concrete foundations of sufficient height to permit all motors, shafting and belts to be installed beneath the floors. This form of installation tends to reduce accidents and aids production by providing a clear floor space.

A market has been found, which takes the sawdust in carload lots. This material is conveyed by a blower exhaust system to a storage bin which has been constructed close to a railway siding. Most of this dust collection system is installed beneath the floor.

Veneer saws and long platform for lift trucks

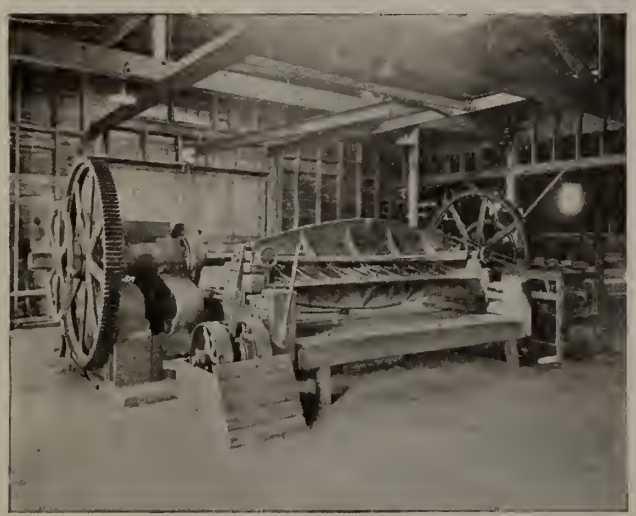
The raw material is brought in by rail and unloaded with the aid of a large electric crane. Indiana oak is used for the oak veneers. The flitches are unloaded on a platform which is in line with the veneer

saws. The logs for the other veneers are cut into lengths by means of a portable gasoline saw and the short pieces are then placed in the vats for steaming. The movement of the logs from the vats to the slicers and lathes is facilitated by the installation of a overhead carrier system. This system is fitted with powerful chain blocks and the logs are picked up and

Veneer slicer lighted by large skylight

conveyed to the different machines, where they are piled convenient to the operator.

The mechanical drying equipment is installed near the veneer cutting machines. As the veneers are cut they are fed into the dryers. After going thorugh the dryers the stock is piled on special platforms and lift trucks are employed in moving the dry material to the warehouse or shipping departments. For the long



Capital lathe for making rotary cut stock

stock the platforms are 12' long and the lift trucks 8' and 10'. Using platforms and transveyor trucks reduces the loss from breakage as well as lowering handling costs.

Provision, in the shape of large skylights, has been made for supplying a bountiful supply of light to each machine. This tends for high production and that production is maintained even on dark and dull days.

The personnel of the National Lumber and Veneer Co. is as follows: B. F. Swain, president; C. J. Roache, vice-president; E. O. Lange, secretary-treasurer; H. A. Hagerman, sales manager.

Overheating Weakens Animal Glue

That long continued heating reduces the strength of animal glue solutions is demonstrated by the following test made at the Forest Products Laboratory.

Solutions of a high-grade joint glue and a veneer grade glue were heated for 48 hours at 104, 140 and 176 degrees Fahrenheit, and tested every few hours during this period for strength and viscosity.

In the first 7 hours of heating at 176 degrees the veneer glue lost approximately one-half its joint strength, and the high grade glue joints weakened almost as much. The greatest loss in the strength of the glue joints made with the high grade glue after 31 hours of heating, due possibly to a combination of bacterial and chemical action. The veneer glue joints showed a more gradual decrease at this temperature. The most favorable of the three temperatures tried was 140 degrees, but even at this temperature an appreciable weakening in both glues was noted at the end of 7 hours, and longer heating caused greater loss.

The viscosity of the high grade glue declined more rapidly than that of the veneer glue, but at the end of the heating test the viscosity of the high grade glue still averaged higher than that of the veneer glue.

Covered glue pots were used in this experiment. When open glue pots are used the loss in strength caused by the heat is less apparent, since the loss is compensated to some extent by evaporation of the water. On the other hand, the concentration of the glue solution through evaporation is an expensive means of gaining strength.

Trimming Veneered Stock

A manufacturer of built up dash-boards for automobiles was confronted with the necessity of increasing his output. It was found that the trimming and sizing of the boards after veneering was a slow operation and was consuming an unnecessary amount of time. A double cut-off saw was installed to speed-up, but it was found that owing to the overhang of the face veneers and the lumps of glue which ran over the edge that it was difficult to make a true cut. This was overcome by driving a couple of finishing nails portway into the saw gauge. The core of the piece was placed against the head of the nails, giving a true cut. Four nails were used and two pieces trimmed at a time.

Moisture Content vs. Density of Wood

Even after long exposure to the same atmospheric conditions different pieces of wood do not have exactly the same moisture content, states the Forest Products Laboratory, Madison, Wis., as the result of recent tests. Variations of two per cent. were recently found in red oak blocks stored under carefully fixed humidity conditions at the laboratory.

These moisture differences, unlike variations in strength, are apparently independent of the density of the pieces. In the laboratory experiments the variation proved to be as great in blocks of the same density as it was throughout the lot of specimens. Moreover, the range in moisture content was the same in wood of low density as in wood of medium density or high density.

This question of moisture content is a most important consideration in the seasoning of airplane parts, of furniture stock and in similar wood manufacture.

Demand the Best

When it comes to Veneers, the best is none too good. That's why we carry nothing but A.1 grades at all times—it pays us better—it pays our customers better—and it pays the ultimate buyer of the finished products better. Right now we have for immediate shipment some excellent Crossbanding & Core Stock—Mahogany, Walnut and Oak. Come in and look it over, or have us submit quotations.

Toronto Veneer Company Ltd.

1100-1104 Queen St. West - TORONTO, ONT.

Walnut and Quartered White Oak Veneers and Lumber

Prompt Delivery

LONG-KNIGHT LUMBER COMPANY

INDIANAPOLIS - - - IND.

The Lumber Market

Domestic Woods

Weak, expresses the demand for Canadian woods. Midsummer is usually a quiet period, but whether it is quieter than usual is difficult to judge. Stocks are fairly plentiful and are in good shipping condition. The situation which exists in the American hardwood market is reflected in the Canadian lumber situation. This is largely due to the fact that the strong demand from the American market is practically non-existant. There is, comparatively speaking, very little lumber moving southward. The demand from Canadian manufacturers is stronger. There has been a reduction in ocean freights from 300,s, per standard to 200,s., with the prospect of further reductions. This has been brought about by the competition of the tramp steamers who have been quoting as low as 175, s. per standard. Just what effect this will have on the export of lumber is problematical. There has been a certain movement overseas, but at the present writing lumber is a drug on the British market. Should any of the large British building schemes be pushed a considerable quantity of lumber will be required. In Canada the speculative building is about over with or the season, and while a lot of construction work is being gone ahead with, building on a large scale can hardly be anticipated before next spring. All indications point to a fair crop. With plenty of money in the rural districts the rural demand for lumber should show improvement.

The softwood market is very easy. The strongest feature is white pine, which is holding firm. Spruce and hemlock have dropped slightly, largely due to weak call. American yellow pine is being offered at reduced prices and has something to do with the drop on hemlock and spruce. The cut in the Ottawa valley will likely be below normal. Several mills have been forced to close earlier than usual, through a shortage of logs.

The demand for hardwoods is what may be spotty. The planing mill men and trim manufacturers are buying freely. Very little is going to the American market. Brown ash is probably the strongest hardwood item. Birch is a trifle weaker but is not showing any sign of a big drop. Maple is plentiful but is not selling and is about the weakest item in the hardwood lists. Stocks of all woods are fairly plentiful and are in prime shipping condition. The demand during the next month or six weeks should be the biggest factor in determining the trend of prices.

Imported Woods

The American hardwood industry is experiencing the usual summer slackness. In addition other factors are likely contributing to this slack period. Many buyers, anticipating a strong break in prices, have refrained from buying, but it is doubtful if they will gain any advantage by holding back. The general opinion is that the stocks held by the wood users, are, on the average, well below normal and that when buying does commence, it will be in real earnest, with a large number of buyers in the market. Should this occur the result will be firmer and perhaps higher prices. The car situation is serious and does not show any signs of improving. It is effecting shipments of lumber to the consumer and in many cases retarding the delivery of logs to the mills. Increased freight rates and slow deliveries seem to be assured. The "Hardwood Record" in outlining the situation, says: "The money is still here and there still exists a stupendous necessity for goods. True the world is probably schooled to doing with less than formerly and is certainly most thoroughly convinced that it has been mulcted of much of its resources by exorbitant prices. However, when it is satisfied that the price level has been stabilized on a basis commensurate with actual worth it will again open its purse strings even if those values are higher than in the old days. That desirable condition is most certainly on the way, though it will be preceded by numerous bumps and jolts as the wheels seek the track. In the meantime lumber values are gradually seeking a level of values more truly expressive of intrinsic worth. Prices on hardwoods in general are not sliding precipitately because stocks are in strong hands, because buyers' supplies are low and because it is physically impossible to pile up any great amount of lumber. Sales are reported as having shown just a slight improvement of late and before the year is up the call for hardwood stocks will have increased one hundred per cent. Prices will not again run away, but they will again go higher."

The Chicago market is quiet, though there is a current of optimism running beneath the surface. Building activity is on the increase. It is the general opinion in that district that buying will be resumed shortly and on a large scale so that available stocks will be speedily exhausted.

Buffalo reports a slack period, with trade quieter than a few weeks ago. The car shortage is blamed for this condition. Some far-sighted buyers are not willing to risk the traffic congestion that appears probable for the fall and winter and are laying in some stocks. Maple is firm and in strong demand. Poplar and cypress are both popular. There is a fair demand for oak and ash, though not as strong as earlier in the season.

The Evansville market is fairly strong, with most lines in fair demand. Conditions are not as good as they were a few months ago. The trade outlook is reported encouraging. Prices are holding firm and if the opinion of the lumber men is worth anything, they will continue that way. The car situation has improved in this section and logs are moving in freely. Quartered and plain white oak are being bought up, in fact all oaks are being sought after. Walnut appears strong, while there are numerous enquiries for ash, poplar and maple. Good weather has helped the building situation.

The demand in the Louisville market is on the increase. The orders being placed are mostly for kiln dry stock and for immediate shipments. This would lead one to the conclusion that the stocks of the buyers are very low and they are buying for immediate use. This would confirm the opinion of many lumbermen. Some mills have about reached normal production, while others are forced to curtail operations for want of logs. The demand for mahogany and walnut is increasing. Poplar is exceptionally strong. Oak, ash and gum are moving freely. The market for veneers is showing a marked improvement, but it is doubtful if the veneer manufacturers have caught up with orders booked earlier in the season.

Taking it all in all, it does not appear as though prices will drop much further. Another month should give a good idea of how the market will likely move.

TRADE MARK
NICKEY BROTHERS INC
LUMBER VENEERS
NB
NONE BETTER
MEMPHIS
TENN
U.S.
A.

The Superior Quality of N.B. oak veneer is apparent and easily demonstrated

NICKEY BROTHERS, INC.

Memphis, Tenn.

The Demonstrable Quality of N. B. Veneer

There are certain objects which have the subtle quality of inviting the experience of other senses than that of sight. Wood is one of these. That is why there is always an instinctive impulse to touch, to handle and to feel any beautiful creation in wood.

This is one of the reasons for the popularity of N. B. Quality Veneer. Its smoothness entirely satisfies the sense of touch, thus emphasizing the quality which is manifested in its appearance.

Concentrate Your Purchases and Save Money

Through Buying

Sliced Figured Red Gum and Rotary Cut Gum Veneer
Sawed and Sliced Ash, Poplar and Gum Grand Piano Rims
Sawed and Sliced Quartered Oak

In Cars with Band Sawed Hardwood Lumber

Carload buyers get closer prices, save freight on local shipments and eliminate damaged goods.

NICKEY BROTHERS INC.

MEMPHIS, TENNESSEE

Improvements to the Knechtel Plant

The Knechtel Furniture Co., Limited, Hanover, Ont., have completed an addition which adds 27,000 feet to their floor space. The lower floor of the new addition is fitted up as a cooling and dry storage shed and has a capacity of 30 kiln cars. In addition four swing saws have been installed, making it a breaking out room as well. The top floor is fitted up as a finishing room and is equipped with the Sidman system of automatically-controlled heat, humidity and moisture. The whole plant is being electrified and numerous motors are being installed. The intention is to use electric power about eight months of the year. During that period the waste and refuse will be stored and will be used as fuel for power and heat during the winter months.

Woman to Recover Oak and Walnut Logs

Sunken treasure in Lake Erie is the goal of Mrs. Margaret C. Goodman of New York city, formerly of Detroit. But this treasure is neither gold nor silver. It is just logs. Nevertheless these logs constitute a fortune—they are a cargo of walnut and whie oak logs sunk in Lake Erie in 1859, when a three-masted schooner carrying them from a Canadian port went down with all hands save one.

Mrs. Goodman is the only woman in the world, it is said, engaged in deep sea salvaging. She organized the company that raised the copper cargo of the steamer Pewabic, sunk off Thunder Bay, near Alpena, before the Civil War. One single piece of copper in mass form recovered from the Pewabic was sold for $3,500. The amount recovered ran into a big total.

Estimating Quantity of Flooring

When estimating the amount of flooring required to cover a given area the following measurements may be considered as standard: ⅜ inch and ½ inch in thickness, all faces, is measured ½ inch waste for matching, ⅝ inch and thicker, all faces, is measured ¾ inch for matching.

To determine the number of feet of matched flooring required to cover a given area: Find the number of square feet of floor space to be covered, and add to this amount the percentage as indicated in the following table:

Finished face—1½ inches, 2 inches, 2¼ inches, 3¼ inches.

⅝ inch and 13/16 inch finished thickness—Add 50 per cent., 37½ per cent., 33-1/3 per cent., 24 per cent.

⅜ inch and ½ inch finished thickness—Add 33-1/ per cent., 25 per cent., 22½ per cent.

For ⅜ inch flooring, use 3d finishing nails.

For ⅝ inch flooring, use 6d finishing nails, and

Over or Underhung Saws?

Certain types of straight edging and jointing saws have the saws mounted above the table so that the bottom part of the saw does the cutting. This is, presumably, so as to secure a better arrangement of the endless bed feed. Are there any advantages or disadvantages with an overhung saw? Does the saw work better? Is it more accessable? Would there be any advantage in building the ordinary rip saw with an overhung arbor. A discussion on this question might bring out some interesting information.

"Half a Minute

Will Read the Following List

of

Hardwoods

20 M′	5/4″	No. 2 Com. & Btr. Basswood
15 M′	8/4″	No. 3 Com. & Btr. Basswood
30 M′	6/4″	No. 2 Com. & Btr. Birch
13 M′	12/4″	No. 1 Com. & Btr. Birch
7 M′	4/4″	No. 3 Com. & Btr. Black Ash
2½ M′	4/4″	No. 3 Com. & Btr. Black Ash.
9 M′	4/4″	No. 3 Com. & Btr. Soft Maple
18 M′	4/4″	No. 3 Com. & Btr. Oak
3 M′	8/4″	No. 3 Com. & Btr. Oak
12 M′	12/4″	No. 3 Com. & Btr. Oak

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Canadian General Lumber Company, Limited

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MONTREAL OFFICE: 203 McGill Bldg.

Selling

Graves, Bigwood & Co.'s

Lumber, Lath and Box Shooks

Information and Inquiries

You are cordially invited to make use of this department

Coating to Prevent End Checking

St. Stephen, N. B., Aug. 3, 1920.

Editor "Canadian Woodworker":

We experience considerable loss through the end checking of lumber piled for air drying. Can you tell what we could use to coat the ends that would tend to prevent this checking?

Sincerely yours,
Haley & Sons.

Any coating that will tend to retard the rate of drying from the ends will tend to prevent checking. It is the rapid drying of the ends that causes the checks. The harder and greener the wood the more effective the coating must be. Paint is easy to handle and apply but is not very effective. The same applies to white or red lead. Rosin-lampblack is not so convenient to handle but is very effective in checking end drying. This mixture is made by melting rosin (60 parts) and stirring in lampblack (1 part). This mixture must be applied hot, either by brushing or dipping the ends.

Market for Hardwood Waste

Victoriaville, P. Q., July 20/20.

Editor "Canadian Woodworker:"

We manufacture a line of hardwood flooring and find that we have to burn as waste a lot of ends and cuttings running from 5 in. to 15 in. in length. Reading your offer in the June issue of your paper we would ask if you can suggest some way of disposing of these cuttings.

We would also like to have some data on clothespin manufacturing, such as machinery required, probable cost, power needed, market, etc. Thanking you for any information you may give.

Yours truly,
Lavasseeur & Fortier, Ltd.

It is rather difficult to name off-hand some article that you could make from the trimmer ends you mention without knowing the equipment you have and also the market there might be for such an article. At the present time there is a strong demand for wooden toys and building blocks of all kinds, and it is just possible that you could make this stock to advantage by making some kind of toys. Then again,, you might be able to dispose of the blocks to some firm who makes toys, handles for paint brushes or some such small article from hardwood. We know of several cases where a market of this kind has been found.

If the flooring you manufacture is from such woods as birch, beech and maple, your suggestion of making clothespins is a good one. Clothespins are in strong demand at the present time and are commanding good prices. The equipment required would be suitable saws for sizing and equalizing, that is, cutting to length the stock for the clothespins. Then you would require an automatic clothespin lathe and, probably, an automatic clothespin slotter. As the stock you would use would be dry, you would not have to dry the finished pin, but it might be advisable to run the pins through a tumbler so as to polish and smooth them up.

We believe that H. W. Petrie, Limited, of Toronto, have some clothespin lathes and slotters in stock; in fact they were listed in their ad on page 114 of the June issue. We cannot give you any data regarding the cost of this equipment or the power necessary to drive it but think that the power required would not amount to very much, probably 20 h.p. If there are any other questions you would like to ask, we would be glad to have you write.

Shoe Shank Equipment

Referring to an enquiry published in the July "Canadian Woodworker," regarding the equipment needed to manufacture wood shoe shanks, this equipment does not seem to be on the market. One large manufacturer of shanks states that the machinery they use is manufactured by themselves and they believe that other manufacturers of shanks are using specially designed machines.

As near as can be learned these shanks are made from blocks and are cut on a lathe having a curved knife, which conforms to the shape of the shank, following the same idea used in manufacturing rotary cut veneers. The long strips are then cut, on clippers, to the desired width. It is difficult to suggest a method for bevelling the inside edges as this is production work and must be handled expeditiously. The suggestion has been made that a bent shank could be stamped out of rotary cut veneer, using dies that would give the shape and press the bevels at one operation. These dies would possibly have to be kept warm. This is only a suggestion and should not be taken as a practical method.

Information on Equipping Planing Mill

A subscriber writes stating that he is considering remodelling his planing mill and wishes information that will enable him to install an efficient, up-to-date, labor-saving plant.

Without knowing the size of the plant and lines to be manufactured it is difficult to give any practical suggestion. Each issue of the "Canadian Woodworker" contains ideas that could be applied to a planing mill and which if adopted should assist in reducing costs and conserving labor. The modern idea is to decide on the equipment and layout then build to suit. Working this way an ideal layout could be sesuit. The articles entitled a "Better Way to Build Your Plant" which appeared in July and August numbers, contains suggestions along this line. A labor-saving overhead carrier system was outlined in the February number while the April and May issues contained description of planing mills. Ball bearing hangers and machines would mean a lower power bill. Perhaps some form of electric drive could be used to advantage. The two most important items are securing modern, labor-saving, production machines and then placing them so that handling and trucking is reduced to a minimum.

Putty is succeptible to certain acids or sodas. To remove hard putty from an article, first soften the putty with a weak solution of caustic soda or potash. If these items are not available apply nitric or muriatic acid and allow to stand for about an hour.

May We Make This Suggestion?

To those buyers whose requirements of hardwood lumber, rotary veneers and panels it has been our privilege to serve and to those others who we hope to serve in the future, we would like to frankly and in friendliness advise that bad as the car situation is to-day, it is bound to be infinitely worse in a month or two. Therefore, to insure delivery and avoid the 30 or 40 per cent. increase in freight rates, due about September first, we earnestly counsel buying now.

May we suggest also that our friends should not reckon too strongly on much lower prices? It is true that the present tendency is downward, but while the southern forests are now pretty well dried out, the almost total impossibility of getting cars is keeping millions of feet of logs in the woods, where vast quantities are rapidly deteriorating. A goodly portion of this accumulation probably never will reach the saw mills. Thus, while one adverse condition is out of the way, another immediately takes its place, and though southern manufacturers have succeeded in making one spurt in production, the average mill stock in the south is still dangerously low. The consequence of such condition has been brought home with force to buyers in the past eighteen months.

This is but a friendly suggestion offered only because we think it absolutely true. Therefore, if you possibly can, buy now. As to price, our only assurance is that now as always, our policy is to give full value for every dollar invested with us.

70,000,000 Feet
ANNUAL
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Anderson-Tully Co.

Memphis - - Tennessee

ALL
SOUTHERN
HARDWOODS

News of the Trade

The Andrew Gray Upholstering Co., Toronto, contemplate moving to Owen Sound, Ont.

The Hillsborough Woodworking & Mfg. Co., Limited, Hillsborough, N. S., are installing a dowel machine.

The Kindel Bed Co., Limited, Stratford, Ont., are installing a Grand Rapids Vapor Kiln.

The plant of Clement, Meunier & Co., Montreal, P.Q., showcase manufacturers, was recently damaged by fire.

The Aetna Broom Manufacture was recently incorporated in Montreal with James O'Sullivan, proprietor.

The planing mill of the Canadian Woodworking Co., Limited, Yarmouth, N. S., was recently destroyed by fire.

Gustave Champagne, Montreal, P.Q., has registered as a pail manufacturer under the name of Cie La Daisy.

The Canada Floor Lamp Co., Montreal, P. Q., has been dissolved.

The Mechanics Tool Case Mfg. Co., Toronto, has been registered.

Flynn & Senecal, Montreal, P.Q., woodworkers and furniture manufacturers, were recently registered.

The plant and equipment of R. G. Taylor, Limited, Winnipeg, Man., trunk manufacturers, was destroyed by fire.

The partnership known as the Standard Broom & Brush Co., Montreal, P.Q., has been dissolved.

Mills Bros., Port Hope, Ont., recently installed a plant to manufacture canoes, boats, toys and other articles of wood.

Weyburn Sash and Door Factory, Limited, Weyburn, Sask., were recently granted a provincial charter to operate a sash and door factory. Capital, $20,000.

The cigar box factory of L. O. Grothe, 556 Lawrence Blvd., Montreal, which was recently destroyed by fire, at a loss of $20,000, is being rebuilt.

The Columbia Handle Co., London, Ont., have started the excavation for their new factory. The completed building will cost in the neighborhood of $25,000.

The Port Hope Lumber & Veneer Co., Port Hope, Ont., have taken a contract to manufacture a large number of 11-quart fruit baskets.

Cyprieu Lauziere is making improvements and extensions to his carriage factory at St. Leonard D'Aston, Que., at a cost of $3,000.

The newly-formed Northwestern Box Co., Limited, Vancouver, B.C., has taken over the business conducted by Dallmore & Morrison.

The partnership known as J. G. Ewing & Sons, Melbourne, P. Q., proprietors of a sash and door factory, has been dissolved.

The partnership known as The Montreal Stuff Over Furniture Co., has been dissolved and J. Moscovitch registered as proprietor of the business.

R. Herbison, proprietor of the Peterborough Planing Mill, Peterboro, Ont., reports that business is very good. He recently accepted a contract for a large number of wood toys.

The Knechtel Furniture Co., Limited, Hanover, Ont., are installing a two-unit Sidman lumber curing kiln and are laying out a kiln car storage yard for their lumber.

Swapped occupations. Jas. Paquette, Hawkesbury, N.S., sold his sash and door factory to Oliver Menard, butcher, and purchased Mr. Menard's butcher business

A blaze broke out in the Regina plant of Cushing Bros. & Co., Limited, Calgary, Alta., but was extinguished before much damage was done.

The Gem Mfg. Co., Amherst, N. S., recently secured a plant to engage in the manufacture of furniture and store fixtures.

Sherman Cooper, who operates a planing mill in Cobourg, Ont., recently added some box-making equipment in the shape of a circular resaw, cut-off saw and boxboard matcher.

The Peterboro Canoe Co., Peterboro, Ont., have enjoyed a very busy season. Canoes and boats are in strong demand for export and several large shipments were made to Great Britain and other countries.

Petheram's mill at Port Hope, Ont., was recently taken over by Speirs & Tye. This plant consists of saw, planing and grist mill. Speirs & Tye report that business is good with a fair amount of work offering.

The planing mill of Robertson Bros., New Glasgow, N. S., was totally destroyed by fire. The loss amounts to $50,000. It is probable that this plant will be rebuilt at an early date.

The Hardwood Chair Co., Limited, Vancouver, B. C., were recently incorporated, with a capital of $10,000, to take over, as a going concern, the plant and assets of the Hardwood Chair Co.

The Bell Furniture Co., Limited, Southampton, Ont., are making a few improvements to their power plant and are installing one unit of a battery of Sidman kilns, including an up-to-date transfer system, cooling shed and kiln yard.

The Williams Piano Co., Limited, Oshawa, Ont., have installed a Taylor clamp carrier in their piano factory. The A. R. Williams Machinery Co., Toronto, are the Canadian representatives for this clamp carrier.

George Menzies, secretary of the Board of Trade, Owen Sound, Ont., has a list of mechanics in Great Britain who are desirous of securing employment in Canada. Employers in need of mechanics might write Mr. Menzies.

Lightning recently struck the smoke stack of the Waugh planing mill at Niagara Falls, Ont., tore off the top and opened a crack all down the side. A heavy steel furnace door was thrown a distance of fifty feet. No one was injured.

Bell-Baldwin Hydromes, Limited, Baddeck, N.S., were recently incorporated to manufacture and deal in hydroplanes, hydrodromes, boats and other water craft. Capital $5,000. Two of the incorporators are J. S. Lovell and W. Bain, accountants, both of Toronto, Ont.

E. O. Webber, Limited, Waterloo, Ont., have been incorporated to conduct a general furniture business as wholesalers, retailers and manufacturers. Capital $500,000. E. O. Webber, R. A. MacGillivray, manufacturers, both of Kitchener, Ont., are two of the incorporators.

The Canadian Mathews Gravity Carrier Co., Limited, Port Hope, Ont., report that their gravity carrier system is finding favor with the furniture manufacturers and other woodworkers, many installations having recently been made in this class of plants.

The Sturgis Baby Carriage Co., Limited, Toronto, Ont., were recently granted a provincial charter to manufacture and deal in go-carts, baby carriages, and all kinds of children's vehicles. Capital, $40,000. Among the incorporators are D. I. Grant and M. MacDonald, both of Toronto.

Wiggily Toys, Limited, Toronto, Ont., were recently incorporated to manufacture and deal in toys, bric-a-brac and other novelties. Capital $40,000. J. Harley and E. Sweet, barristers, both of Brantford, Ont., are two of the incorporators.

The Dominion Music Company, Limited, Montreal, Que., was recently granted a provincial charter to manufacture and deal in phonographs, gramophones and other musical instruments. Capital $50,000. J. P. Martin and J. Thibault, both of Ottawa, Ont., are two of the incorporators.

Halifax Shipbuilding Company, Limited, Montreal, Que., was recently granted a federal charter to manufacture, construct and deal in steamships, barges and other water craft. Capital, $100,000. F. H. Markey and W. W. Skinner, both of Montreal, are among the incorporators.

Fire destroyed the plant of McEachren & Sons, sash and door manufacturers, Alvinson, Ont. The loss amounted to about $10,000. Plans have been prepared for a new factory, which is to cost about $20,000. The above firm are in the market for some equipment.

The special suite of furniture built for H. R. H. the Prince of Wales, by the T. Eaton Co., and used by him during his stay at Government House, Toronto, has been purchased by the management of the new Pantagis Theatre, Toronto, and will be installed on the mezzanine floor.

Thomas Meadows & Co., Canada, Limited, Montreal, P. Q., have been incorporated to manufacture and deal in aircraft, boats and all kinds of vehicles. Capital, $50,000, Among the incorporators are H. W. Vaughan and C. B. McCallum, both of Toronto, Ont.

Dominion Snath Company, Limited, Waterville, P. Q., have been incorporated to manufacture and deal in scythe snaths, cradle handles and all kinds of wood turnings. Cap-

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You show it by installing these two styles of International Time Recorders for registering the time of starting and stopping work.

Internationals make every minute count; bring harmony between employer and employee; discourage small time losses and thus prevent big ones.

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More Good Judgment

will be shown by installing the International Job Time Recorder for registering the time of starting of jobs or massed or grouped operations.

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HALIFAX, N.S., 44 Granville St.; ST. JOHN, N.B., 18 Germain St.; QUEBEC, QUE., 506 Merger Bldg.; MONTREAL, QUE., 1 and 3 Notre Dame St. W.; OTTAWA, ONT., 190 Queen St.; TORONTO, 409½ Yonge St.; HAMILTON, ONT., 225 King St. East; LONDON, ONT., 489 Richmond St.; WALKERVILLE, ONT., 44 Lincoln Rd.; WINNIPEG, MAN., 227 McDermott Ave.; SASKATOON, SASK., 254 3rd Ave. S.; CALGARY, ALTA., 127-6th Axe.; EDMONTON, ALTA., 10118 102nd Ave.; VANCOUVER, B .C., 110 Water St.

(*Also Manufacturers of Dayton Scales and Hollerith Electric Tabulators*)

ital, $75,000. Two of the incorporators are H. S. Ball of Waterville, and F. S. Rugg, K.C., of Sherbrooke, P. Q.

The doors and interior woodwork for the new technical school which is being constructed at Fort William at a cost of $250,000, has not as yet been purchased. George Coo is secretary of the Board of Educatiin at Fort William, and R. E. Mason, Victoria Block, Fort Wililam, is architect for the school.

The plant of J. P. Abell, Fortin Co., Limitee, Montreal, P.Q., box manufacturers, was recently destroyed by fire, causing a loss estimated by an official of the company at about $25,000, partly covered by insurance. The origin of the fire is unknown. It is expected that construction work will be started on a new plant in a few weeks.

There is a possibility that a car factory may be estabilshed in Toronto in the near future. A representative of a large English organization has been looking over the ground with this end in view. It is also reported that the plant of the Dominion Shipbuilding Co. will be converted into a car factory as soon as the company can be re-organized.

W. W. O'Hara, Limited, Montreal, Que., was recently incorporated to take over the business known as W. W. O'Hara & Co., and to manufacture and deal in pianos, organs, phonogrophs and other musical instruments. J. MacNaughton and W. W. O'Hara, both of Montreal, are two of the incorporators.

In an effort to relieve the shortage of fruit baskets, which has caused a loss to many fruit growers, the Norfolk Co-operative Association contemplate equipping a basket factory to meet the requirements of its members. According to J. E. Johnson, manager of the Association, this appears to be the only remedy in sight.

Office Requirements, Limited, Sherbrooke, P.Q., was recently granted a federal charter to manufacture and deal in all kinds of office furniture also paper preparations such as paper bags and cardboard boxes. Capital, $50,000. Two of the incorporators are K. Forrest and J. R. Forrest, both of Sherbrooke, P. Q.

Work on the new furniture factory of the Langslow-Fowler Furniture Co. at Cobourg, Ont., is progressing rapidly. The first unit, which is a two-storey brick building, 60 x 220, with separate power house and kiln, is rapidly nearing completion. A two-compartment Standard dry kiln is being constructed. It is anticipated that the new plant will be in operation about October 1st.

Aylmer Products, Limited, Aylmer, Ont., have been granted a provincial charter to manufacture and deal in motor trucks, carriages and other wooden vehicles, and to take over as a going concern the business known as the Aylmer Pump and Scale Co.. Capital $500,000. D. I. Grant and A. Dodds, barristers, both of Toronto, Ont., are two of the incorporators.

Foster, Merriam and Company, Meriden, Conn., have recently been granted a charter to do business in the Province of Ontario provided they do not use capital in excess of $20,000. The company manufacture and deal in furniture casters, trimmings and hardware. Victor Grantham of Hamilton, Ont., has been appointed the company's representative.

According to a St. Johns, Newfoundland, report a large organization, backed by British and American capitalists, is erecting a large saw and pulp and paper mill at St. George's, Nfld. The plans of this company include the construction of two veneer mills, to manufacture birch veneers, and a box and barrel factory. The pulp and paper will be imported to Britain and the U. S., while the boxes, barrels and veneers will be sold locally as well as exported.

In giving evidence before the Board of Conciliation at Ottawa, Grant P. Davidson, manager of the James Davidson's Sons & Co., declared that, in his opinion, the demands of the men were exorbitant and that the company could not stand the added financial burden which would ensue if their demands were granted. He stated he would be glad to turn the whole plant over to the men and allow them to operate it if they would guarantee a return of 5 per cent. on the capital invested.

The agreement under which John Stirrett & Sons, Port Arthur, Ont., will take over the plant of the Port Arthur Wagons & Implements, Limited, has been ratified by the Port Arthur city council. The new owners agree to employ 125 men and have the factory in operation within sixty days. The price involved in this transfer is said to be $270,000. The plans of the new company include a box factory and, if possible, large pulp mill.

Personals

R. B. Elgie, of the Elgie and Jarvis Lumber Co., Toronto, and family, are spending a vacation at the Woodington House, Lake Rosseau, Muskoka.

Wm. Cawkill, Toornto, the energetic and capable secretary of the Furniture Manufacturers' Association, is spending a well earned holiday at Renfrew, Ont., and vicinity.

Col. H. P. Howard, recently of the U. S. Army, has been appointed assistant secretary of the National Association of Box Manufacturers, 1553 Conway Bldg., Chicago.

A. Farrel, an employee of the Thessalon branch of Firstbrook Bros., Limited, box manufacturers, had the misfortune, recently, to break his arm while discharging his duties in the plant.

Benjamin G. Robinson, formerly with the Guelph Lumber Co., Guelph, Ont., is in charge of the Peterboro plant of the Canadian Aladdin Co., Limited. T. W. Oke, formerly proprietor of the Peterboro Furniture Co., is the shop foreman.

J. F. Field recently returned to Collingwood, Ont., after an absence of forty years, to visit familiar scenes and renew old acquaintances. Mr. Field is now president of the Field Body Corporation, which specializes in auto and truck bodies. This business, which has assumed large proportions, was built up from a small beginning by Mr. Field.

A. E. Switzer, the energetic sales manager of the Martin-Orme Piano Co., Ottawa, Ont., has severed his connection with this firm to join the firm of Switzer Bros., piano dealers, Vancouver, B. C. At a farewell dinner given at the Laurentian Club, Mr. Switzer was presented with a reading lamp as a token of the esteem in which he was held by his associates. The presentation was made by Mr. Mathew Orme.

W. J. Lovering, of Toronto, returned lately from a four weeks' trip to British Columbia. He states that the western crops look well and a record yield is looked for which should result in a good demand from the prairies for B. C. forest products. Several shingle mills which were closed down, have resumed, and while business with several sawmills was quiet, there is a belief that general activity will, in the near future, reassert itself in the lumber line.

Obituary

Robert Heard of St. Thomas, Ont., recently passed away at the age of 87 years. Mr. Heard was engaged in the wagon business for about 35 years.

Henry G. Steins, London, Ont., recently passed away at his home in that city. Mr. Steins was born in Waterloo in 1844, later moving to London, where he engaged in the cooperage business.

Reeve McKinley, pioneer wheel and spoke manuafcturer, recently passed away at his home in St. Catharines, Ont., at the age of 90 years. Mr. McKinley had been in the wheel and spoke manufactuirng business the greater part of his ilfe.

B. Jamieson, of the firm of R. C. Jamieson & Co., Limited, varnish manufacturers, Montreal, recently passed away at his residence after an attack of heart trouble. Mr. Jamieson was 75 years of age and had resided in Montreal for the last 40 years. He is survived by Mrs. Jamieson, two sons and two daughters.

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GREENWOOD, MISSISSIPPI,
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Any lumber which does not stand the acid test of the men who work it, is expensive. We welcome the judgment of your workmen.

Every board is branded as above, and this brand is your GUARANTEE and our mutual PROTECTION.

Manufacturers Exclusively

BAND MILLS:

GREENWOOD, MISS. MOORHEAD, MISS.

Our Kraetzer-Cured Gum is guaranteed to be practically ***flat, straight*** and ***bright.***

Band Saw in Pattern Shop

Pattern makers are, as a rule, accustomed to allowing considerable material beyond the finsh line when employing the band saw to cut out wooden parts. This practice makes it necessary to spend considerable time in finishing the parts down with hand tools, such as the plane or chisel, when, as a matter of fact, the required finish could be obtained by sawing up to the line. It may, nevertheless, be difficult to convince some pattern makers that this can be done unless they are afforded an opportunity of seeing the practical application of this method.

The benefit to be derived from a properly cared for and operated band saw in the pattern shop may be illustrated by the following experience of the writer. The manager of a certain pattern shop contracted to make several thousand pieces in wood, basing his price on the assumption that the work would be all performed on the band saw, but when the patternmaker was confronted with the work, he decided that the only satisfactory method of producing the pieces would be to cut them out first on the band saw to approximately the correct size and shape, and afterwards finish the pieces accurately by means of a cutterhead especially designed for this purpose.

The work proceeded satisfactorily in this way until the band saw broke. As it was necessary to maintain the output, the material and "finished size" templets were sent to a furniture factory near by, where the work was continued, but in a different way. The band-saw operator in the furniture factory, knowing nothing about the finish allowance or the cutterhead, cut the pieces out to finish size directly with the band saw, eliminating all additional hand-finishing work. When the foreman found out how the work was being done, and that the parts could be assembled satisfactorily, he became convinced that with the right kind of a band saw, operated by a careful workman, it was possible to cut right up to the finish line and thus avoid unnecessary hand fitting.

In order to keep the band saw in good condition so that it may be used for accurate work, the following rules should be observed:—(1) Always use a roller saw-guide and never a stationary one. (2) Make sure that the saw is only just permittetd to touch the roller lightly. (3) Use a ¼-in. saw for cutting light as well as heavy stock. (4) Never use saws which are kinked, bent or humped at the brazed joints. (5) Test the truth of the saw for cutting square by sawing a 3 in. diameter cylinder from a piece of wood 6 in. thick, an operation which cannot readly be performed with a wide saw, or one that is incorrectly set or filed. (6) See that the bands on the wheel are never allowed to become gummed. (7) Oil every sliding bearing and journal bearing each morning.

Credit Where Credit Due

Don't think because the other fellow employs different methods in veneering, that your ways of doing things are necessarily the better. We can all learn from each other and should be broad enough to realize that there are ideas in every system which if properly applied might result in improving your methods. Give the other fellow credit for a few good ideas and see if you cannot learn from him.

Opens Chicago Sales Office

The James E. Stark & Co., Inc., Memphis, Tenn., manufacturers of Southern hardwood lumber and sawed veneers, have opened a sales office under the management of E. M. Slattery, at 29 North Dearborn St., Chicago, Ill. Mr. Slattery has had six years' sales experience with the Stark Company, which, coupled with a practical knowledge of lumber gained at the mills, makes him particularly well equipped to render efficient service to the many customers of this company. The rapidly-increasing volume of business made the opening of this office imperative in order that they might better serve their customers. The James E. Stark & Co. now own and operate two modern band mills, one at Memphis and one at Dyersburg, Tenn., with a third big mill under construction at Memphis. When the three plants are in operation, they will have a daily output of 125,000, with a dry kiln capacity of, approximately, 1,000,000 per month. In addition, a modern veneer plant is operated on oak, cypress and gum veneers.

Woodworker Issues Booklet

An interesting and artistic booklet was recently issued by James Davidson's Sons, Ottawa, Canada. It is called "Davidson's Portable Cottages." There are shown pictures of the manufacturing plant in Ottawa, the company's sawmill at Davidson, Que., photographs of the late James Davidson, (the founder of the business), and his two sons, Grant P. Davidson and Lieut. Keith Davidson, who are directing the large enterprise. The leading characteristics and special features of Davidson's portable houses are pointed out and a number of illustrations given, not only of cottages but of hunters' cabins, churches, garages, hen houses, dog houses, refrigerators and other accessories.

The firm lately put out a most complete and neatly bound catalogue of sash, doors, blinds, boxes and shooks. The illustrations are particularly well executed, the grouping is effective and a vast amount of data is presented on doors, blinds, portable houses, sash, etc. James Davidson's Sons announce that their slogan is "from tree to finished product." They cut the logs and saw the lumber into doors, sash, blinds, etc., which enables them to meet adequately the requirements of the trade.

Making the Most of Our Time

Why is it that the busy man is always asked to do the big things in this life? Is it not because he is the only one that can find time to do just a little more work? The average man wastes three or four hours daily and never has time for anything. The great question is not "How much time have we " for we all have the same amount, but "What shall we do with it?" Most of us are letting this priceless gift slip away from us from day to day because we have no plans or system of doing anything worth while. When one sets himself to lead a useful life he is always busy.

The Emery Wheel and the File

Somebody has figured that it costs 62 cents to remove a pound weight with a file and only 8 cents with an emery wheel, and that the latter process requires only one-eight of the time of the former. However, the file can do some things which cannot be done with an emery wheel.

Hardwoods

Labor conditions and tight finances are making the lumber supply shorter than anticipated for the Fall trade. These conditions, together with a shortage of cars and an inevitable increase in freight rates of 25 to 30% should induce our customers to place their orders with us now, covering their Fall needs, and the stock will be shipped promptly—you will have it at your factory when you want it, and at lower prices than it can be purchased later.

Special Offers

1 car 4/4 Fas. Walnut (35 to 45% 10" & wider)
3 cars 4/4 No. 1 Common Walnut
1 car 5/4 No. 2 Common Walnut
2 cars 8/4 No. 1 Common Walnut
1 car 10/4 Log Run Beech
1 car 4/4 No. 1 Common Birch
1 car 1-1/8" No. 1 Com. White Oak
1 car 5/4 Fas. White Oak
2 cars 5/4 Fas. Red Oak
1 car 5/4 No. 1 Common White Oak
3 cars 5/4 No. 1 Common Red Oak
1 car 6/4 Fas. White Oak
2 cars 6/4 Fas. Red Oak
2 cars 6/4 No. 1 Common White Oak
3 cars 6/4 No. 1 Common Red Oak

Leland G. Banning
CINCINNATI, OHIO

Eastern Representative - -
A. E. Klippert
11 Laxton Ave. Toronto, Ont.

PANELS

HAY & CO., Ltd., Woodstock, Ont.

For Sale

1 Iron Frame Gaining Machine, cutting up to 3" wide.
1 Witherby Rugg & Richardson Tenoning Machine, single heads and single cope, cut 3" wide, one cut.
1 Fay & Egan, 3 spindle, vertical car boring machine.
1 Fay & Egan, No. 3 automatic railway cut-off Saw, with 24" x 8' 6" roller top table.
1 Fay & Egan, Vertical Car tenoning machine, making single, double or triple tenons on both sides of sills without reversing.
1 John Bertram & Sons, Vertical Solid Chisel Mortising Machine, with drilling attachment, 2" cap.
1 Cant, Gourlay & Co. blind style Mortising and Boring Machine.
1 Bertram & Sons, 7", four-sided Moulder.
3 50-h.p. Electric Motors, 25 cycle, 3 phase, 550 volt, 720 to 750 R.P.M.
3 75-h.p. Electric Motors, 25 cycle, 3 phase, 550 volt, 720 to 750 R.P.M.

Apply L. S. TARSHIS & SONS,
7-10 400 Front Street East,
Phone Main 5338. Toronto, Ont.

I Offer the following

Used Machines

For Immediate Shipment
Subject to prior sale

Combination Single Spindle Shaper and Dovetailing Machine.
New Mereen-Johnson Double Box Board Matcher.
No. 3 Waymoth Turning Lathe.
Francis 42" Combination Single or Double Glue Spreader, with 20 gallon glue cooker.
Superior Jigg Saw.
Moore Machine Co. Standard Rubbing Machine.
Fay & Egan 42" Band Rip Saw.
Mershon Band Resaw.
No. 10 Ober Turning Lathe.
Berlin Machine Works No. 229 Hopper Feed Double Cut-off Saw.
American 30" x 12" 4 Side Timber Sizer.
Moore Machine Co. Double Belt Sandpapering Machine.
Hall & Brown 12" 4 Side Moulder
H. B. Smith 6" 4 Side Sticker.
E. B. Hayes Dowell Rod Machine.
E. B. Hayes Dowell Gluer and Driver.
E. B. Hayes Standard Power Door Clamp.
Berlin 48" 3 Drum Sandpapering Machine.
Berlin 36" 3 Drum Sandpapering Machine.
Hermance Machine Co. 10" 4 Side Sticker.
Buss Machine Works 30" Cabinet Planer.
Baxter D. Whitney 42" Scraper.
S. A. Woods 24" Pony Planer.
American No. 129 Fast Feed Hardwood Flooring Matcher.
Greenlee Bros. No. 2 Power Feed Rip Saw.
30" Band Saw with iron table.
Falls Machine Co. 24" Power Feed Under Cut Jointer

C. J. ANDERSEN,
15 S. Swan Street,
8 Buffalo, N. Y.

Wanted—Planer Hand—One experienced on a Whitney machine preferred. Apply to Beck Mfg. Co., Ltd., London, Ontario. 8

Superintendent

Woodworking plant open for position. Experience covers Interior Hardwood Trim, High Class Furniture and Plywood, Machine and Quantity Production. Address Box 94, Canadian Woodworker, Toronto, Ont. 8

FOR SALE

One 15 in. head matcher, McGregor & Gourlay make; one 12 in. four sided moulder, Goldie-McCullough make; also pulleys and shaftings. Apply Gold Medal Furniture Co., Toronto, Ont. 8-9

FOR SALE

Planer and matcher. One S. A. Woods No. 33 Planer and Matcher in very good order, $1200. Also one 4" Sticker, American Woodworking Machinery Co., new, $450.00. O. Chalifour, Inc., Quebec, P. Q. 8-11

For Sale

Excelsior Machine and Press. Can be seen running. Good reasons.

REID BROS.,
8-11 Bothwell, Ont.

FOR SALE

Woodworking factory equipped with modern machinery, situated in the centre of the very prosperous town of Edmundston, N. B. Business established with splendid returns. Reasons for sale, recent death of the owner. Price very moderate. All offers will be considered. Mrs. L. Gagne, Edmundston, N. B.

LATHS FOR SALE

Also 500 M. ft. White Pine L.R. D.C.O.
500 M. ft. Hardwood,—Birch, Maple, etc. L. R. D.C.O.
800 M. ft. 5th & Better Dry Spruce.

J. P. Abel, Fortin, Limited,
379 Desjardins Ave,
8 Maisonneuve, Montreal.

Drum Sanders For Sale

49" Berlin, Spiral, run one week.
48" Berlin, Straight, good as new.
43" Berlin, Spiral, excellent shape.
48" Fay & Egan, excellent shape.
Also
Mershon 44" Band Rip, excellent.
Berlin No. 108-15" Moulder, good as new.
Berlin No. 90 High Speed Matcher.
American No. 2 "BOSS" Timber Sizer.
70" Sheldon Fan.

All the above are very fine tools.

Write Box 82, Canadian Woodworker, Toronto. t.f.

"WILLIAMS"

Special Announcement

of Interest to Manufacturers

We have just purchased the entire plant of The Aldrich & Hyndman Company of Palmerston, Ont., and offer a complete unit of machinery for manufacturing washing boards; complete unit for manufacturing croquet sets, including a Ball turning lathe; complete unit for manufacturing trunks, including a No. 10 Morgan Nailer; complete unit for manufacturing children's sleighs.

Some manufacturers might want to add these lines to what they have, and we can offer good bargains.

In this plant are a lot of woodworking machines, such as band saws; single spindle and multi-spindle boring machines, rip and cross-cut saw tables, planers, moulders, dowel machines, variety lathes, routers, re-saw presses, box printer, paper cutter, iron punch, riveting machine 36-in. shear, splendid dry kiln apparatus.

If Interested Write Promptly to

The A. R. Williams Machinery Co.
Limited
TORONTO, ONT.

Halifax, N.S- St. John, N.B. Montreal, P.Q.
Winnipeg, Man. Vancouver, B.C.

Dowel Machines For Sale

Two Hawker Dowl Machines No. 1 with full equipment, trim saws, etc., as good as new, in use less than one year.

8 John J. Grant, New Glasgow, N.S.

Double Cut-Off Saw

For Sale at a Bargain

Capacity 4 ft. 6 in. x 3 ft. Absolutely new—never used.

Dodge Manufacturing Co. of Canada Limited

7 Toronto.

FOR SALE

We have immediately available the following used machines, equal to new, because at the most they have only been running three months:—

1—"GOODSPEED" Variety Lathe, complete with regular equipment, without countershaft. Price $385.00.

1—"LEWIS T. KLINE" Variety Lathe, complete with regular equipment and countershaft. Price $465.00.

1—"DAUBER-BELL" Adjustable Dowel Machine, 2 in. capacity, complete with regular equipment, including 4 sets Heads and Rolls. Price $750.00.

The above prices are F.O.B. Cars, Montreal, where they can be inspected.

Williams & Wilson, Limited,

84 Inspector Street,

7-9 **Montreal, Que.**

Home Shortage is Building Problem

Recent investigations of the home shortage by United States building experts disclosed that building activities generally were confined to business structures. Commenting on this investigation, S. W. Strauss said:—

A shortage of homes, which is continually becoming more acute constitutes the outstanding feature of the present building situation throughout the nation. Preliminary statistics for the first seven months of the current year indicate that less than 20 per cent. of the money spent on the nation's building programme was for residential structures, while normally about one-third of the building outlay goes into homes of various types.

The constantly increasing shortage of dwellings offers one of the gravest problems. Overcrowded living conditions, accompanied by constantly increasing rents, are bound to result in lower standards of living and continued social unrest.

In solving the problem of the present period of readjustment it would seem that the first and most important step is to find means of bringing about improved housing conditions. It will take a long period of years to restore the correct balance between supply and demand, and everything possible should be done as a start in this direction.

Judging from current statistics, legislative efforts that have been made to help the situation have not generally resulted favorably, for it is apparent that a great deal of capital is being diverted from residential types of construction to business buildings. These problems should be given close study by the people. Capital, labor and materials are the three prime essentials, and building problems should be studied with a view of preventing diversion of any or all of these elements from home construction to other forms of building activity.

There is at present a world-wide shortage of homes and it is not unlikely that there is some connection between this condition and the general unrest, under-production and lack of thrift that exists. In this country housing facilities have been growing more inadequate for the past four years. Last year for example, only 70,000 homes were constructed, although the shortage at that time amounted to 500,000 houses.

With the 1920 building season now more than one-half gone, it is not expected that any marked improvement can be made this year. Every process of education and enlightment should be put in force immediately to the end that the significance of the present serious condition shall become thoroughly understood by the people. A campaign of education on the fundamentals of the building situation is one of the great needs in America today.

The Building Situation in England

The government subsidy of 250 Pounds or $1250 per house can be secured also for temporary wooden structures provided they cover not less than 700 sq. feet.

For the housing schemes, much English timber is being used, except for joinery purposes. Housing schemes in Great Britain are not yet sufficiently advanced for heavy quantities to be required in construction, although orders are plentiful for manufactured wood.

The market for American and Canadian lumber shows little improvement. It is not so much a question of price as of lack of demand. Every month shows an increased quantity of mining timber coming to the United Kingdom from France while there have lately been increased deliveries of home-grown mining timber.

Not a little of the present depression is said to be due to the uncertainty prevailing as to the future of transportation. The probable increase in British freight rates makes the future grading of prices of such a commodity as lumber very problematical and difficult and merchants in general are suspending purchasing for forward delivery. The general opinion throughout the timber trade, however, is that a period of slow recovery and increased prosperity will follow immediately on the present stagnation.

It was stated in Parliament in the early summer by the Minister of Health that the number of disputes in the building trade had delayed construction of houses. Present rates of wages, he said, varied in different districts from the equivalent of 30 cents to 57 cents per hour, the corresponding range in 1914 being 14 cents to 23 cents per hour.

PETRIE'S

LIST

of NEW and USED

WOOD TOOLS

FOR IMMEDIATE DELIVERY

Wood Lathes

No. 4 Waymouth, variety.

Wood Planers

26" Double surfacer.
24" Pony planer.
24" Crescent, single surfacer.
12" Buzz planer.

Band Saws

30" Goldie & McCullough, bracket.
30" Ideal, pedestal.
60" Fay & Egan, band re-saw.

Saw Tables

No. 5 Famous, combination (2).
No. 4 Famous, combination.
No. 125 Preston combination.
McKenzie, combination.
Ballantine, tilting table.
MacGregor Gourlay railway cut-off.
No. 1 Greenlee automatic cross-cut.
No. 642 C. M. C. cut-off.
Galt, iron frame, cut-off.
Goldie & McCullough, power feed rip.
Davis, power feed rip.
No. 648 C.M.C., swing saw.
7' Williams, swing saw.
Canadian, steel frame airmotor cut off.

Mortisers

Cowan, foot power.
No. 1 C. F. & F., foot power.
No. 2 C. F. & F., foot power.
No. 1 Defiance D handle mortiser.
Dominion, foot power.

Moulders

13" Clark-Demill four-side.
12" Woods four-side, inside.
10" Goldie & McCulloch, three side.
10" Houston, four-side.
8" Dundas four-side.
6" Dundas sash sticker.

Boring Machines

Ballantine, vertical.
Gear driven, post borer.
Fay, single spindle, horizontal.

Sanders

48" Berlin, three drum.
No. 176 Cowan, adjustable.
M. 155 Cowan, disc and drum.
Post radial, surface sander.

Sawmill Machinery

No. 1 Sawyer-Massey. portable sawmill.
Boss, automatic, shingle machine.
Vaughan, gasoline driven, drag saw.
Champion, friction, drag saw.

Miscellaneous

No. 5 Elliot, universal motor driven, woodworker.
Saw arbors, for 20"-30" saws.
McGregor-Gourlay 12 spindle dovetailer.
20" American, wood scraper.
Ballantine dowel machine.
Fay, iron frame, double head, tenon machine
C.M.C. 4 head rounding machines (3).
No. 3 Defiance. rim & felloe rounder.
No. 3 Cowan two spindle shaper.
No. 1 Defiance, axle shaper.
No. 1 Defiance. spoke driver.
No. 21 Covel bandsaw filing clamp.
No. 104 Covel band saw roller.
M. 137 Cowan, sash clamp.
M. 21 Cowan, door clamp.
3" x 7" universal wood trimmer.
Cowan veneer press screw.
Humphrey clothespin lathes (5).
Humphrey clothespin slotters (2).
Ask to see our large stock of used supplies—belting, pulleys, machine shop equipment, mill supplies, pipe and fittings., etc. Most of this material is as good as new, and can be bought at greatly reduced prices.

H. W. PETRIE, LTD.

Front St. W., Toronto, Ont.

General Carriage Woodworking and Smith Shop Machinery for Sale

The closing of our carriage plant has necessitated the sale of the following machinery, which we offer for immediate sale and subject to prior sale, all f.o.b. Chatham, as follows :—

12 No. 4 Boring Machines, Flexible Shafts	Stow Co., Binghampton, N. Y.
1 2-wheel Emery Stand	No Name
1 2-wheel Emery Stand, 1¼ in. x 22 in. Arbor, 3½ in. x 3 in. Iron Pulley, 15¼ in. wide, inside Wheels	Builders Iron Foundry, Providence Bay, R. I
1 Tire Bending Machine, Iron Frame, Capacity 4 in., 18 in. x 6 in. Wood Drive Pulley, 18 x 3 Iron Loose Pulley	Williams, White & Co., Moline, Ill.
1 Iron Brace Former for Bench, with Crank Handle	No Name
Lever Bulldozer Hand Iron Frame	No Name
Alligator Shears, 5 in. Jaw, 12 in. x 4 in. Iron Drive Pulleys, 24 in. x 4½ in. Flywheel	Badger State Machine Co., Janesville, Wisc.
Rolling Machine Hand, 3 in. x 28 in. long	No Name
Screen Boring Machine, 4 Spindle, Horizontal on Wood Frame, No. 30 Drills	No Name
Special Wood Frame Chain Sink Machine, for No. 11 Wire with 3/16" 12 roll Wire Straightener	John Adt & Son, New Haven, Conn.
Special Wood Frame Chain Link Machine, for No. 9 Wire for Elevator Chain, Wood Pulley	No Name
Chain Stretcher, Double, with tight and loose Pulleys	No Name
Geared Power Seamer, on Sqr. Pedestal Base, 18 in. depth of Throat, 18 in. x 3 in., flanged Drive Pulley	Pettengell Machine Co., Amherstburg, Mass.
No. C22 Power Wiring Machine 16 in. x 4 in. Friction Drive Pulley	C. M. Yoder, Cleveland
No. 312 Axle Cap Fitting Machine 10 ft.	Bentel & Margedant Co., Hamilton, Ohio
Iron Frame Power Beading Machine, 17½ in. depth of Throat, 12 x 3 T. & L. Pulleys	No Name
Pendulum Foot Power Press, on 3 legs, 6 in. depth of Throat, adjustable stroke	Park Bros., Chatham
Power Folder, Hand, Special 20 in. long	Brown Boggs Co.
Power Folder, Hand, 20 in. long	Brown Boggs Co.
Power Cup Former, Foot, Special	Brown Boggs Co.
Power Bench Punch Press, 10 in. Throat, 12 in. wide, 1 die, 6¾ x 6¾ in., 36 in. x 4 in. Fly Wheel	Park Bros., Chatham
3 Blacksmith Hammers, Cast Iron Frame, Foot Power	A. Standish, Columbus, Ohio
Drum Sander, Iron Frame, 12 in. x 20 in.	No Name
Iron Frame Jointer, with Endless Power Feed, complete	Jackson Cochrane Co., Kitchener
Paint Mixing Machine Complete	J. H. Day Co.
Small Post Drill	MacGregor, Gourlay Co.
Buzz Planer, 12 in. Knives, 18 x 74 Table, Iron Frame and Table	Cowan & Co., Galt
Mortice Machine, Hollow Chisel Bit, No. 20610 Adjustable Table	Greenlee Bros., Chicago
Double Spindle Shaper, 39 in. x 52 in. Cast Iron Top and Frame	J. Ballantine & Co., Preston, Ont
Disc Sander, 35 in. Dia. 50 in. x 50 in. Table, Iron Covered, Wood Frame	No Name
No. 119 Band Saw, 30 in. Rubber Tired, 30 x 33 Iron Bevelling Table	A. R. Williams Mach. Co., Toronto
Sticker, Iron Frame, 4 side	J. A. Fay & Egan Co., Cincinnati, Ohio
Single End Tenoning Saw, Iron Frame, Sliding Table, Spindles for 11 in. Vertical & 2-10 in. Horizontal Saws	MacGregor, Gourlay Co., Galt, Ont.
Wheel Machine for Tightening Nuts and Cutting Bolts, Automatic with Cast Iron Bed. T. & L. Pulleys.	Genesee Iron Works. Flint, Mich.
52 in. Capacity, Wheel Tire Setter, Hydraulic, with Double Plunger Power Pump Complete	West Tire Setter Co., Rochester, N. Y
No. 4 Tire Welding Power Press and Shear	Long & Allstatter Co., Hamilton, Ohio
Special Double Spindle, Vertical Rim, Drilling Machine on Iron Pedestal, Lever Feed	No Name
Wood Rattler Box, 20 in. Dia., 4 ft. long, 2 in. Staves, Iron Lined, 36 x 8 in. Wood Drive Pulley	No Name
Special Wood Frame Spoke Clipping Machine	No Name
30 H.P. Motor, "Burnt Out," Direct Current, 220 Volt	Electric Construction Co.
2 Swing Scale Testing Beams, 5 ft. Jib, 4 Wheel Traveller and Lifting Lever	No Name
Double Crank Straight Side Perforating Press, 32 in. wide inside Columns, with 36 in. 2 roll Automatic Feed Attachment, back and front, 48 in. x 8 in. Flywheel	J. Bertram & Sons Co. Dundas, Ont.
10 Dies for above Press, 7/32"", ¼", ⅜", 5/64", 7/64", 9/64", 3/32", 17/32", ½", 5/32" perforations, 24 in. long	J. Bertram & Sons Co.
Hub Boring Machine, 54 in. Wheel Capacity, Iron Frame	H. A. Moyer, Syracuse, N. Y.
Belt Sander for Iron, 5 in. Iron Frame, 6 in. wide pulleys and screw tighteners	No Name
Band Rip Saw, 42 in. Wheel, Automatic, 24 in. capacity, 42 x 42 Cast Iron Table & Fence, Tight & Loose Pulley and Outboard Bearing	J. A. Fay & Egan Co., Cincinnati, Ohio
Set 3 rollers for Metal Bench, 1¾ in. x 38 in. long	Brown, Boggs Co.
Hand Power Circle Shears	Brown, Boggs Co.
6 Small Hand Power Crimping Beading Grooving & Turning Machines	Brown, Boggs Co.
Blacksmith Bolt Header and 3 sets Dies, ¼ in., 5/16 in., ⅜ in.	No Name
No. 77 Bow Shaper & Cutter with Countershaft Special Machine	Buob & Schew Cincinnati
Saw Stretching Machine, 10 in. throat	Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Special Wheel Painting Machine, 60 in. Dia., Galv. Iron, Revolving with Brake & 15 in. x 3½ in. Tight & Loose Drive Pulleys	No Name
Wood Beam, Horizontal Hammer, No. 2, No. 40, Rubber Cushioned	Bradley & Sons Syracuse, N. Y.
Small Iron Bed Post Drill	No Name
2 Spindle Shaper, Adjustable Spindle, Iron Table and Pedestal	Battle Creek Machine Co, Battle Creek, Mich.
No. 5 Foot Power Mitering Machine	
Belt Driven Geared Cutting-off Shear, 7 in. Throat, 5 in. Shear	A. R. Williams Mach. Co.
4-500 lb. Weights for Testing Scales	No Name
4-250 lb. Weights for Testing Scales	No Name
1-50 in. x 1½ in. Thick Wheel Straightening Plate with 18 in. hole in centre	No Name
Power Punch Press 6 in. Throat, 35 in. x 4½ in. Fly Wheel	London Machine Tool Co., Hamilton, Ont.
1 Tinsmith's Bench Stake, Arrow Head	No Name
6 Stack Barrels for Forges	No Name
1 Foot Punch for 22 gauge Metal for Bench	Brown, Boggs Co.
Hand Power Bench Groover, 18 in. with Handle	Brown, Boggs Co.
Small Sand Drum on Heavy Cast Iron Base No. 11671	MacGregor, Gourlay Co., Galt, Ont.
Power Shear & Punch, upright, Solid Frame, 5 in. Throat, 7½ in. x 16 in. Iron Table, Vertical Adjustment, 48 in. x 5 in. Iron Fly Wheel	No Name
Double End Tenoner, 11 ft. Capacity, 7 in. wide Heads, 9 in. Throat, Cut-off Saw Attachments, 6 ft. Chain Carriage and Self-contained Countershaft	J. A. Fay & Egan Co., Cincinnati, Ohio
Direct Current Generator No. 4-30 Form H., 125 Volts, 240 Amps. Capacity, 45 H.P., Compound Wound	Canadian General Elec. Co.
No. 225 Three Drum Sander	J. A. Fay & Egan Co.
12 in. Buzz Planer, 18 x 74 Table, Single Cut	MacGregor Gourlay Co.
No. 5 Blower, Cast Iron Casing	Buffalo Forge Co.
No. 9 Blower, 45 in. Cast Iron Casing	Buffalo Forge Co.
No. 5 Size Blower, Sheet Iron Casing	A. R. Williams Co.
30 in. Post Band Saw	No Name
Vertical Drum Iron Rattler, with Dumping Gear Attachment	No Name
Multiple Drill, Solid Cast Iron Frame, 8 Spindles, 3/16 in. Drills, 2½ in. Fixed Centres	Park Bros., Chatham, Ont.
Set 30 in. Crimping Rollers for Corrugating	T. J. Moore, Hamilton, Ont.
Sand Blast Pressure System Complete	Pangborn Co., Hagerstown, Md.
Sand Separator, complete	Pangborn Co., Hagerstown, Md.
Band Rip Saw Sharpening Machine, with Emery Wheel Complete	No Name

(Continued on opposite page)

Cut-off Swing Saw	No Name
Planer Knife Grinding Machine, Automatic, 40 in. with Pedestal Base & Self-contained Countershaft	Ballantine & Co.
2 Cut-off Saws with Wood frames & Table	No Name
Belt Sanding Machine, Automatic, 8 ft. 6 Table, 20 in. x 6 in. Wheels & 16 x 6 Tight & Loose Pulleys	Fisher Sander Co.
No. 137 Square Box Body Corner Rounder, Horizontal Spindle with Vertical Adjustment on Sliding Head	Cowan & Co., Galt
Iron Planer, 24 in. x 24 in., 9 ft. Bed, 20 x 6 ft. 6 in. Platen, Single Head Power Cross Feed	J. Bertram & Sons, Dundas
Single End Saw Tenoner, 2 Horizontal & Vertical Saw Arbors, Iron Table	Pettingel Machine Co., Amherstburg, Mass.
Iron Frame Disc Sander No. 80, 36 in. Disc, 60 in. x 54 in. Iron Table, Horizontal	Cant Bros., Galt, Ont.
Chain Morticer Vertical ⅛ in. x ½ in., capacity 8 in. Vertical Adjustment.	New Britain Machine Co. New Britain, Conn.
25 H.P. Motor Direct Current 220 Volts 1100 R.P.M. on slide vail base with 10 in. x 12 in. Pulley ...1-19 point Starting	Canadian General Electric
Hydraulic Tufting Machine, Channel Iron, Frame Table 24 in. x 72 in.—No. 1026 and No. 14220	Hydraulic Press Mfg. Co. for Tufting Machine Supply Co., Detroit, Mich.
Metal Band Saw 30 in. rubber tired wheels, 30 x 32 in. Table 14 x 4½ Tight & Loose Pullcys	John Ballantyne Co., Preston
Power Hack Saw, 12 or 14 in. Saws, 6 in. Capacity	D. McKenzie, Guelph, Ont
Power Punch Press No. 200, Inclinable Bed, open back, 5 in. Throat, 34 in. Flywheel	Brown Boggs, Hamilton
Foot Power Punch Press, 3 legs iron hand, 6 in. depth of Throat, Adjustable Strokes	Park Bros., Chatham, Ont.
Power Hammer Vertical No. 3, No. 75 Champion	Beaudry & Co., Boston, Mass.
Rip Saw with Tilting Table for Bevelling 48 x 37 Iron Table and solid Iron Pedestal Base	Cowan & Co., Galt
Vertical Belt Sander, Hood Frame 3 14 in. x 8 in. Pulleys Screws Tightener	No Name
Single Wheel Emery Floor Stand ½ x 3 in. Iron Frame 27 in. high 1¼ in. Arbor 4 x 4½ Drive Pulley	No Name
Hand Power Former or 3 rolls for light Metal 1 in. x 20 in. rolls for Bench	Brown-Boggs Co., Hamilton
36 in. Cabinet Single Surfacer, Double Belt, 4 knives, 10 in. capacity	J. Ballantine & Co
Drum Sander, 30 in. Dia., 24 in. wide, Wood Frame, 11 in. x 6 in. Loose & 12 x 6 Tight Pulley Drive Pulleys	No Name
Drum Sander 18 in. x 24 in. wide, Wood Frame, 9 x 4½, Tight & Loose Pulleys	No Name
4-sided Sticker, 6 in. Horizontal, 4 in. Vertical Knives, 6 ft. Table, Self-contained Countershaft	J. Ballantine & Co., Preston, Ont.
Scrolling Machine on Wood Frame 3¾ in. Cutter	No Name
Dowel Machine ½ in. Screw Head Plugs on Wood Frame 4½ in. x 4½ in. Pulley	No Name
Dowel or Rounding Machine, Iron Frame, Self-contained Countershaft with ⅝ in. Cutter	Cant Bros., Galt, Ont.
Double Spindle Shaper, 42 in. x 42 in. Cast Iron Table & Pedestal, Adjustable	Cant Laidlaw & Co., Galt, Ont.
Drill Press with Foot Feed, Iron Pedestal & Base, 3-step Cone, Drive Pulleys	A. B. Jardine Co., Hespeler
Small Horizontal Boring Machine on Wood Stand, 4 in. x 5 in. Pulley	No Name
Wood Frame, Belt Sander, Horizontal with 2 wood pulleys, 14 in. x 8½ in. & Tight & Loose Drive Pulleys	No Name
Double Cut-off Saw, 6 ft. Capacity, Adjustable Self-contained Countershaft, No. 33304	Egan Co., Cincinnati

For further information communicate with the

GRAY DORT MOTORS LIMITED

CHATHAM, ONTARIO, CANADA

MACHINERY FOR SALE

Subject to previous sale, we offer a lot of used engines, woodworking machinery, paper mill machinery, etc., as per list below at unusually good values for the prices opposite each item.

MACHINERY and MANUFACTURER		*PRICE F.O.B. Berlin, N.H. Terms : C.O.D.*
Item A	One steam engine, made by B. F. Sturtevant Co., Boston, Mass. Diameter of cylinder 18-inch—16-inch stroke, center crank, left-hand drive. The indicated horse-power is 300 which is obtained under 120 lbs. of steam pressure and 225 revolutions per minute. This Sturtevant will develop the I. H. P. and more, under sufficient pressure, with one-quarter to one-third cut-off. This engine has not been run in three years and is in excellent condition except that a cracked fin strap and boxes must be replaced, which is all that needs to be done.	$450.00
Iten AA	One steam engine, made by B. F. Sturtevant Co., Boston, Mass. Diameter of cylinder 10-inch—12 inch stroke, centre crank. Base 28 inches by 75 inches, space required to set engine up 96 inches by 52 inches. Driving pulley 40-inch diameter, 12-inch face, driving shaft 4 7/16 inches. Speed 250 to 300 revolutions per minute. This engine is in fair condition.	$200.00
Item B	One 12 x 16-inch Jones & Hitchings Engine, including one 3-inch Waters' Governor, left-hand drive, fly-wheel 72 inches across, with a 20-inch face. Develops horse-power of 60 under 110 lbs. pressure and 110 revolutions per minute; also one 6-inch gate valve.	350.00
Item C	Four Dean Exhausters, made by the Dean Steam Pump So., Holyoke, Mass. Shop Nos. 46130, 49812, 43106—plate lost on one. All four have bronze cylinders, which are 24-inch diameter with an 18-inch stroke. The fly-wheel dimensions are 96 inches across with a 20½-inch face.	Each, 250.00
Item G	One S. A. Wood's Double Clapboard Planer, Shop No. 8557, with edge jointer, and two-saw trimmer which trims 4 feet.	95.00
Item J	One Morris Pulley Machine (bores 1 hole only).	200.00
Item K	One Baluster Machine, made by Mattison Machine Works, Beloit, Wis.	350.00
Item M	One Chisel Sash Mortiser, made by L. Moulton Co., Montgomery, Pa.	100.00
Item N	One American Wooden Frame Dado Machine—2 heads and 1 saw for dadoing, made by American W. W. Machine Co.	50.00
Item T	Twenty-six steel rods 19 feet 10½ inches long, 2⅛ inches in diameter, upset and threaded on one end.	Each, 8.00
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(These rods have never been used and are in good condition with exception of being a little rusted.)

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Plain, Straight and Spiral Grooved

"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co. Limited

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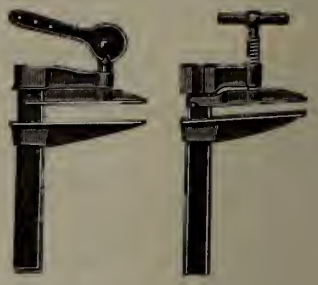
Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

Colt's Clamps

for the

Woodworker



Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

For further information write for Catalogue No. 294.

Batavia Clamp Co.

235 Centre St. BATAVIA, N. Y.

Canadian Planing Mill Exhauster

Keep your shop clean, remove your sawdust, shavings, or other loose material.

A clean shop with machines free from shavings, chips or sawdust makes for greater efficiency.

Let our engineering department help you plan your refuse exhaust system.

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This Big Western Shop is 100 Per Cent "OLIVER"

That there are always three or four steel boats in various stages of construction in the Ferguson Steel & Iron Company's big shipyard, at Buffalo, N. Y., indicates the size of the plant and the magnitude of its equipment.

All the patterns required by this enormous concern and a generous share of the carpentry and wood fitting as well, are handled on "Oliver" wood working machinery. "Oliver" Lathes and the "Oliver" Universal Saw Bench are favorites.

The "Oliver" Sander is a two-man machine and the work on which the protograph shows it engaged is typical of the class of service it is most frequently called on to perform—finishing the outer arc of a mooring post core-box on the disc, the inner arc having been finished previously on the vertical spindle on the opposite side of the machine.

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Scroll Saw

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Manufacturers of a complete line of woodworking machinery
Since 1867 Philadelphia, Pa.

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For
Veneer Presses
Are Made
Entirely of Steel

ALL SIZES - ANY QUANTITY
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Unchanging Adhesion in All Weathers and Climates.

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These casters are Efemco products through and through. Of standard quality—the result of 85 years' manufacturing experience.

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Improved Glue Heater

No heat controllers or other safety guards are necessary with this heater, **because it cannot injure glue.** It's simple, substantially made of copper and costs less than any other.

Let us tell you more about it.

We make any size desired.

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"CASCO" Waterproof Glue

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COST

FOR JOINTING—very much less than the hide glues.

FOR VENEERING—A little more per pound than vegetable, but little, if any, more per GLUE LINE FOOT.

Hundreds of large manufacturers are using "CASCO" to produce the BEST veneered products, at no increase in cost.

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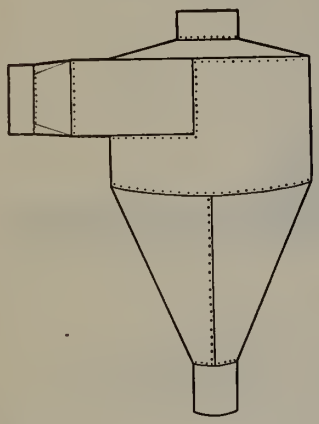
You will save money by consulting us. Our systems are scientifically designed and constructed to give continual and satisfactory service.



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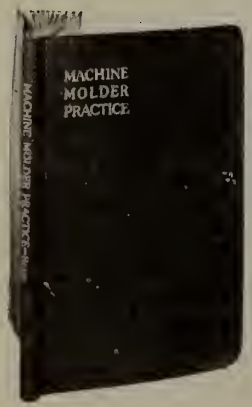

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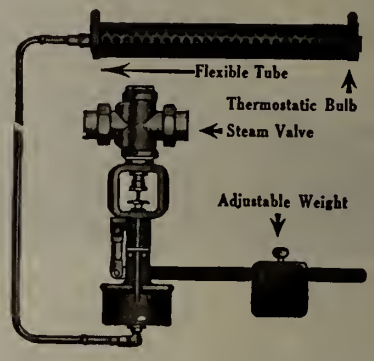
You can relieve the labor situation by using machines on all automatic jobs, thereby releasing men for work machines can't do.

Automatic Temperature Control offers a big field for such labor conservation. Get posted on its possibilities as applied to your particular plant.



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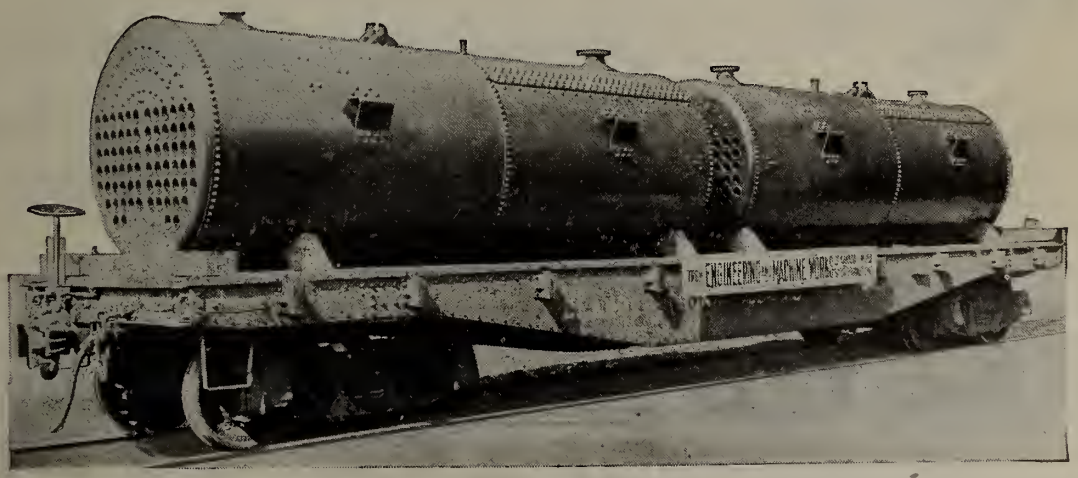

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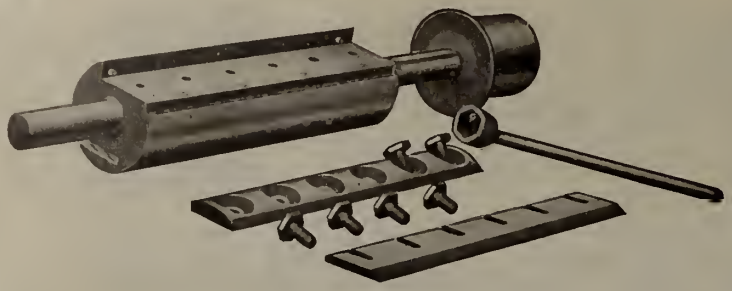

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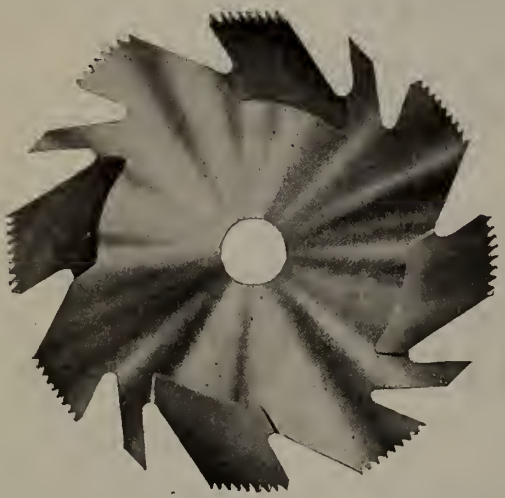

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We have succeeded in turning out saws and cutters that will cut the various pieces clean and smooth.

The mitres will be perfectly true and ready to glue straight from saw.

Illustration shows the ¼ Bevel wing groover for shelf slots.

We also furnish Knives for all planing and jointing operations.

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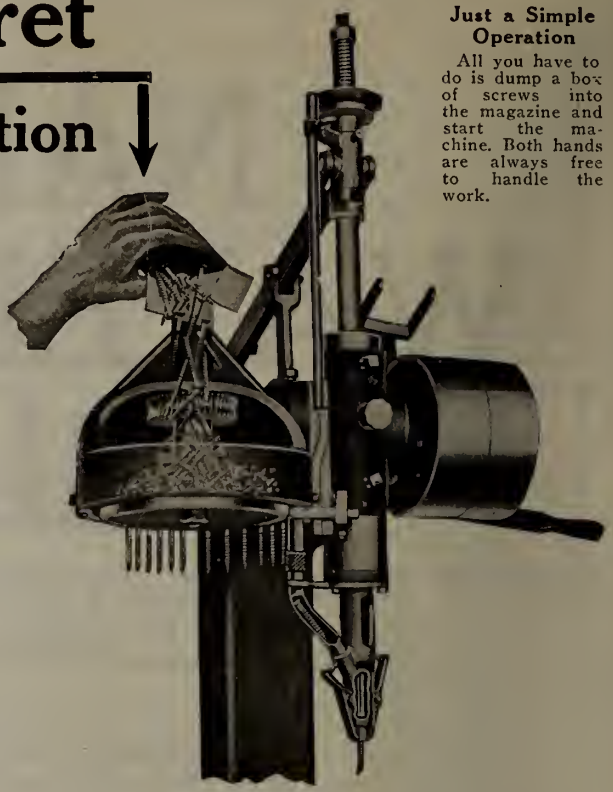

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All you have to do is dump a box of screws into the magazine and start the machine. Both hands are always free to handle the work.

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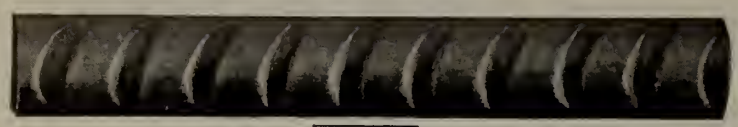


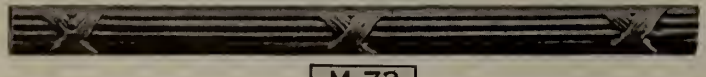
M 97

M 88

M 77

M 91

M 72



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OP8 OP5 OP6

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Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

Ask for catalogue.

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SAVES 2 HOURS A DAY.
SAVES 10 FEET OF LUMBER.
That's $25.00 a MONTH or More than Total Cost of this
ALL STEEL AUTOMATIC SWING SAW GUAGE.
WE SHIP ON TRIAL.
3500 IN USE
ACT NOW.
GUARANTEED AND SOLD BY THE
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Just look down this list of Woodworking Machines for the equipment you have been planning to buy.

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OF ALL DESCRIPTIONS

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We manufacture a complete line of nails and wire in every style and size. Your special needs can be supplied. Write us today. We manufacture special styles to order.

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We depend on our NATIONALS to turn out this kind of stuff in prime condition."

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Are you getting the maximum production from your knife equipment? With the present necessity for greatly increased production, be sure your knives will give you the best possible results.

Disston knives cut fast and clean ,and hold their cutting edge.

Write for the Disston booklet on Machine Knives.

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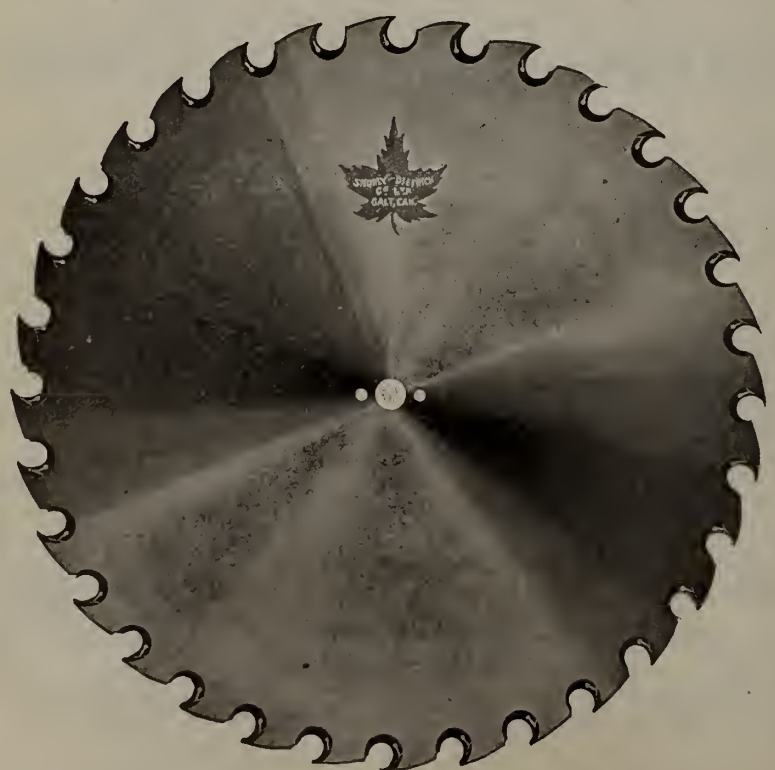
"MAPLE LEAF" SAWS



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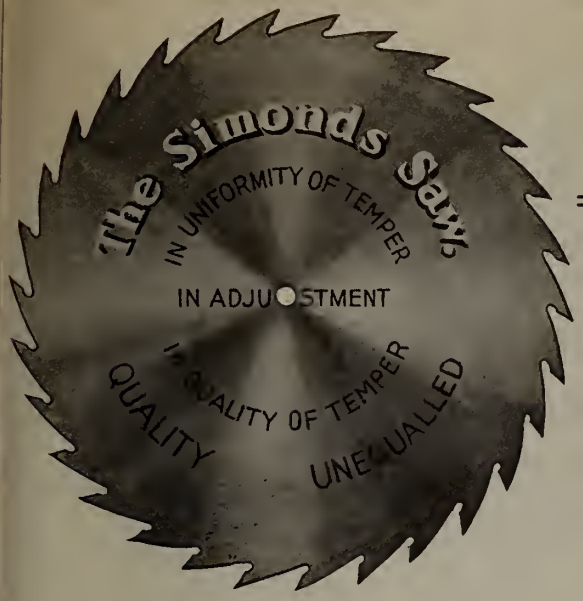


SIMONDS
CIRCULAR AND BAND
SAWS

In every mill or woodworking shop in the land the demand for greater production is urgent. Devious methods to secure the desired results are being tried out. Some are making good—some are not. They have the man-power, but they can't get production. Many mills and woodworking shops have discovered one of the greatest hindrances to efficient operation are poor saws and knives. The saws dull easily and do not hold their tension, while the knives lose their cutting-edge quickly and this results in unsightly marks on the lumber, and consequently damage.

Inferior saws and knives are being discarded by many, and in most cases Simonds Products are replacing them. There is no question about Simonds Saws and Knives. They are made of the finest steel obtainable, hardened and tempered right and made mechanically perfect. They produce smooth lumber and cut down your operating expense.

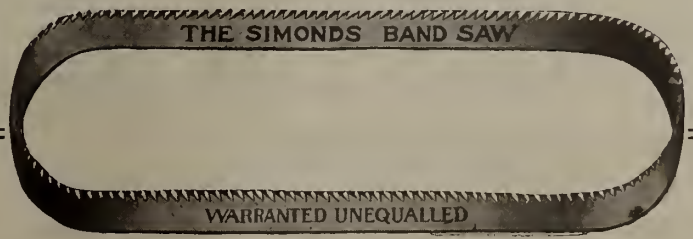
Write for catalog and prices.

Simonds Canada Saw Co., Limited

"The Saw Makers"

MONTREAL, QUE.

VANCOUVER, B. C. ST. JOHN, N. B.



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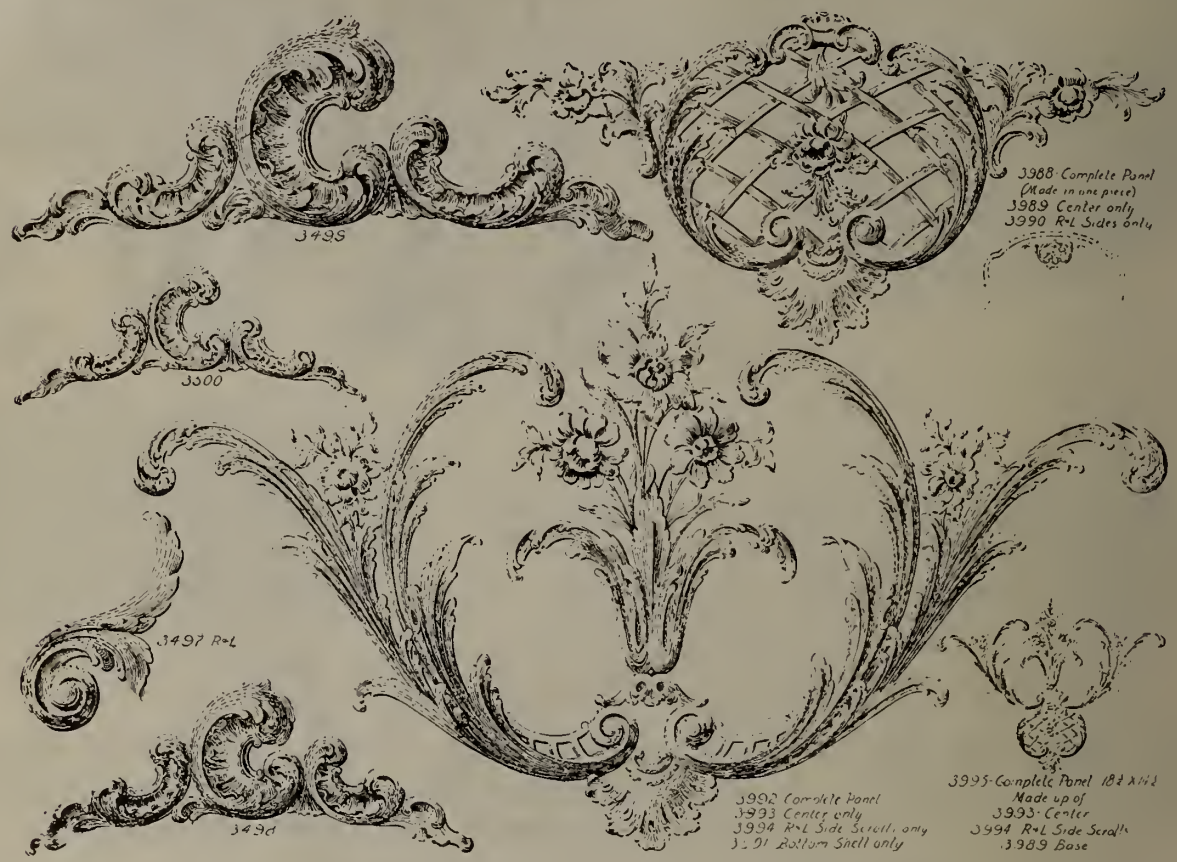

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The Largest Plant in America devoted exclusively to the manufacture of special table parts for the table maker

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Greater Production with Less Experienced Help

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The patented RUBBER PADS used for the bed of this sander are decidedly an improvement and are used in large quantities on every make of Endless Bed Sander. Ask for sample.

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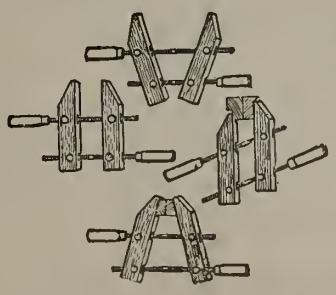

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Adjustable Steel Spindle Clamps that hold better and are far superior. Their guarantee against breakage protects you. Write for further particulars.

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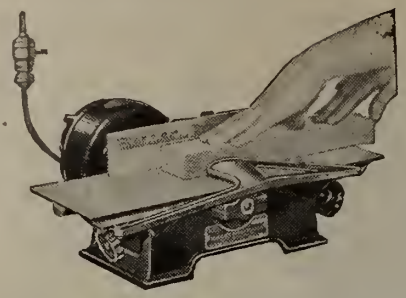

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Wisconsin Chair Co.,
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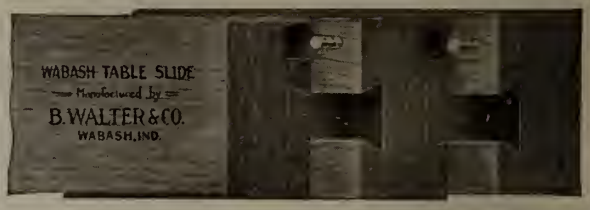
THE SLIDE IS THE HEART OF YOUR EXTENSION TABLE



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Wabash Slides insure Satisfied Customers

SLIDE MAKING is a SPECIALTY BUSINESS

We can Furnish etter Slides for Less Cost

Eliminate Slide Troubles by using WABASH SLIDES

MADE BY

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Cut Miles without Grinding

A Characteristic Experience

Richmond, Indiana.

G. M. Diehl Machine Works,
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You may possibly be interested in an experience which we had recently in our factory with your Diehl Heads and Cutters.

Our Sticker man recently made a run of 10,000 stiles, each piece being 73 inches long, of hardwood, in which we cut a groove ¼ inch wide by 9/16 inch deep, and we made the entire run without taking the Heads or Bits off the machine and without resharpening, which makes a total run of a little more than 11½ miles. The Bits would, no doubt, have run quite an additional number of feet before it would have been absolutely necessary to sharpen them. We consider this a very good performance, especially in view of the fact that these stiles were all run from the rough wood and the Heads being used on a four-sided Sticker

Very truly yours,

RICHMOND FURNITURE MFG. CO.,
Per O. H. BRUBAKER, Manager.

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WABASH, INDIANA - U. S. A.
On the Banks of the Wabash

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SAW EDGE

PLAIN EDGE

According to final decision, after long litigation, we have been granted the SOLE RIGHT to manufacture a Saw Tooth Corrugated Fastener with a continuous cutting edge. Our fastener is beveled evenly on both sides, which enables fasteners to be driven in straight, and much easier than any other fastener made. Our Corrugated Fastener is made in various widths and corrugations, also in coils wound right and left. Try our products and you will use no other.

Samples and prices on request.

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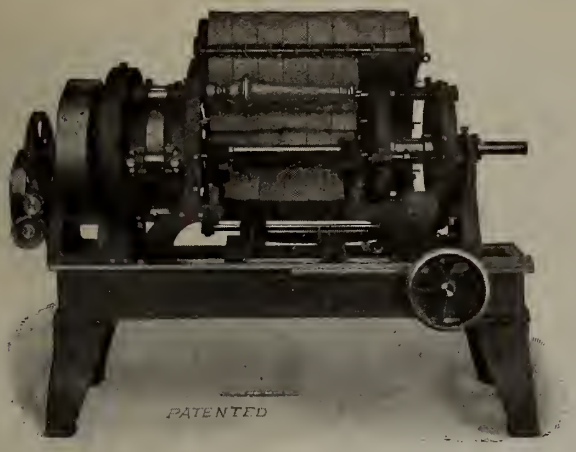

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Fireless cooker principle conserves and utilizes every bit of heat generated. Holds glue at correct working temperatures without guesswork. Average cost of operation about one cent per day. Keeps glue at correct temperature for greatest tensile strength. Properly glued joints never fail. This heater has a place in every shop and factory. Sizes, one pint to fifty gallons. Heavy spun copper construction. No seams or soldered joints. Three heats. No water bath. Clean, safe, economical. Portable. Fits any lamp socket. Used by prominent concerns everywhere.

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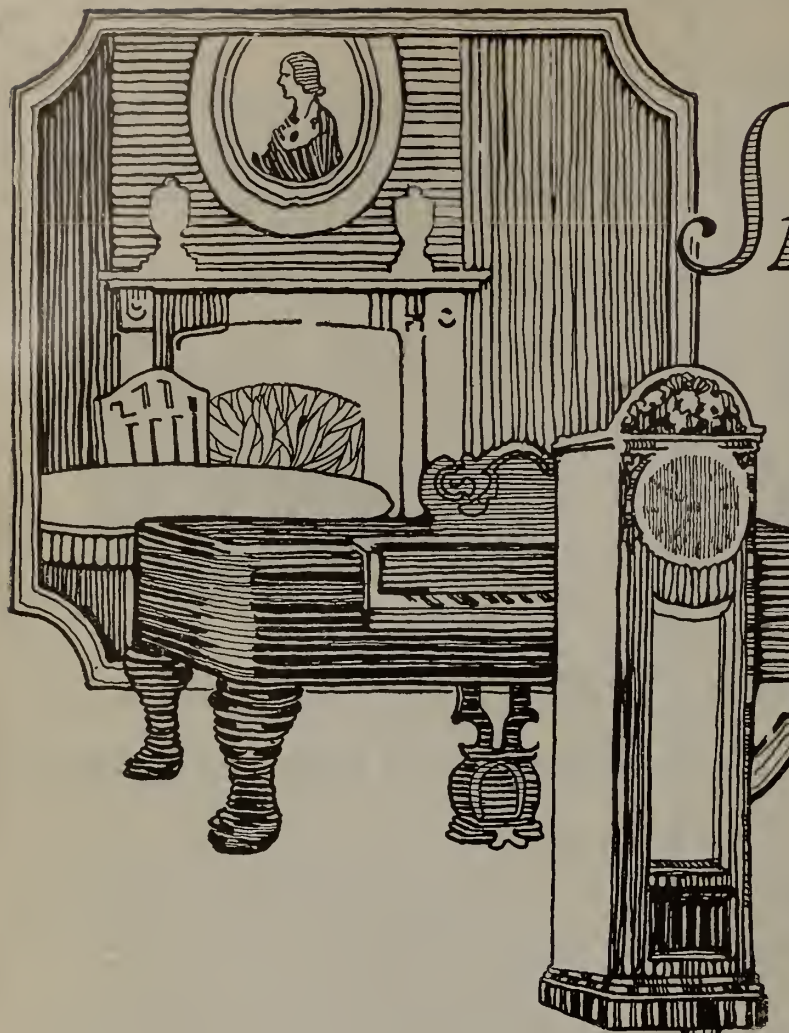

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The reason is not hard to find. It lies in the form of special Silex used as a base. Most fillers are based on such ingredients as Silver White, Gypsum, Corn Starch, etc. All of these are more or less soft and permit of absorption and shrinkage—the two deadliest foes of good wood finishings.

Wheeler's Wood Filler is quite different. It has as a base, rock crystal quartz, which when pulverized is known as "Silex." When the filler is being rubbed in, these tiny, transparent prisms, with needle points so hard that they will cut glass, are forced into the grain of the wood and held there by the special Japan Binder, which is our exclusive product.

Wheeler's Filler stands more reducers than other Fillers; covers more surface per pound and fills the pores flush with a hard, transparent, unshrinkable material that will support the finishing coats without shrinking or pitting.

Rubbed in not on~

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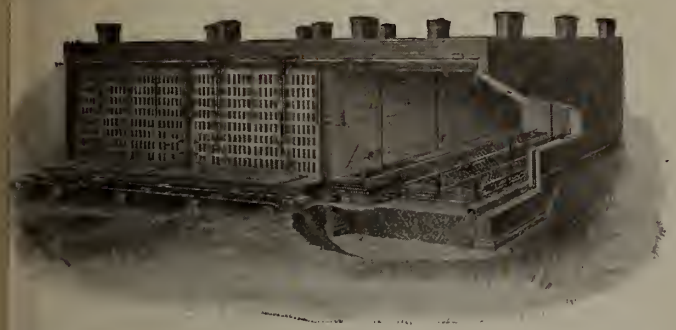

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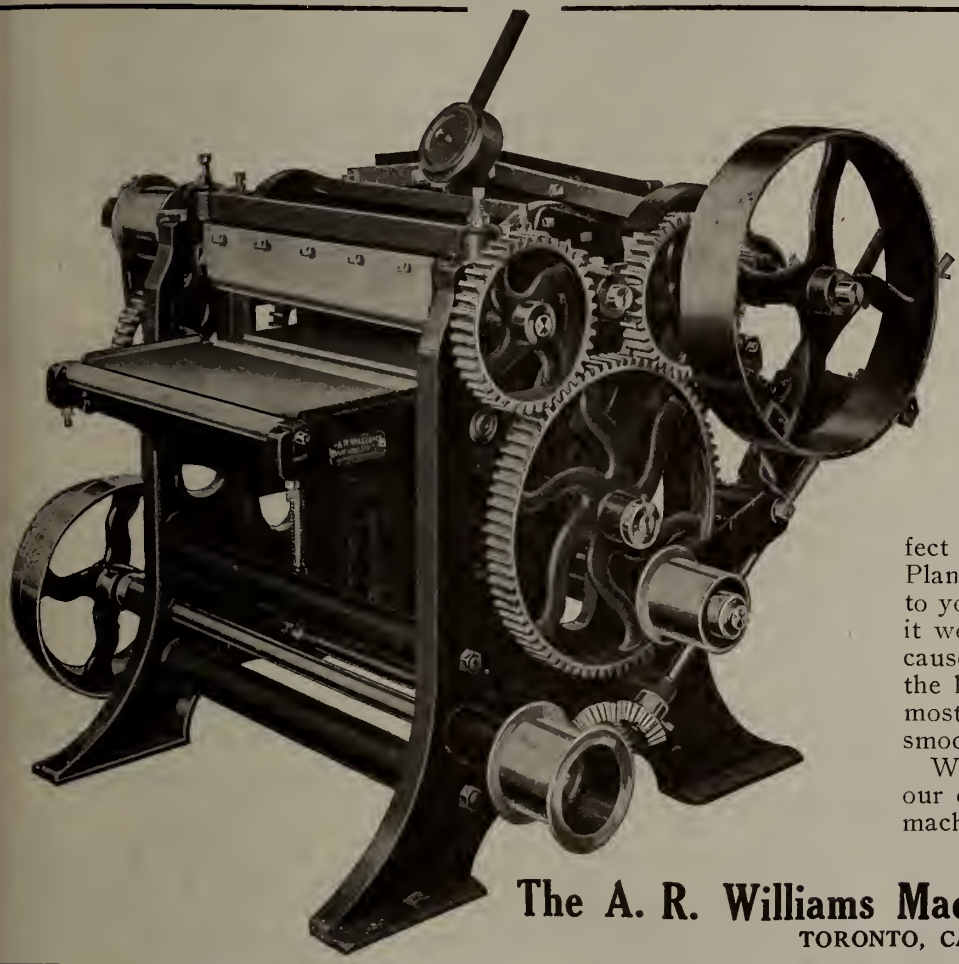

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With a record of over 2,000 in actual use and giving full satisfaction and perfect results the "Eclipse" Surface Planer is bound to be of interest to you. For the furniture factory it would be an ideal machine because of its ability to produce the highest grade of planing and most suitable where very thin, smooth work is required.

Write us for full particulars on our entire line of woodworking machinery of all descriptions.

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TORONTO, CANADA

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The Wheel and Hole Cutting Machine has four automatic movements, all of which work in perfect unison, performing their functions in clock-like regularity.

The Hand-Hole Machine will cut hand holes in crate and box ends. It is worked by a carriage and levers, and will cut any size or length hole with either round or bevel edge in any kind of wood.

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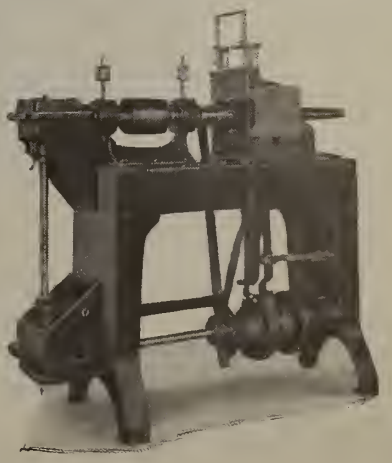
S. S. SEE, Manager
14 Third Street N.E. Roanoke, Va.



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End Stock 1 x 7 in., and wider, 1 x 6 in.

All thicknesses and grades in
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An automatic attachment for grinding long knives can be furnished with this machine.

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Canada Machinery Corporation, Galt, Ont.
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Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
GRINDERS (Tool)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane, & Company, Kitchener, Ont.
GRINDING WHEELS
Carborundum Co., Niagara Falls, N.Y.
GROOVING HEADS
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
GUM LUMBER
Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
Anderson-Tully Co., Memphis, Tenn.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Brown & Co., George C., Memphis, Tenn.
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Churchill-Milton Lumber Co., Louisville, Ky.
Cornelius Lumber Co., St. Louis, Mo.
Darnell-Love Lumber Co., Leland, Miss.
Gum Lumber Association, Memphis, Tenn.
Hyde Lumber Company, South Bend, Ind.
Merceau-Hawkins Tie Co., Huntington, W.Va.
Nickey Bros, Memphis, Tenn.
Paepcke-Leicht Lumber Co., Chicago, Ill.
Probst Lumber Co., Cincinnati, Ohio.
Sondheimer Co., E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Thomas & Proetz Lumber Co., St. Louis, Mo.
HAND SCREWS
Fay & Egan Co., J. A., Cincinnati, Ohio.
HANDLE & SPOKE MACHINERY
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.
HARDWARE
Laidlaw Bale-Tie Co., Hamilton, Ont.
HARDWOOD LUMBER
Aberdeen Lumber Co., Pittsburgh, Pa.
American Column & Lumber Co., Columbus, Ohio.
American Hardwood Lumber Co., St. Louis, Mo.
American Oak Mfrs.' Assn., Memphis, Tenn.
American Walnut Association, Washington, D.C.
Anderson-Tully Co., Memphis, Tenn.
Arrow Lumber Co., Parkersburg
Astoria Mahogany Co., New York, N.Y.
Atlantic Lumber Company, Toronto, Ont.
Baker-Matthews Lumber Co., Memphis, Tenn.
Banning, Leland G., Cincinnati, Ohio.
Barr- Holaday Lumber Co., Greenfield, Ohio.
Bartlett Lumber Co., W. C., Charleston, Va.
Bedna Young Lumber Co., Jackson, Tenn.
Biglow-Cooper Co., Bay City, Mich.
Boland Lumber Co., Grand Rapids, Mich.
Bonner & Sons, J. H., Memphis, Tenn.
Brown & Company, Geo. C.
Brown & Hackney, Inc., Memphis, Tenn.
Bury & Company, Robert, Toronto, Ont.
Buskirk Rutledge Lumber Co., Cincinnati, O.
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Conkling Lumber Co., Frank A., Memphis, Tenn.
Cornelius Lumber Co., St. Louis, Mo.
Canadian General Lumber Co., Toronto, Ont.
Churchill-Milton Lumber Co., Louisville, Ky.
Clark & Sons, Edward, Toronto.
Dacus-Richards Hardwood Co., Memphis, Tenn.
Darby Hardwood Lumber Co., Memphis, Tenn.
Darling Lumber Co., J. W., Cincinnati, Ohio
Darnell-Love Lumber Co., Leland, Miss.
DeHewit Lumber Co., Huntington, Va.
Des Moines Sawmill Co., Des Moines, Iowa.
Dooley Lumber Co., F. T., Memphis, Tenn.
Evansville Band Mill Co., Evansville, Ind.
Felger Lumber & Timber Co., Memphis, Tenn.
Gayoso Lumber Co., Memphis, Tenn.
Gill Lumber Co., Chas., Wausau, Wis.
Hall Lumber Co., Thos., Charleston, W.Va.
Hart & McDonagh, Toronto. Ont.
Heeney, Percy E., Kitchener, Ont.
Hunt, Wellington & Smith, Nashville, Tenn.
Hyde Lumber Co., South Bend, Ind.
Johnson Bros., Memphis, Tenn.
Kersley, Geo., Montreal, Que.
Korn-Conkling Co., Cincinnati, Ohio.
Kosse, Shoe & Schleyer Co., Cincinnati, O.
Kraetzer-Cured Lumber Co., Greenwood, Miss.
Lawrence & Co., P. J., St. Louis, Mo.
Leach & Co., J. D., Chicago, Ill.
Long-Knight Mfg. Co., Indianapolis, Ind.
McLennan Lumber Co., Montreal, Que.
Memphis Band Mill Co., Memphis, Tenn.
Merceau-Hawkins Tie Co., Huntington, W.Va.
Mowbray & Robinson, Cincinnati, Ohio.
Murrelle Lumber Company, Memphis, Tenn.
Paepcke Leicht Lumber Co., Chicago, Ill.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Perkins Bros., Kelso, Ark.
Pickrel Walnut Co., St. Louis, Mo.
Powe Lumber Co., Thos. E., St. Louis, Mo
Probst Lumber Co., Cincinnati, Ohio.
Reese Sheriff Lumber Co., Williamsport, Pa.
Ritter Lumber Co., W. M., Columbus, Ohio
Sondheimer Co., E., Memphis, Tenn.
Spencer, C. A., Montreal, Que.
Spotswood & Son, E. R., Lexington, Ky.
Stark & Co., Jas. E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Sterrett, Will S., Cincinnati
Stimson Hardwood Co., J. V., Memphis, Tenn.
Tallahatchie Lumber Co., Memphis, Tenn.
Thompson, Katz Lumber Co., Memphis, Tenn.
Tustin Hardwood Lumber Co., Memphis, Tenn.
Utley-Holloway Co., Chicago, Ill.
Warren-Ross Lumber Co., Jamestown, N.Y.
Wheeler-Timlin Lumber Co., Wausau, Wis.
Woodruff Powell Lumber Co., South Bend, Ind.
Wayne Lumber Co., New York
Yellow Poplar Lumber Co., Coal Grove, Ohio.
HYDRAULIC VENEER PRESSES
Perrin & Company, Wm. R., Toronto, Ont.
KNOBS
Waddell Mfg. Co., Grand Rapids, Mich.
JOINTERS
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
KNIVES (Planer and others)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Onio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochane & Company. Kitchener. Ont.
Mattison Machine Works, Rockford, Ill.
Petrie. H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Smith, C. W., Grand Rapids, Mich.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
LEATHER (Artificial)
Burch Co., A. F., Grand Rapids, Mich.
Fibro Mfg. Company, Beverly, N. J.
MACHINE KNIVES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
MIRRORS
Hart Mirror Plate Co., Grand Rapids, Mich.
MITRE SAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
MOTOR TRUCK EXTENSIONS
Swedish Crucible Steel Co., Windsor, Ont.
MOULDERS
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.
MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.
NAILS
Laidlaw Bale-Tie Co., Hamilton, Ont.
NAILING MACHINES
Morgan Machine Co., Rochester, N.Y.
OIL STONE GRINDERS
Mummert-Dixon Co., Hanover, Pa.
PANELS
Hay & Co., Woodstock, Ont.
Holden Company, Henry S., Chicago, Ill.
Roberts, Geo. G., Chicago, Ill.
Waetjin & Co., L., Milwaukee, Wis.
PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago. Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
PERIOD MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.
PERIOD TURNINGS
Walter & Sons, J., Kitchener, Ont.
PLANERS
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
PLANING MILL MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
PORTABLE DRILLS
Wisconsin Electric Co., Wisconsin, U.S.A.
PRESSES (Veneer)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company. Preston, Ont.
REED
Overseas Reed and Cane Co., Ionia, Mich.
RESAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company. Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
RIM AND FELLOE MACHINERY
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A. Cincinnati, Ohio.
RIP SAWING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company. Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.
ROSETTES
Waddell Mfg. Co., Grand Rapids, Mich.
RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.
SAFETY DEVICES
Cowan & Company, Galt, Ont.

How do YOU Drive Nails?

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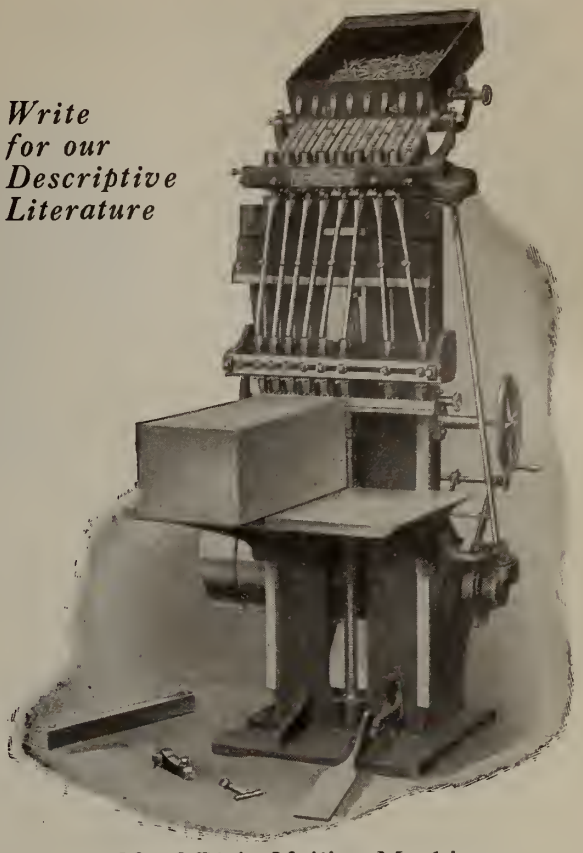
The Morgan Automatic Nailing Machine will prove a good investment for any woodworking plant. It drives nails anywhere and in any kind of wood, accurately, effectively and faster than it is possible to do it by hand. It makes money for Box Factories, Canning Factories, Cabinet Factories, Furniture Factories, etc.



No. 8 Plain Nailing Machine

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Increases Service — Reduces Costs

OLSON FRAME EXTENSION

OLSON FRAME EXTENSION -- When you desire to increase the carrying capacity of your Ford Truck, insist on having the Olson Frame Extension.

The perfect balance of the Olson makes the transportation of lumber, furniture etc , a simple matter, even for long distances.

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Just a Few Users—

Robert Bury Co. Canada, Limited, Toronto, Ontario.
Batts, Limited, Toronto, Ontario.
Gibbard Furniture Company, Napanee, Ontario.
Langmuir Manufacturing Company, Toronto, Ontario.
Gardiner Lumber Company, Galt, Ontario.
Irvin Lumber Company, Toronto, Ontario.

Swedish Crucible Steel Co. of Canada, Limited, Windsor, Ont.

Branches: 901 Royal Bank Bldg., TORONTO 285 Beaver Hall Hill, MONTREAL.

"Canadian Woodworker" Buyers' Directory—Continued

SANDERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Solem Engineering Co., Sheboygan, Wis.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAND PAPER
Manning Abrasive Company

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Elliot Machinery Co., Belleville, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS
Atkins & Co., E. C., Indianapolis, Ind.
Disston & Sons, Henry, Toronto, Ont.
Elliot Machinery Co., Belleville, Ont.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Silver Mfg. Company, Salem, Ohio.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.

SAW BENCH
Sidney Machine Tool Co., Sidney, O.
Wallace & Co., J. D., Chicago, Ill.

SAW SWAGES
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Company, Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY
Reynolds Machine Co., Massillon Ohio.

SCROLL SAWS
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane, & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamiltonfi Ont.

SECOND-HAND MACHINERY
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Osborne Sexton Machinery Co., Columbus, O.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS
Anketell & Davies, Toronto, Ont.
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

STAINS
Ault & Wiborg, Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ohio.
Shannon Co., Ed. J., Cincinnati, Ohio.
Standard Paint & Varnish Co., Windsor, Ont.

SINGLE SPINDLE BOXING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE
Whitney & Son, Baxter D., Winchendon, Mass.

STEEL DOOR MATS
Cary Mfg. Company, Brooklyn, N.Y.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Colladay Machine Works, Indianapolis, Ind.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Tannewitz Works, Grand Rapids, Mich.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohoa.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES
Jefferson Woodworking Co., Louisville, Ky.
Walter & Company, B., Wabash, Ind.

TEMPERATURE REGULATORS
Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Compan, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS
International Business Machines Co., Toronto, Ont.

TRIMMERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Preston Woodworking Machinery Company, Pretson, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS
Cowan Truck Company, Toronto, Ont.
National Dry Kiln Co., Indianapolis, Ind.

TURNED WOOD GOODS
Algoma Wood Products Co., Algoma, Wis.

TWINES & WEBBING
Doon Twines, Ltd., Kitchener, Ont.

UPHOLSTERY FABRICS
Burch Co., A. F., Grand Rapids, Mich.

UPHOLSTERY SUPPLIES
Burch Co., A. F., Grand Rapids, Mich.

VARNISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto, Ont
Flint Varnish & Color Co., Montreal, Que.
Penfound Varnish Co., Toronto, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N.Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS
Astoria Mahogany Co., New York, N.Y.
Batesville Lumber & Veneer Co., Lawrenceburg, Ind.
Birds Eye Veneer Co., Escanaba, Mich.
Bury & Compny, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christmann Veneer & Lumber Co., St. Louis, Mo.
Curtis Co., C. E., Chicago
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Evansville Veneer Co., Evansville, Ind.
Freiberg Lumber Co., Cincinnati, Ohio
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Holden, Henry S., Chicago, Ill.
Geo. Kersley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Litton Veneer Co., Rockford, Ill.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Veneer Co., New Albany, Ind.
Roberts, Geo. G., Chicago, Ill.
Southern Veneer Mfg. Co., Louisville, Ky.
Stimson Veneer & Lumber Co., Memphis, Tenn.
Sturm Co., Adolph, Chicago, Ill.
Talge Mahogany Co., Indianapolis, Ind.
Thompson Veneer Co., W. L., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Underwood Veneer Co., Wausau, Wis.
Veneer Manufacturers Co., Chicago, Ill.
Waetjen & Co., George L., Milwaukee, Wis.

VENEER TAPE
Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.

VENEER JOINTERS
Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY
Garlock-Walker Machinery Co., Toronto, Ont.

VENEER PRESSES (Hand and Power)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont
Perrin & Company, Wm. R., Toronto, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Johnson Co., O. E., Chicago, Ill.

WALNUT LUMBER
American Walnut Mfrs. Assn., Chicago.
Des Moines Saw Mill Co., Des Moines, Iowa.
Pickrel Walnut Company, St. Louis.
Purcell Walnut Lumber Co., Frank, Kansas City.

WIRE
Laidlaw Bale-Tie Co., Hamilton, Ont.
Pakanship Company, Brooklyn, N.Y.

WIRE BOX STRAPPING
Cary Mfg. Company, Brooklyn, N.Y.

WOOD FINISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Penfound Varnish Co., Toronto, Ont.

WOODWORKING MACHINERY
General Machinery Co., Toronto, Ont.

WOOD SCREWS
Robertson Mfg. Co., P. L., Milton, Ont.

WOOD TURPENTINE
Brown Corporation, Quebec, Que.

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Garlock-Walker Machinery Co., Toronto, Ont.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WODD LATHES
Colladay Machine Works, Indianapolis, Ind.

44 Yates No. 275
30 and 60-in. Automatic
Knife Grinders,
Brand New, at
One-half Price

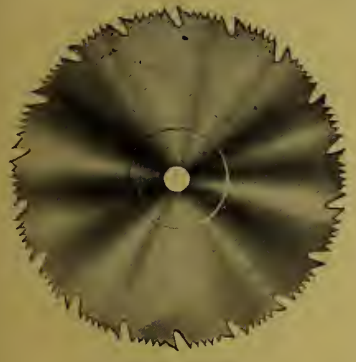
Machines arranged for Motor Application as per cut, or regular belt drive, if wanted.

8 New Andrew Mutiple Vertical Borers, 20, 30, 42 and 60-in., any number of heads.

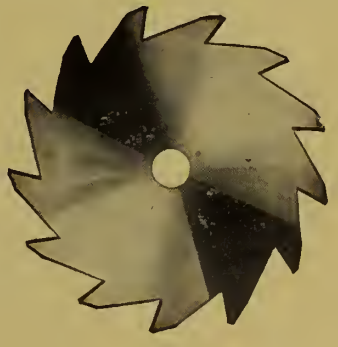
7 New Hermance Molders, 8, 10 and 12-in., stationary and slip-on heads.

Band rip saw, Fay & Egan, 42-in.
Band saws, 32, 36 and 38-in.
Borer, Andrew, 10-ft., 13-spindle, power table.
Borers, Andrew mult. vert., 20, 42 and 60-in., new.
Carver, 5-spindle, Moore.
Door clamp, Fay-Egan, heavy.
Edgers, two, three and four saws.
Glue cookers and retainers. Glue spreaders.
Hogs, two, Mitts & Merrill.
Jointers, 8, 12, 16, 20, 24 and 30-in.
Knife grinders, two 32-in., F. & E.
Lathe, Ober spoke and handle, almost new.
Lathes, Mattison, No. 8 auto; No. 6 block mach.
Lathes, speed, eight, mounted on iron bed.
Lock-corner machine, Morgan No. 8, full set.
Matcher, American Northwest, 24x8-in., 3 sides.
Matcher, end, Sherman, fine condition.
Matcher, 24x6-in., 3 and 4 sides.
Automobile spoke machines, Defiance, complete set.
Band resaw, 50-in., Fay & Egan, tilting rolls, full set of filing room tools.
Molder, Smith 14-in. outside, latest style, practically new.
Molders, 4-side, 9, 10 and 12-in. American.
Molder, Fay & Egan No. 184, 12-in. outside.
Molders, inside, 13-in. American and Woods.
Mortiser and router, Fay & Egan No. 124.
Mortiser, chain saw, New Britain No. 1, 25 chains.
Mortiser, chain saw, New Britain No. 7, new.
Mortisers, F. & E. vertical, hollow-chisel; also plunger type.
Nailers, two, Morgan No. 8, used three months.
Nailing machines, 2 closed back, 4-track, 4d, 15-in. spread.
Pony planers, 16, 20 and 24-in.
Relisher and mortiser, Greenlee.
Rip saws, self-feed, Hoosier, F. & E., Greenlee.
Router for stair stringers, H. B. Smith, flexible arm with adjustable table and forms.
Sand belt, closet seat and similar work.
Sander, H. B. Smith, spindle and disc, practically new.
Sanders, 30 and 42-in. Columbia; 30, 42 and 48-in. Invincible; 30-in. double Invincible.
Saw, 8-ft. double cut-off, roller table.
Saws, combination and variety, single and double arbor, also tilting arbor, stationary and tilting table, 24 and 30-in. circular resaw.
Saw, circular re-slab, 40-in. blade, power feed rolls.
Shapers, Fay single-spindle reversible, also Shimer single with overhead routing attachment.
Surfacer, 30-in. double, cabinet, B. & M., practically new.
Surfacer, Whitney 30-in. double, sectional roll and sectional chipbreaker; American No. 4½, 36-in. sectional and solid; Fay & Egan No. 140, 27 and 30-in. double divided rolls; also 18, 20, 24 and 30-in. single cylinder panel planers.
Tenoners, B. & M. double-end, also several single-end tenoners with and without copes.
Timber sizer, Fay-Egan s4s, 17x12-in.
Window frame machines, Smith & Phillips combination.
Wood-worker, universal, Fay & Egan and Bentel & Margedant. One lot of glue room machinery.

The Osborne & Sexton Machinery Co.
Re-manufacturers **COLUMBUS OHIO**



ATKINS
STERLING QUALITY
SAWS and KNIVES



The best steel—the most careful and accurate workmanship—the equipment that will eventually save you money.

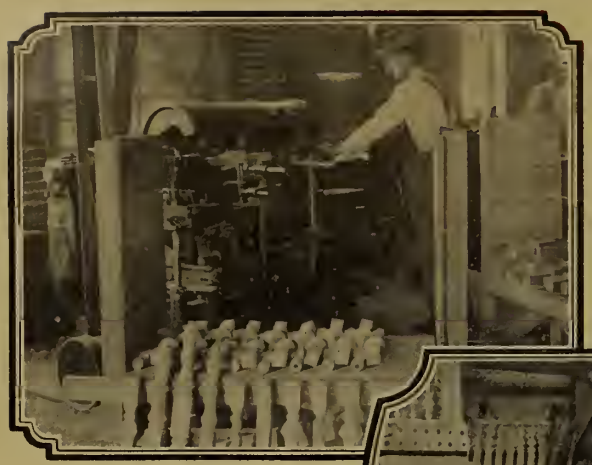
Atkins Sterling Quality Saws and Knives are proving their superiority by competitive tests in the largest plants of the country. We welcome your most careful investigation, as we know the satisfaction that will result.

Write to-day for our Knife Booklet "C W" and Pattern Template Paper.

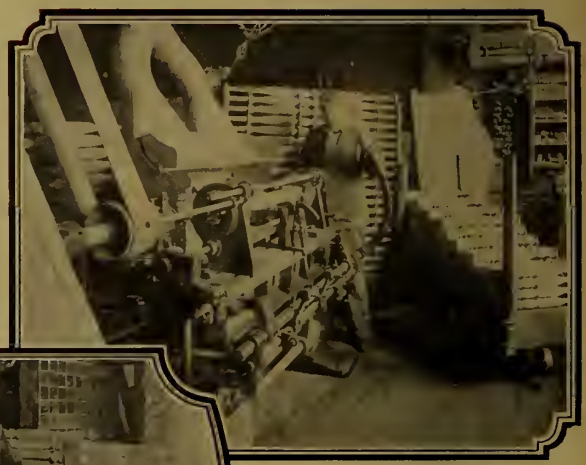
E. C. ATKINS & CO.
Makers of Sterling Saws

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

MATTISON
"Automatic"
The Standard Shaping Lathe



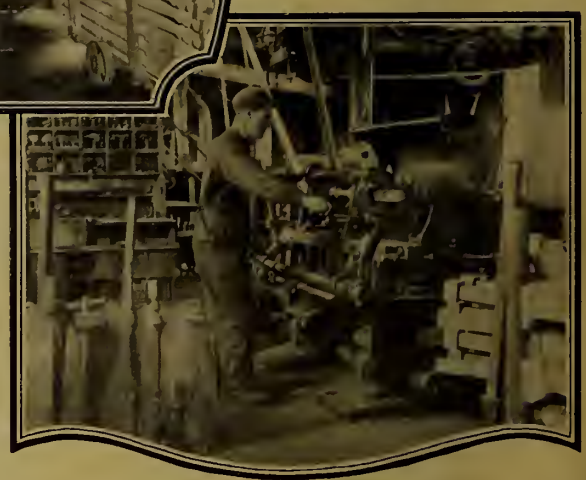
A Practical, Economical Machine Turner



Provides unlimited capacity and minimizes Labor Cost.

Allows the designer free play in the creation of elaborate or complicated patterns.

Efficient and dependable — requires but an ordinary mechanic to operate.



Thru the various stages of its development, the "Mattison" has given profitable service to its users

Conditions faced in 3,000 installations brought problems, the solving of which showed the way to the improvements now designed into the latest model "Mattison."

Mattison Machine Works

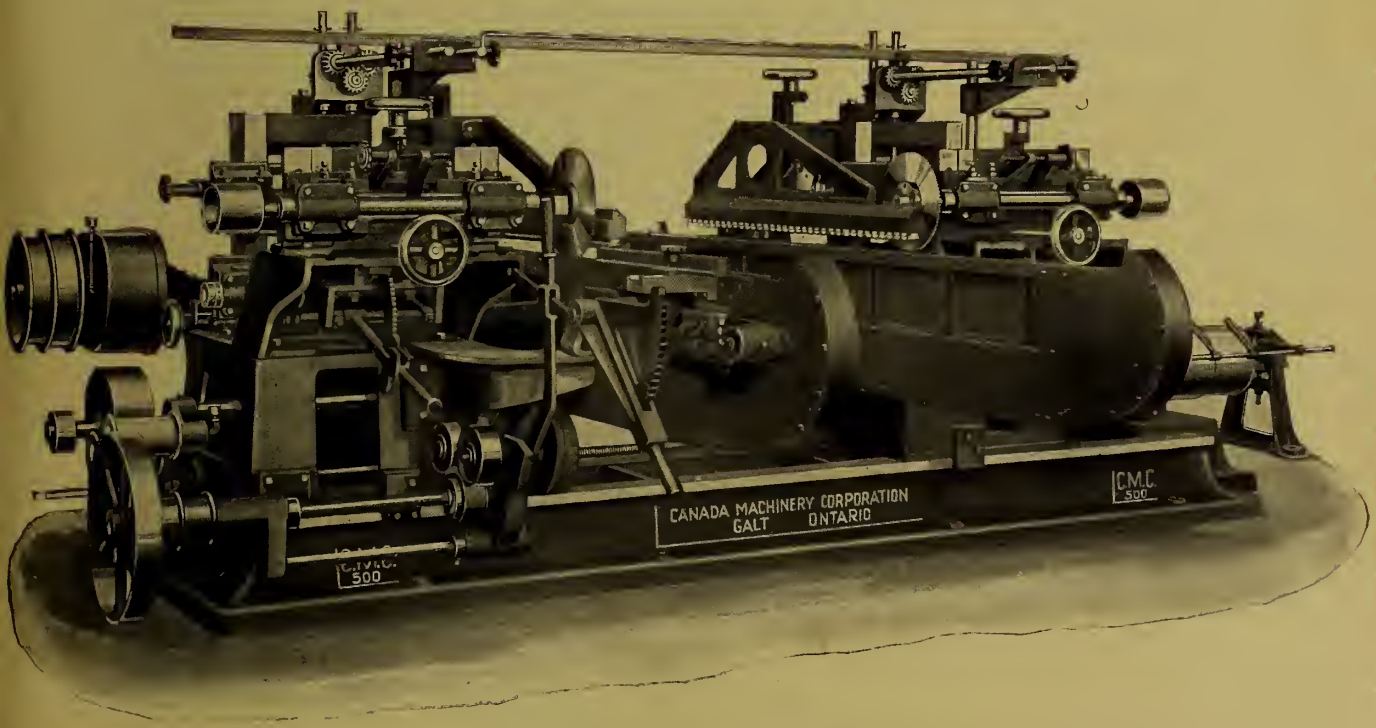
Rockford, Illinois, U.S.A.

olume Twenty TORONTO, SEPTEMBER, 1920 Number Nine

CANADIAN WOODWORKER and Furniture Manufacturer

C.M.C. DOUBLE END TENONER

MADE IN CANADA



Features of our new No. 500 DOUBLE END TENONER
Rigidity of Construction Centralized Control
Independent Drives to Heads and Saws

CANADA MACHINERY CORPORATION, GALT, ONTARIO
LIMITED

Toronto Office and Warerooms: Brock Avenue Subway

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Model 1-D Portable Drill

HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—4¾ pounds.

Capacity—Steel, 0 to 3/16". Wood and alloys, 0 to ½".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3⅜ inches.

Spindle—Offset from center ⅜".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

Jacob's Chucks used as a regular equipment.

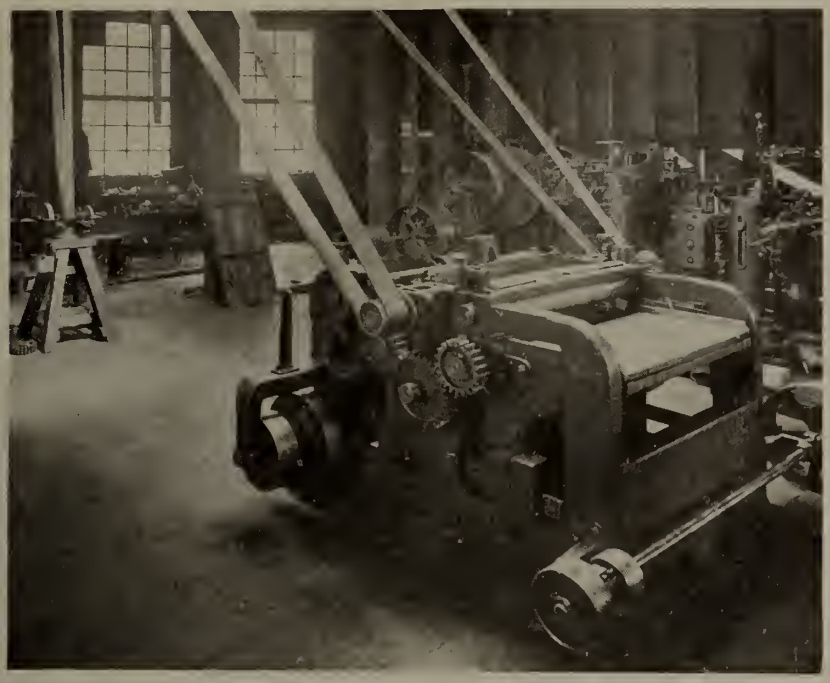
FOR speed in drilling and countersinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

Wisconsin Electric Company

717 Sixteenth Street, Racine, Wisconsin, U. S. A.

DUMORE GEARED ELECTRIC DRILLS



This photograph shows a section of our machine shop and testing floor. All our used machines are tested out before shipment, assuring satisfaction to our customers.

WE HAVE THE FOLLOWING

NEW MACHINES IN STOCK

ALSO MANY FIRST-CLASS USED TOOLS

1 American No. 25 Edging & Ripping Saw

1 American No. 3 Double Cut-off Saw.

1 American No. 30 Universal Saw Bench

2 American No. 9 Universal Knife Grinders for thick and thin knives

1 American No. 26 10 in. Outside Moulder

1 American No. 4½ 36 in. Cabinet Surfacer with sectional roll and chipbreaker

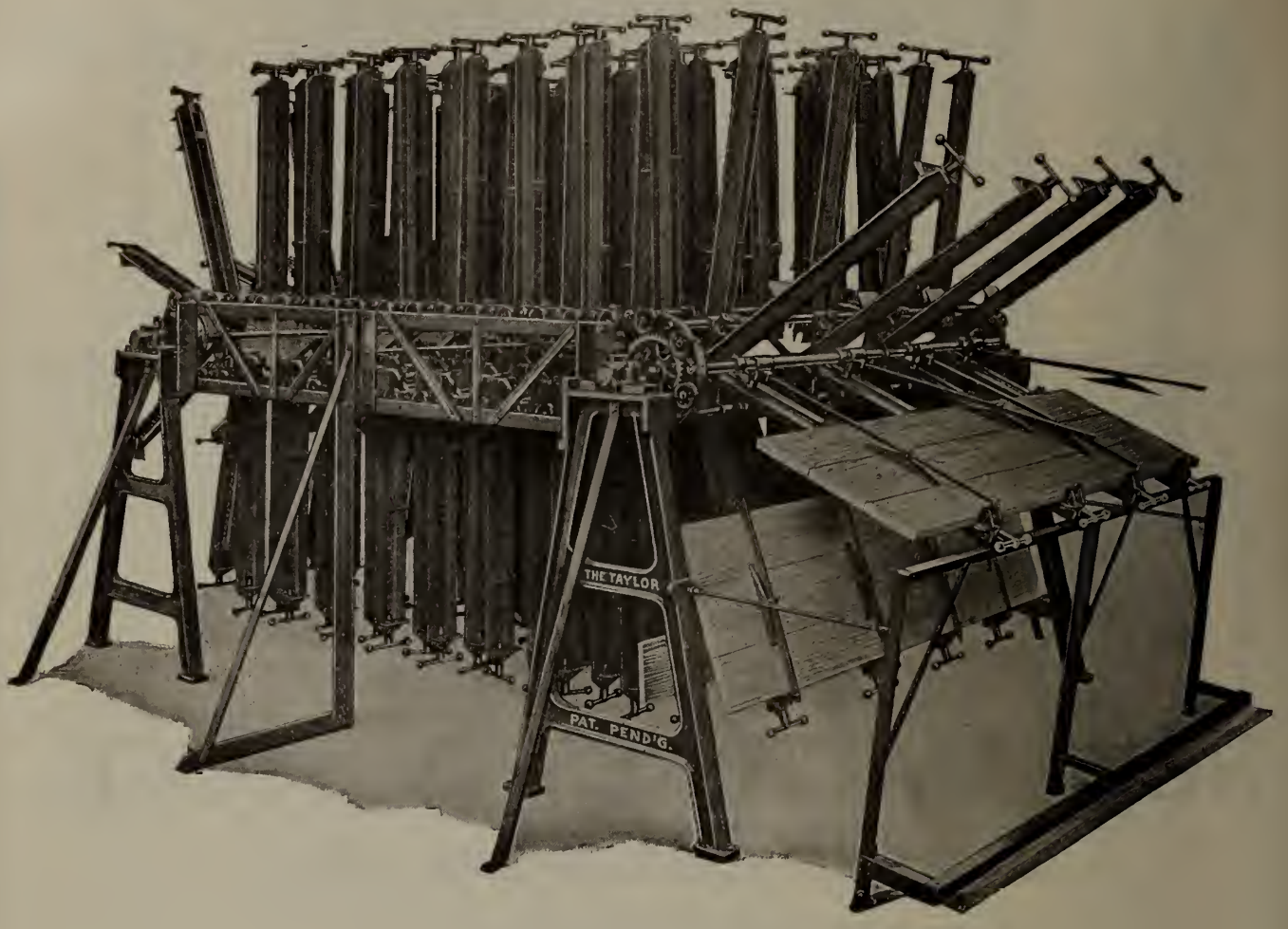
When you require woodworking machinery or veneer equipment send us your inquiries.

Garlock-Walker Machinery Company, Limited

32 Front Street West

TORONTO

CLAMP The Taylor TRADE MARK CARRIER



Forty section machine carrying 160 clamps, measuring 8 ft. 2½ in. between shaft centers.

The clamp is one of the most interesting features of the clamp carrier. A remarkable strain can be applied with greatest ease; the work it turns out—both thick and thin stock—is 100 per cent. perfect.

An Engineering concern recently wrote:

"I am recommending Taylor clamps to the Germain Mfg. Co. because I have proven the clamps more efficient through scientific time studies on both and all existing types of gluing-up machines and devices."

As a result of the above recommendations, The Germain Mfg. Co. referred to bought two Taylor carriers. They installed them, and tested them and have since purchased two more. We can tell you numerous instances where customers are using from two to nine Taylor carriers each as a result of similar experiences.

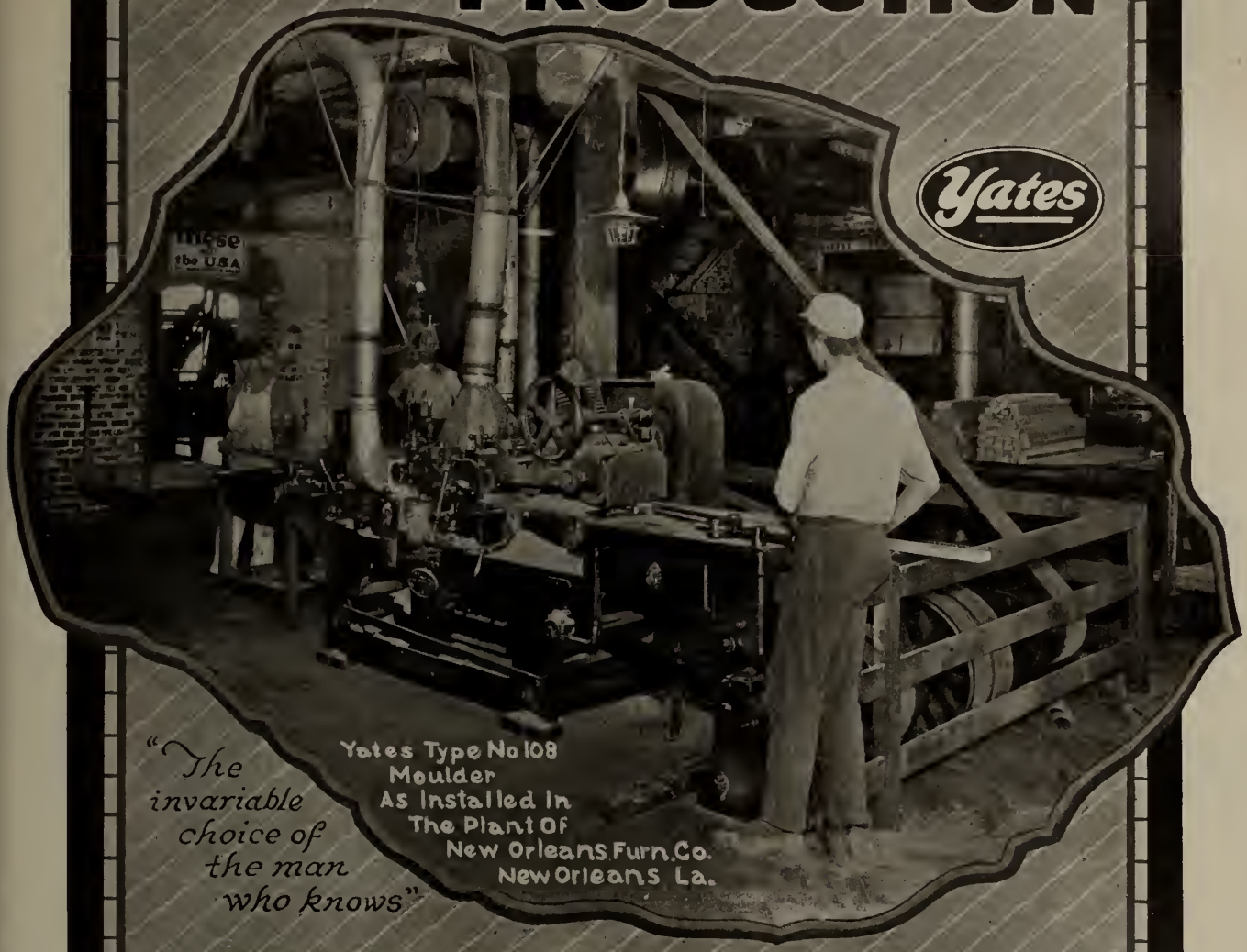
Let us prove the truth of these claims by showing you one of these carriers in operation, or you can try the clamps out on your own work. Ask for C. C. Folder and further information.

A. R. Williams Machinery Co., Toronto, Canada — Representatives

James L. Taylor Manufacturing Co.

POUGHKEEPSIE, N. Y.

LESS MEN, MORE PRODUCTION



"The invariable choice of the man who knows"

The Yates No. 108 Moulder

is built for strength and speed and it sure does get the work out. Is just the machine progressive mill men are looking for. They cannot afford to be without a No. 108. This is the big reason. By actual tests, in many mills, under all conditions, the Yates No. 108 got out more mouldings and better mouldings with less men. Write a letter for detailed information and circulars.

P. B. Yates Machine Co. Ltd.,
HAMILTON, ONT. CANADA.
U.S. Plant - Beloit, Wis.

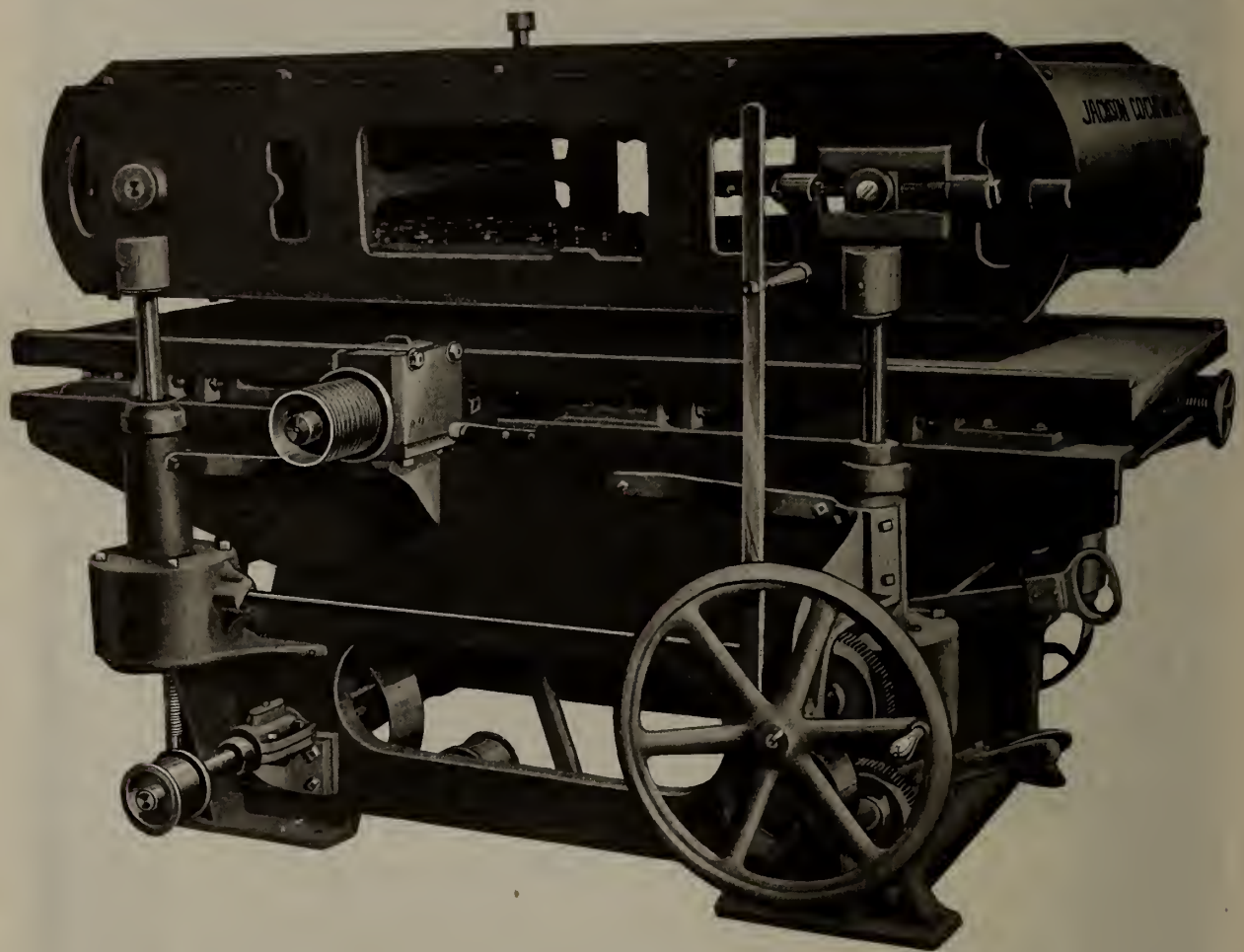
The

Herzog Self-Feed Jointer

means

Increased Production
Small Floors Space
Simplicity of Operation
Safety to Employees

Does Four Times the Work of the Hand Jointer



Our No. 34 Herzog Jointer, illustrated above, is one of the most efficient machines on the market to-day. It is appreciated by the manufacturer and employees alike, because, while it will produce from three to five times as much work as the hand jointer, it does not require skilled operators, but eliminates the danger so common to other makes. It can be operated by two boys. It will handle stock varying in width from 1 inch to the full width of the jointer, will feed fast or slow, takes only one-fourth the floor space of hand jointers, and requires only one-fifth of the sharpening of the knives. It is fitted with power feed raising and lowering attachment, with cylinder double belted and driven from both ends.

If interested in reducing your costs, write us

Jackson, Cochrane & Company

KITCHENER - CANADA

The Shimer Round Safety Cylinder with High Speed Knives

A Round Safety Cylinder that will Appeal to the Buyer and the User for Three Reasons:

The first is our adjusting nut for setting the knives. It is the only cylinder with properly located adjusting nuts for setting the knives, which, with our way, can be set to 1-1000 of an inch.
The second is our way of holding the knife without tapping into the head.
The third is the correct angle of cut for the knives.

Made for Any of the Different Makers' Machines and in Any Length Cylinder.

WRITE FOR PRICES

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

SUCCESSORS TO SAMUEL J. SHIMER & SONS, Inc.

GALT, ONTARIO

WHAT THE "ELLIOT" CAN DO FOR YOU

The "Elliot" Woodworker will do all your cutting, trimming, fitting, housing, dadoing, etc. Its use will enable you to handle more work and to do it quicker, better and cheaper than it is now being done. Unless you are employing the "Elliot" your plant is not working at capacity and you are not getting the profits that should be yours. Think it over.

Pat. 1910-1914.

ELLIOT MACHINERY

Company, Limited

BELLEVILLE - ONTARIO

UNIVERSAL ADJUSTABLE CUTTER HEAD Patented
Infringements (maker or user will be vigorously prosecuted.

Two Heads

that have put 100% more profit in the production of Dowel Stock.

FOR SHIP TREENAILS

W. S. HAWKER.

Inventor and Designer of the World's most efficient Tubular Turning Machinery

THE

Money Maker Adjustable Rod

and

Dowel Machine

The machine that is sent under a guarantee to show you a gain of from 100 to 400 per cent. before you buy it.

The improved dowel machine that 90 per cent. of the largest and oldest machinery builders and dealers now endorse and recommend in preference to the solid chuck machines they themselves previously built.

One cutter head turns from 1/4 in. to 2 in. diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

Works stock as short as five inches.

Rolls automatically centre variations in squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid chuck dowel machine.

We can save you from one dollar out of every two, to four out of every five, that the operation of solid chuck machines costs you.

Engagements for competitive test solicited.

Formal orders not solicited. All sales made after demonstration.

The only question is, are you willing to cut cost of your dowel turning to one-half or one-third of what it costs with any make of solid chuck machine?

Machine delivers the goods before you buy.

State conditions of stock closely.

Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY

DAYTON, OHIO.

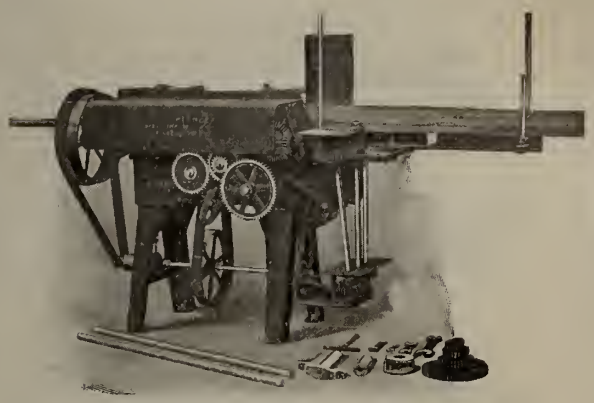
The Chaplin Automatic Handle Lathe

is The Shortest Cut to Efficiency

IT WILL TURN

Broom—Fork—Rake and Hoe Handles, Golf Sticks, Whip Stock, Vienna Chair Backs, Curtain—Flag and Pike Poles, etc. Capacity 6,000 to 10,000 handles a day.

Write for illustrated and descriptive circular



Chaplin Patent Automatic Handle Lathe

THE DEFIANCE MACHINE WORKS

New York City ***DEFIANCE, OHIO, U.S.A.*** *London, England*

HART MIRROR PLATE CO.

IMPORTERS AND MANUFACTURERS OF

MIRRORS

GRAND RAPIDS QUALITY

Grand Rapids, Mich.

Largest manufacturers of high grade mirrors in America serving the furniture trade exclusively.

Treat Your Machine as a Living Friend.

Attached to a Jointer

—It's Economical
—It's Efficient
—It's Convenient
—and above all, it's a Big Money Saver

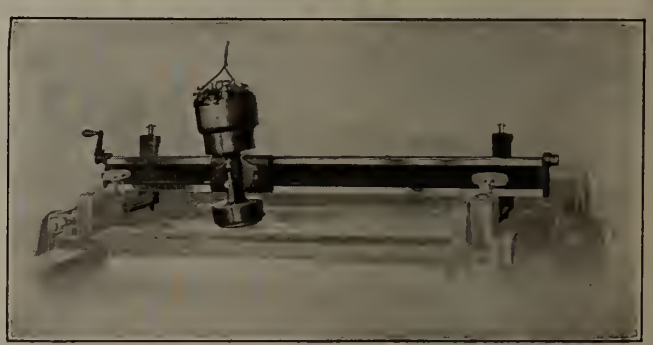
THE

Quicksharp Grinder

Wherever this machine has been installed it has been found to live up to the claims made for it. The ease of attaching and detaching, the speed with which it will grind a set of knives without removing them from the machine, the perfect work it performs and the time it saves make the Quicksharp Grinder an indispensible machine in every woodworking shop.

It has many unique and highly commendable features—in fact will do all and more than the expensive automatic, yet it is reasonable in its first cost and operates from a lamp socket.

It wouldn't take it long to pay for itself right in your own factory, and if you are dissatisfied with your present grinding equipment you should investigate it. We will gladly send full particulars.



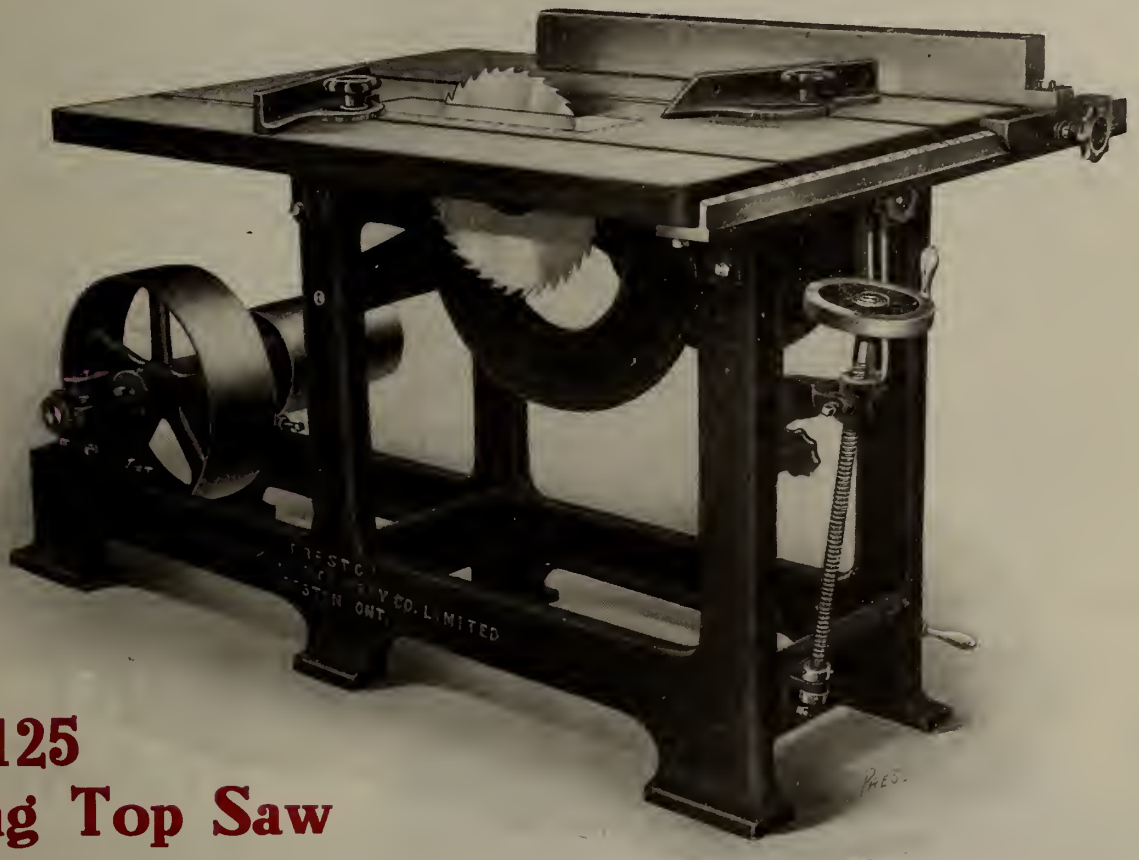
Attached to a Planer

The

Preston Woodworking

PRESTON

You can always depend upon a "PRESTON" for quality



No. 125 Tilting Top Saw Table

A medium sized machine, well adapted for the Furniture Factory, the Sash and Door Factory, the Cabinet, Pattern and General Woodworking Shop. It is designed to give the greatest amount of efficiency and to take up as little space as possible.

The one piece cast frame makes it a substantial, rigid machine, and the easy and rapid adjustment of the saw makes it a simple matter to change from one operation to another.

For dadoing, grooving, bevelling, mitring and rabetting it cannot be beaten. You'll be interested in a complete description of this machine. Send for it.

Machinery Co., Limited

ONTARIO

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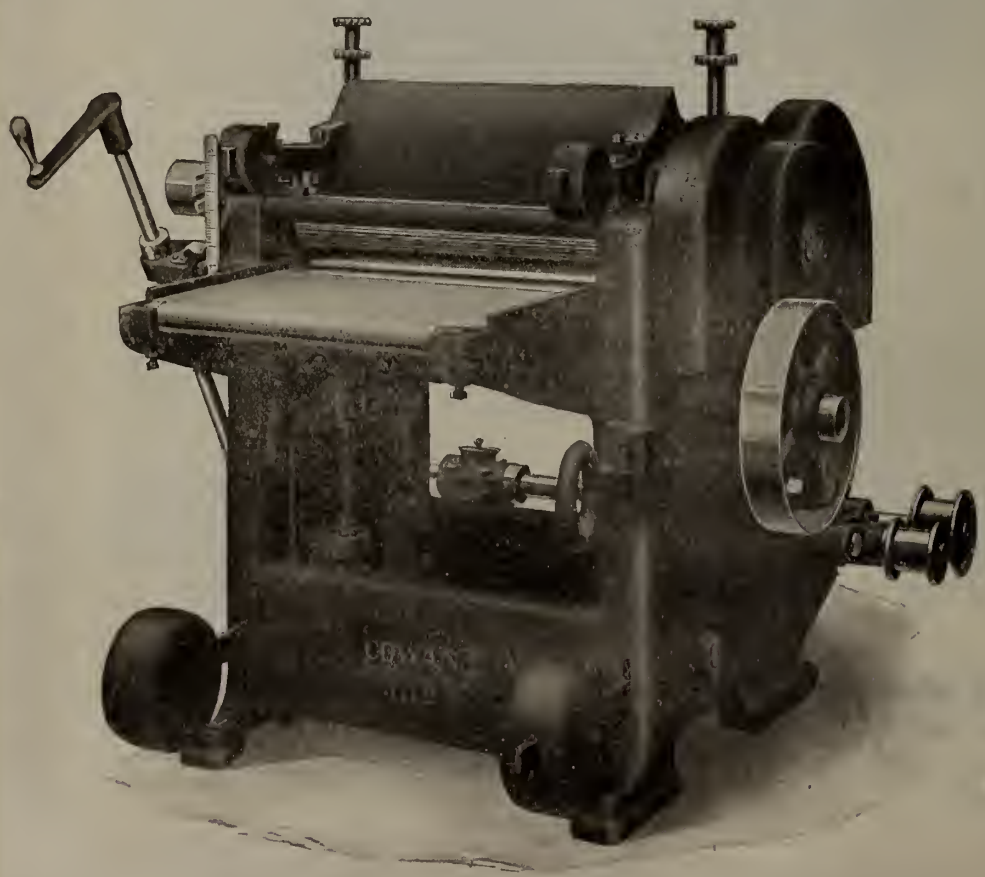


PONY PLANER 182

16″, 20″, or 24″ wide
6″ thick.

Feed Driven from Cylinder.

Upper Rolls 3″ Solid Steel.

Your Inquiries Solicited.

Cowan & Company of Galt, Limited

Galt, Ontario, Canada

Power is expensive—SAVE IT

—but not by reducing production.

In fact, by the use of ball bearings, you can largely increase production and consume no more power than formerly, for in the average plant friction destroys at least 25 per cent. of all the power produced or bought.

High grade ball bearings, such as S K F and Hess-Bright are almost frictionless. Not only is less power required, but belting life is lengthened, wear is practically eliminated, bearing renewals are postponed almost indefinitely, frequent tying up of equipment is avoided, oil costs are lower, and hot boxes are unknown.

Ball bearings, by conserving the energy formerly wasted, benefit the whole power line from the machines back to the boilers.

CANADIAN SKF COMPANY, LIMITED
MONTREAL TORONTO

SKF INDUSTRIES

Hess-Bright Ball Bearings
S K F Ball Bearings
Atlas Steel Balls
Gronkvist Chucks
Transmission Hangers

A Service that contemplates more than the sale of a bearing.

Every S K F Industries service-salesman is a plant engineer equipped to consult on your bearing problems. S K F Service made available through these men is built on a laboratory backed ideal that seeks to increase Canadian output by lifting the friction load from industrial machinery.

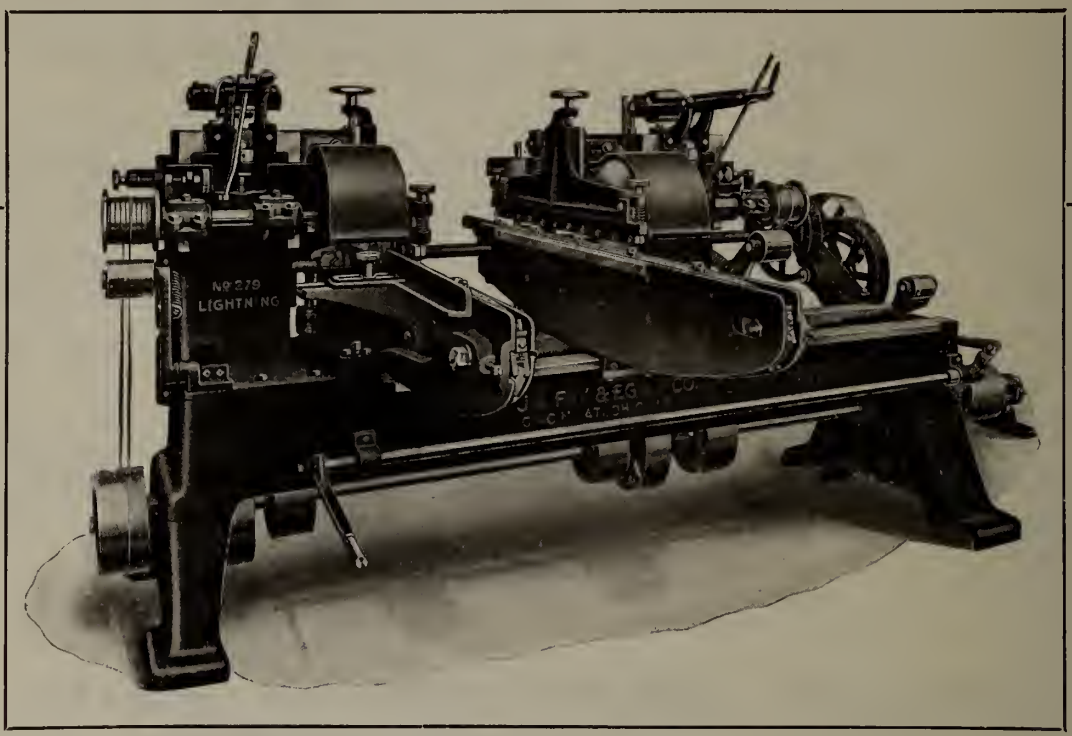
Manufacturers are invited to avail themselves of this freely offered co-operation.

The S K F Research Laboratories where friction problems are solved

Control Your Manufacturing Costs

by installing a

No. 279 "Lightning" Double End Tenoner



There are many jobs now being worked on Shapers, Gainers, Saws, etc., which could be done better and more cheaply on a No. 279.

No. 279 was designed for cutting tenons, coping and cutting off to exact dimensions both ends of material at one operation.

This machine is not only a modern fast-feed Tenoner—it is an up-to-date Automatic Double Cut-Off and Equalizing Saw as well.

As a Tenoner, it is distinctive in that it is entirely self-contained, all operating parts being driven from a single countershaft in base of the machine, greatly economizing floor space.

Send for Special Bulletin I-16 for full information about this wonderful and labor-saving machine.

J. A. FAY & EGAN COMPANY

ESTABLISHED 1830

World's Oldest and Largest Manufacturers of Woodworking Machinery

153-173 West Front Street - Cincinnati, Ohio

St. Francis Basin Hardwoods
Tennessee Aromatic Red Cedar

For Fall Shipment "Dry Stock"

Viz.:

100,000′—4/4″—No. 1 Common & Selects—Sap Gum
50,000′—4/4″—No. 2 Common.....Sap Gum
50,000′—6/4″—No. 2 Common Sap Gum
50,000′—4/4″—No. 1 Common & Selects—Red Gum-Pl.
75,000′—4/4″—No. 2 Common Red Gum-Pl.
35,000′—5/4″—No. 1 Common & Selects—Red Gum-Pl.
25,000′—6/4″—No. 1 Common & Selects—Red Gum-Pl.
50,000′—6/4″—No. 2 Common Red Gum-Pl.
75,000′—4/4″—No. 1 Common & Selects—Oak—Plain.
50,000′—4/4″—No. 2 Common Oak—Plain.
50,000′—4/4″—Sound Wormy Oak
30,000′—4/4″—2″ to 5½″—Quartered White Oak Strips

We also have a good supply of other items in Hardwood. Write us for information and prices delivered your plant.

Note: CEDAR, car load and less. Also mixed with Hardwoods.

GEO. C. BROWN & COMPANY

General Office, - MEMPHIS, TENN.

BAND MILLS, PROCTOR, ARK. LAKE VILLAGE, ARK.

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DRY AND PARTLY DRY STOCK

Ready for Shipment

Your inquiries will bring very prompt quotations. You can depend on straight grades, quick service, and well manufactured lumber.

RED GUM

11219 ft. 8/4 1sts & 2nds Qtd.
36728 " 8/4 No. 1 Common Qtd.
18917 " 6/4 1sts & 2nds Qtd.
51022 " 6/4 No. 1 Com. & Sel. Qtd.
10195 " 6/4 No. 2 Common Qtd.
2842 " 5/4 1sts & 2nds Figured
3575 " 4/4 No. 1 Com. & Btr. Figured
84088 " 6/4 1sts & 2nds
448648 " 6/4 1sts & 2nds
76177 " 6/4 No. 2 Common
302921 " 5/4 1sts & 2nds
210017 " 5/4 No. 1 Com. & Sel.
41051 " 5/4 No. 2 Common
7000 " 4/4 1sts & 2nds
279690 " 4/4 No. 1 Com. & Sel.
110337 " 4/4 No. 2 Common

SAP GUM

16170 " 8/4 1sts & 2nds Plain
16360 " 8/4 No. 1 Common Plain
5180 " 8/4 No. 2 Common Plain
271736 " 6/4 1sts & 2nds
470990 " 6/4 No. 1 Com. & Select
185418 " 6/4 No. 2 Common
100453 " 5/4 1sts & 2nds
196429 " 5/4 No. 1 Com. & Sel.
78285 " 5/4 No. 2 Common
13280 " 5/4 No. 3 Common
10241 " 4/4 9-12" Box Boards
104671 " 4/4 1sts & 2nds
230717 " 4/4 No. 1 Com. & Sel.
132202 " 4/4 No. 2 Common
31122 " 4/4 No. 3 Common

LA. WHITE ASH

7980 " 8/4 1sts & 2nds (Dry)
76476 " 10/4 12/4 No. 1 Com. & Btr.
3900 " 6/4 8/4 Log Run (Dry)
35800 " 8/4 No. 2 Common (Dry)
20000 " 6/4 No. 1 Common (Dry)
14820 " 6/4 No. 2 Common (Dry)
42000 " 5/4 No. 1 Common (Dry)
18700 " 4/4 No. 1 Common (Dry)
14321 " 4/4 No. 3 Common (Dry)
53292 " 4/4 Sound Wormy

PECAN—DRY

1000 " 8/4 Log Run
660 " 4/4 Log Run
4000 " 8/4 Flitches
4500 " 8/4 No. 2 Common
1200 " 5/4 No. 3 Common
12000 " 6/4 No. 2 Com. & Btr.

OAK

5992 tt. 4/4 1sts & 2nds Qtd. Red
10053 " 4/4 No. 1 Com. & Sel. Qtd. Red
3014 " 4/4 No. 2 Com. Qtd. Red
3019 " 4/4 No. 3 Com. Qtd. Red
13709 " 4/4 No. 3 Common Qtd. White
11265 " 4/4 Log Run Qtd. Red
17407 " 4/4 1sts & 2nds Plain Red
167641 " 4/4 No. 1 Common Red
43900 " 4/4 No. 2 Common Red
46727 " 4/4 1sts & 2nds Mixed
62801 " 4/4 No. 1 Com. & Sel. W.
97325 " 4/4 No. 2 Common Mixed
25093 " 4/4 No. 3 Common Mixed
70210 " 4/4 Sound Wormy
3920 " 5/4 No. 2 Common Red

LA. CYPRESS

11097 " 10/4 No. 1 Shop
6012 " 10/4 No. 1 Common
9590 " 8/4 No. 1 Common
12839 " 6/4 Select
1067 " 6/4 No. 1 Common
3190 " 6/4 No. 2 Common
18588 " 6/4 & 8/4 Dog Bds.
15800 " 5/4 No. 2 Common
8605 " 4/4 Shop & Better
100100 " 4/4 No. 1 Shop
152851 " 4/4 No. 1 Common
15551 " 4/4 No. 2 Common
4300 " 4/4 No. 3 Common
51020 " 4/4 Peckie
7890 " 4/4 No. 2 Boxing

ELM—GREEN

73007 " 10/4 & 12/4 No. 2 Com. & Btr.
26941 " 8/4 No. 2 Common & Btr.
2100 " 6/4 No. 1 Common & Btr.

ARKANSAS YELLOW PINE—AIR DRIED

18760 " 4/4 B. & Better
76292 " 4/4 No. 1, No. 2, No. 3 Com. 6, 8, 10 & 12"

SYCAMORE

3535 " 4/4 No. 3 Com. & Btr. Pl. Sawn
4300 " 4/4 No. 3 Com. & Btr. Qtr. Sawn

HACKBERRY

600 " 4/4 No. 3 Com. & Btr. Pl. Sawn

HOLLY

3360 " 4/4 No. 3 Com. & Btr.

LYNN

880 " 4/4 No. 3 Com. & Btr. Pl. Sawn

COTTONWOOD

1 car 4/4 Log Run, 50% 1sts & 2nds, 30% No. 1 Com., 20% No. 2 Com.

ABERDEEN LUMBER COMPANY, Pittsburgh, Pa.

William S. Whiting Company

JOHNSON CITY, TENNESSEE

1 Band Mill *5 Circular Mills*

Hardwood Lumber

Oak	Basswood
Maple	Buckeye
Chestnut	Poplar
Ash	Birch

Rotary-Cut Soft Yellow Poplar Veneers
Quarter-Sawn White Oak Flitches
Sliced and Sawn Quartered White OakVeneers
Oak and Maple Flooring
Dowel Pins and Dowel Rods
Glued-Up Chestnut Cores and Dimension

5-16" Oak Parquetry Flooring Strips and Squares carried in stock at our warehouses:
138 44th St., Brooklyn, N.Y., and at Elizabethton, Tenn.

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VENEER TAPE

is made of highest quality Kraft Paper that peels off your veneer in one piece, thus eliminating that tedious and expensive work of sanding or scraping.

YOUR especial needs of Veneer Tapes, whether Paper or Cloth, can be furnished by

The Gummed Products Co.

Troy - Ohio

Chicago Minneapolis New York

There's no use arguing

Veneer Tapes may all look alike to the man in the office, but the shop foreman knows how they differ. When he points out the advertisement to you in the Woodworker, be sure to order the genuine

Nashua Veneer Tapes (Made in Canada)

Write for samples and prices.

Whether you require Kraft, Hollands or Coarse Cloth, Nashua Quality tapes will fill the bill.

You will swear by them—and not at them.

CANADIAN·NASHUA·PAPER·CO.·LTD
SERVICE PRODUCTION QUALITY
TRADE MARK
PETERBOROUGH ONT.

CANADIAN NASHUA PAPER CO., Ltd.

Peterborough, Ont.

BEST LUMBER

QUALITY

Oak

SERVICE

Poplar — Gum

All Thicknesses
Quarter Sawn or Plain

Memphis Band Mill Co.
"Quarter-sawn White Oak Headquarters"
Memphis, Tenn., U.S.A.

Boland Lumber Company

Murray Bldg., Grand Rapids, Mich.

Manufacturers and Wholesalers Northern and Southern Hardwoods

Northern Woods:

Ash, Basswood, Beech,
Birch, Hard Maple,
Quartered Maple,
White Maple, Soft Maple,
Soft Elm, Rock Elm.

Southern Woods:

Cherry, Chestnut,
Cottonwood, Cypress, Gum,
Hickory, Magnolia,
Oak, Poplar, Sycamore,
Walnut, Willow.

Please send us your inquiries and it will be a pleasure to quote you and describe our stocks

Band Mill and Yards, Memphis Plant.

Yes

We are specialists in

QUARTER	IN
SAWN	THICKNESSES
RED	OF
GUM	1½″
SAP	2″
NO	2½″ AND
DEFECT	3″

We manufacture all the lumber we ship and operate two band mills on our own timber which enables us to ship stock of even grade, color and texture.

Manufacturers of all kinds of high grade Southern Hardwoods. Phone, wire or write for quotations and we will be pleased to quote delivered prices.

Direct from producer to consumer.

GAYOSO LUMBER COMPANY

MEMPHIS, TENNESSEE U.S.A.

Stock on Hand in Kitchener

7,000	ft.	4/4 SAP Gum No. 1 Com. & Selects
9,000	"	8/4 Qtd. Red. Gum, No. 1 C&B
5,000	"	5/4 Pln. Oak FAS
30,000	"	6/4 Pln. Oak FAS
30,000	"	6/4 Pln. Oak No. 1 Com.
30,000	"	8/4 Pln. Oak FAS
50,000	"	8/4 Pln. Oak No. 1 Com.
12,000	"	8/4 Pln. Oak Sd. Sq. Edge
1,200	"	4/4 Pln. Oak No. 1 Com.
15,000	"	4/4 Tenn. Red Cedar Brds. No. 1 C&B
35,000	"	4/4 Qtd. Wht. Oak FAS
35,000	"	4/4 Qtd. Wht. Oak No. 1 Com.
7,000	"	4/4 No. 2 Com. & Sd. Wormy Chestnut
23,000	"	5/4 No. 2 Com. & Sd. Wormy Chestnut
50,000	"	6/4 No. 2 Com. & Sd. Wormy Chestnut
12,000	"	5/4 FAS Chestnut
10,275	"	5/4 No. 1 Com. Chestnut
		Odd lots of No. 1 Com. Chestnut 4/4, 6/4 & 8/4
1,847	"	3/4 No. 1 C&B Qtd. Wht Oak
69	"	4/4 FAS Qtd. Wht. Oak
2,065	"	4/4 No. 2 Com. Qtd. Wht. Oak
1,000	"	3/4 No. 1 C&B Pln. Wht. Oak
2,624	"	3/4 FAS Sap Gum 13/17"
2,152	"	3/4 Select Sap Gum 3/12
8,573	"	3/4 Select Sap Gum 12" & up
470	"	5/4 Select Sap Gum
15,000	"	12/4 No. 1 C&B Hard Maple
15,000	"	4/4 No. 2 Basswood

PERCY E. HEENEY

202 Weber Chambers, KITCHENER, ONT.

GET THE HABIT

When you want good, dependable grades and satisfactory service on your Hardwood Lumber wants write or wire

STERRETT

SEPTEMBER SPECIALS

2 cars 4/4 Com. & Btr. Qtd. White Oak Ohio Stock, wide, good figure.
1 car 4/4 No. 2 Com. Qtd. White Oak —same..
2 cars 4/4 Com. & Btr. Chestnut. Worms no defect.
1 car 8/4 Com. & Btr. Plain White Ohio Oak.
5 cars each 4/4 Com. & Sap Gum & No. 1 Com. Cottonwood.

WILL S. STERRETT

810—2nd Natl. Bldg. - CINCINNATI, OHIO

Reese Sheriff Lumber Co.

WILLIAMSPORT, PENNSYLVANIA

Manufacturers of

Northern and Southern Hardwoods White Pine, Spruce and Hemlock

With special attention to **Oak, Chestnut, Poplar, Cherry, Walnut, Gum and Basswood.**

OUR MOTTO

REASONABLE PRICES - that you can afford to pay.
EFFICIENT SERVICE — that you have a right to expect
FAIR TREATMENT — that you can depend on getting

We would appreciate an opportunity of furnishing a portion of your lumber requirements.

"Hartzell's Choice Walnut"

Are you a believer in the fact that

"Quality Counts"

Have you ever experienced that delightful sensation of accidently overhearing a person speaking in a complimentary way of the "Quality of your Product."

"We emphasize Quality"

If your finished product is made from Hartzell's American Walnut Lumber and Veneers you will have the last word in "Quality"

There is a difference and it will pay you to think it over.

Samples submitted and quotations made upon application.

Our Motto is
"Satisfied Customers."

Geo. W. Hartzell - Piqua, Ohio

The Hotel Pennsylvania Used Walnut

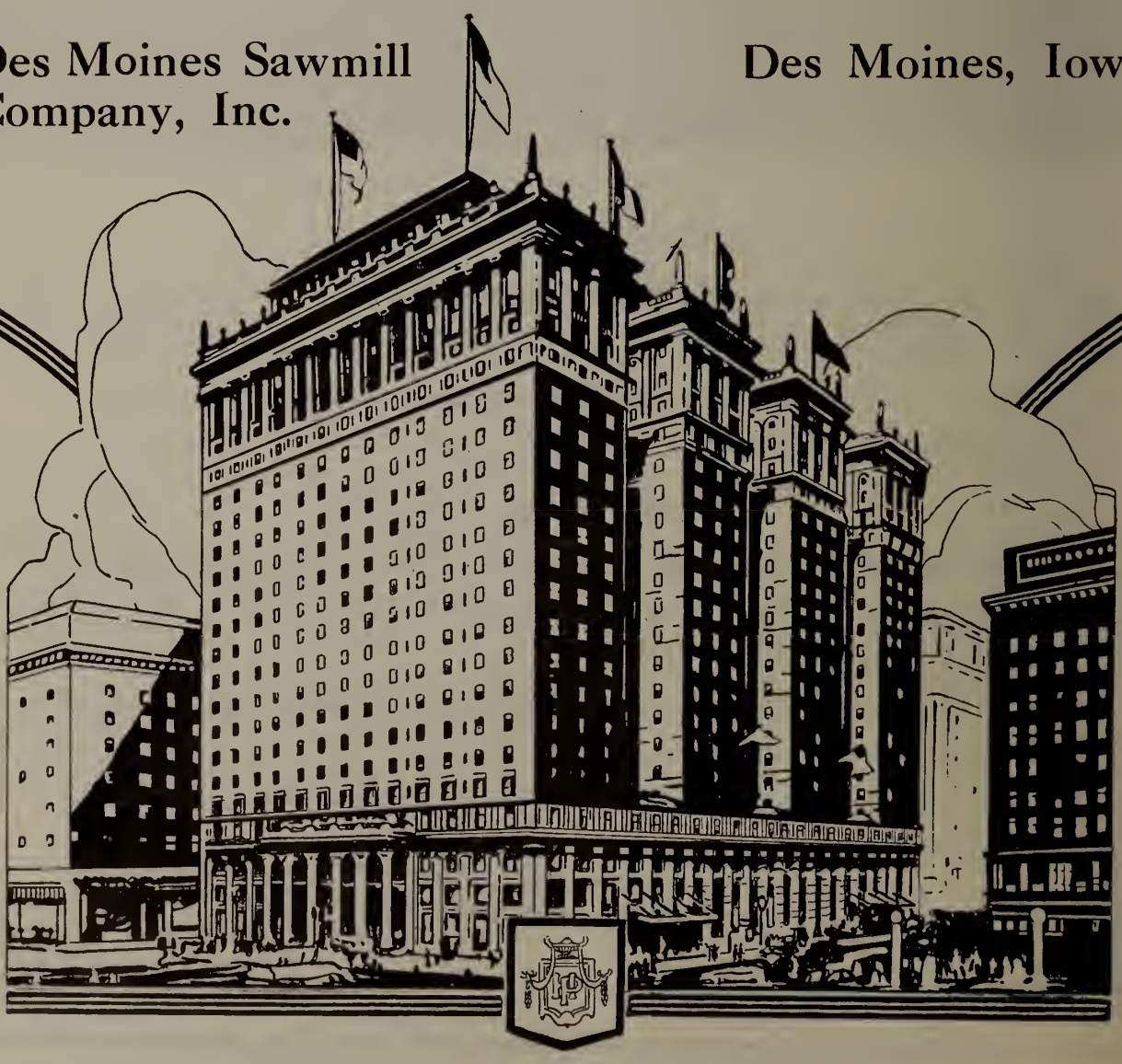
They selected American Walnut because they believed it to be the most practical and yet the most distinctive wood obtainable. Later they confirmed their own judgment by consulting the preferences of the public they serve. The management in a recent statement say:—

> "The fact that we have chosen Walnut as a furniture wood and for the interior trim for the largest hotel in the world, and a hotel which is designed for New York's most discriminating hotel patrons, speaks for itself. Could we say more?"

Use Walnut for all furniture and interior trim and especially insist upon the Iowa variety in both lumber and veneers.

Des Moines Sawmill Company, Inc.

Des Moines, Iowa



GLIMPSE NO. 2 INTO THE SPIRIT OF AMERICA'S SECOND GREATEST INDUSTRY

Pride in *First Class Work* is the Label of Leadership

Nowhere else in the world does the science of *Lumbering* equal modern American methods. And no *hardwoods* in the world surpass the superb cabinet-woods of our own great eastern and mid-southern forests. (Knowledge of their extent today gives a sudden joy to people of cultured taste in *furniture* and *interior-trim*, some of whom had almost been led to actually believe in the early exhaustion of our native supply! Yet generations to come will share our present lavish privileges.)

The vista shown above is *two miles long*—a solid bed of *superior hardwood logs*, of *many species*, which in due course will yield over 12,000,000 board-feet of the best furniture, trim and specialty woods in the world today.

Notice the obscure *temporary railroad* at the right—laid (at heavy cost) to convey the thousands upon thousands of selected logs from their neatly arranged "stop-over" to the great mills which are to convert them into form for your most intimate and life-long uses.

It is a fascinating thought—as to *just which* of the logs seen above may contain the material for *your own new dining room set*, your new *phonograph cabinet* or the *interior trim* (or floors) of your *new home*—perchance this year, or next year (or even the year after.)

No matter when it happens, however, *you never will forget this photograph* of the superb logs, superbly "logged" and so proudly and skilfully handled, parts of which *some day or other* are to be *your very own.* (Really, the notion is distinctly interesting!—Isn't it?)

WRITE US—AND WATCH THIS PUBLICATION FOR *GLIMPSE NO. 3*

American Hardwood Manufacturers' Association

MEMPHIS, TENNESSEE

American Oak	Cottonwood	Elm	Sycamore	Willow
Red Gum	Chestnut	Beech	Tupelo	Lynn
American Walnut	Hickory	Basswood	Cherry	Magnolia
Poplar	Ash	Maple	Persimmon	et al.

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

BROWN ASH

	Clear	No. 1	No. 2
1 in.	40,900	50,000	17,000
1¼ in.	58,500	7,300	36,200	15,300
1½ in.	36,500	....	35,000	7,500
2 in.	7,500	....	20,000	2,000

WHITE ASH

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	15,000	....	110,000	110,000
1¼ in.	117,000	4,500	140,000	40,000
1½ in.	22,900	1,200	39,000	65,000
2 in.	56,300	500	80,000	86,000
2½ in.	25,500	....	34,000	32,500
3 in.	87,500	....	75,500	33,500
4 in.	7,000	....	15,000	5,500

BASSWOOD

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	115,700	3,000	340,000	240,000
1¼ in.	151,300	14,000	235,500	70,800
1½ in.	94,600	....	41,800	15,000
2 in.	68,900	....	16,000	4,500
2½ in.	90,000	....	13,900	15,000
4 in.	1,300	....	450	....

BEECH

	1 & 2	No. 1 Com.	No. 2 Com.
⅜ in.	.....	.....	.....
¾ in.	2,000	.....	.....
1 in.	25,000	254,700	13,000
1¼ in.	33,200	10,600	12,000
1½ in.	80,800	7,500	8,400
2 in.	6,000	6,000	.....
2½ in.	.....	.....	.....
3 in.	1,100	5,000	5,500
4 in.	225	1,200	475

CHERRY

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	187,500	182,200	90,500
1¼ in.	5,500	4,600	4,500
1½ in.	32,000	21,700	57,300
2 in.	.....	16,200	52,900
2½ in.	5,500	2,700	2,200
3 in.	28,700	3,500	2,300
4 in.	5,900	.....	500

HICKORY

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	3,200	8,400	11,600
1¼ in.	1,100	2,500	2,050
1½ in.	6,600	11,300	25,000
2 in.	2,400	17,200	16,200
2½ in.	7,000	13,000	4,700
3 in.	3,500	7,580	7,200
4 in.	300	.....	275

CYPRESS

	1 & 2	Select	No. 1 Shop
1 in.	.....	2,000	500
1¼ in.	.....	8,800	.....
1½ in.	17,100	5,200	18,000
2 in.	24,000	24,200	4,600
2½ in.	8,000	3,200	.....
3 in.	69,400	23,100	12,000
4 in.	10,300	.....	.....

SOFT ELM

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	4,700	11,000	3,800
1¼ in.	41,500	38,200	6,800
1½ in.	12,500	13,300	5,400
2 in.	6,000	1,000	....
2½ in.	6,000	1,200	300
3 in.	39,280	8,500	8,000
4 in.	7,100	6,200	6,000

PLAIN RED GUM

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	30,300	31,000	15,500
1¼ in.	.....	.....	7,700
1½ in.	8,000	10,300	9,500
2 in.	4,500	3,800	7,500

QUARTERED SAP GUM

	1 & 2	No. 1 Com.	No. 2 Com.
4/4	.....	2,500	12,000
5/4	14,000	.....	.....
8/4	2,000	400	.....
10/4	350	29,000	3,000

QUARTERED RED GUM

	1 & 2	No. 1 Com.	No. 2 Com.
4/4	9,000	20,000	15,100
5/4	8,100	9,800	....
6/4	3,900	4,500	4,600
8/4	19,100	11,500	3,600

SAP GUM

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	6,400	16,000	200
1¼ in.	.....	800	....
1½ in.	2,400	6,000	13,500
2 in.	4,490	12,700	10,400
2½ in.	.....	1,500	1,200

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	700	.....	9,700	400
1 in.	24,200	3,400	3,500	400
1¼ in.	3,000	.....	3,000	500
1½ in.	350	.....	500	100
2 in.	1,000	.....	7,400	.....

Also Large Stock of BEECH, BIRCH and MAPLE

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

Brown & Hackney, Inc.

MEMPHIS, TENN.

Manufacturers of High Grade
Bandsawn Southern Hardwood

LUMBER

September, 1920—Stock List

BROWN & HACKNEY, Inc., LITTLE ROCK, ARK.

QUARTERED WHITE OAK

10,000' 5/8" 1s & 2s
2 cars 5/8 No. 1 Common
3 cars 4/4 1s & 2s
10 cars 4/4 No. 1 Common
2 cars 4/4 No. 2 Common
1 car 4/4" Clear Strips
2 cars 4/4 Common Strips
1 car 8/4 No. 1 Common
1 car 8/4 No. 2 Common

PLAIN OAK

1 car 3/4" 1s & 2s Plain Red Oak
2 cars 3/4 No. 1 Com. Plain Red Oak
1 car 3/4 No. 2 Com. Plain Red Oak
3 cars 4/4 No. 1 Com. Plain White Oak
3 cars 4/4 No. 2 Com. Plain White Oak
2 cars 4/4 Sound Wormy Oak
4 cars 4/4 No. 1 Com. Plain Red Oak
2 cars 4/4 No. 2 Com. Plain Red Oak
1 car 8/4 Oak Dog Boards

PLAIN GUM

3 cars 5/8 No. 2 Com. Sap Gum
2 cars 6/4 No. 2 Com. Sap Gum
2 cars 4/4 No. 2 Com. & Btr. Black Gum
2 cars 6/4 & 8/4 Gum Dog Boards

CYPRESS

1 car 4/4 No. 1 Shop & Better
1 car 4/4 Pecky
1 car 8/4 No. 1 Shop & Better
3 cars 8/4 No. 1 Common
1 car 8/4 No. 2 Common

ELM

1 car 6/4 No. 1 Com. & Btr. Elm
2 cars 8/4 Log Run Elm

MISCELLANEOUS

1,800' 6/4" 1s & 2s Quartered White Oak
3,000 6/4 No. 1 Com. Qtd. White Oak
8,000 8/4 No. 3 Com. Qtd. White Oak
6,000 8/4 No. 2 Com. & Btr. Qtd. Red Oak
5,500 3/4 Com. & Btr. Black Gum
5,100 4/4 Log Run Lynn
1,800 4/4 Log Run Elm
15,000 4/4 Log Run Sycamore
3" and 4" Red and White Oak Bridge Plank

MARK H. BROWN LUMBER COMPANY
TRANSYLVANIA, La.

QUARTERED WHITE OAK

30,000' 4/4" 1s & 2s
40,000 4/4 No. 1 Common

QUARTERED RED OAK

8,000 4/4 1s & 2s
20,000 4/4 No. 1 Common

PLAIN OAK

24,000' 4/4" 1s & 2s Plain Red Oak
30,000 4/4 No. 1 Com. Plain Red Oak
10,000 4/4 1s & 2s Plain White Oak
30,000 4/4 No. 1 Com. Plain White Oak
50,000 4/4 Sound Wormy Oak

PLAIN GUM

100,000 4/4 No. 1 Com. Plain Sap Gum
50,000 5/4 No. 1 Com. Plain Sap Gum
100,000 6/4 & 8/4 Gum Dog Boards

QUARTERED GUM

25,000 4/4 No. 1 Com. & Btr. Qtd. Sap Gum
130,000 6/4 No. 1 Com. & Btr. Qtd. Sap Gum
50,000 8/4 No. 1 Com. & Btr. Qtd. Sap Gum

CYPRESS

50,000 4/4 No. 1 Com.
40,000 5/4 Shop
30,000 4/4 No. 2 Common

MISCELLANEOUS

15,000 4/4 Log Run Hackberry
50,000 4/4 No. 1 Common Cottonwood

WRITE US FOR PRICES

HAVE YOU TRIED

Quartered Black Gum

It beats Red Gum for flashy ribbon figure—

We have dry—

1 Car —4/4 FAS Qtd. Black Gum
2 Cars—4/4 No. 1 Com. Black Gum

also

Complete stock of band sawn
Plain & Qtd. White Oak
Plain Red Oak
Plain & Qtd. Red Gum

Rush Lumber Co.

Band Mill and Office - Memphis, Tenn.

If Dryness Counts--You Can't Beat This

Bone Dry Plain Oak

402,500' 2 " No. 1 Com. White and Red.
239,600' 2 " No. 2 " " " "
106,800' 2½" No. 1 " " " "
12,400' 2½" No. 2 " " " "
83,900' 3 " No. 1 " " " "
15,600' 4 " No. 2 " " " "

We also have a good stock of dry Oak in other thicknesses of both Plain and Quartered. Prices on request.

James E. Stark & Co., Inc.

MEMPHIS, TENN.

Canadian Hardwoods

Good Stocks, Right Goods,
Prompt Shipment

C. A. SPENCER, Limited
LUMBER MERCHANTS
Offices—500 McGill Building
MONTREAL - - Quebec

WARREN ROSS LUMBER CO.
JAMESTOWN, N. Y.

Please let us quote you on the following:—

455'	3/4 1s & 2s Bataan Mahogany	1,500'	8/4 1s & 2s Walnut
		12,000'	8/4 No. 1 Com. Walnut
10,000'	4/4 1s & 2s Bataan Mahogany	7,000'	8/4 No. 2 Com. Walnut
		15,000'	4/4 1s&2s Plain Red Oak
468'	5/4 1s & 2s Bataan Mahogany	4,000'	5/4 1s&2s Plain Red Oak
		4,000'	6/4 1s&2s Plain Red Oak
25,000'	4/4 1s & 2s Cherry	20,000'	8/4 1s&2s Plain Red Oak
12,000'	4/4 No. 1 Com. Cherry	20,000'	4/4 No. 1 Com. Pl. "
5,000'	6/4 1s & 2s Cherry	4,000'	5/4 No. 1 Com. Pl. "
5,000'	8/4 1s & 2s Cherry	4,000'	6/4 No. 1 Com. Pl. "
2,000'	8/4 No. 1 Com. Cherry	10,000'	8/4 No. 1 Com. Pl. "
7,000'	4/4 No. 1 Com. Walnut	15,000'	4/4 1s&2s Poplar S.N.D.
1,500'	5/4 Selects	3,000'	5/4 1s&2s Poplar S.N.D.
2,000'	6/4 No. 1 Com. Walnut	3,000'	8/4 1s&2s Poplar S.N.D.

J. H. Bonner & Sons
Memphis, Tenn.
Mills:
Jonquil and Ruffwood, Ark.

Manufacturers

Band Sawn Hardwood Lumber

Write or wire for prices on

Gum, Oak, Elm, Etc.

Hardwood Lumber

Wire collect, or write for delivered prices on any or all of the following DRY STOCK

125,000'	3/4 No. 1 Common Walnut
100,000'	4/4 No. 1 Common Walnut
150,000'	4/4 No. 1 Common & Better Sap Gum
100,000'	8/4 No. 2 Common & Better Sap Gum
50,000'	4/4 No. 2 Com. & Btr. Plain Red Gum
16,000'	8/4 No. 1 Com. & Btr. Q't'd. Red Gum
10,000'	3/4 No. 2 Common & Better Plain Oak
200,000'	4/4 No. 2 Common & Better Plain Oak
100,000'	5/4 No. 2 Common & Better Plain Oak
13,000'	8/4 No. 1 Common & Better Plain Oak
140,000'	8, 10 and 12/4 No. 2 Common & Better Soft Elm & Maple
80,000'	4 and 8/4 No. 2 A & B Common Poplar
50,000'	4/4 Log Run Basswood
75,000'	8, 10 and 12/4 No. 2 Com. & Btr. Poplar
120,000'	4, 8 and 10/4 No. 2 Com. & Btr. Sycamore
150,000'	5, 8 and 10/4 No. 2 Com. & Btr. Beech
150,000'	4, 6 and 8/4 Sound Wormy Chestnut

The Woodruff-Powell Lumber Co.
South Bend, Indiana

J. R. EATON & SONS, LIMITED

MANUFACTURERS OF HIGH GRADE WOOD PRODUCTS

Wood Turnings, Hardwood Dowels, Turned Table Legs, Kitchen Tables, Kitchen Cabinets, Oak Extension Tables, Oak Library Tables, "Empire Brand" Hardwood Flooring in Maple, Birch, and Plain or Quarter Cut Oak, Solid Pine and Veneered Hardwood Doors.

A Large Factory equipped with up-to-date machinery is at your service to furnish "WHAT YOU WANT"— WHEN YOU WANT IT."

YOUR ENQUIRIES SOLICITED

Orillia Ontario Canada

E. SONDHEIMER CO.

MEMPHIS, TENN., U.S.A.

Manufacturers and Exporters of

AMERICAN HARDWOODS

Specializing in RED GUM and SALIX

OUR BUSINESS RECORD

50 years of business under one name.
500 satisfied customers served annually.
5,000 or more inquiries receive courteous attention annually
5,000,000 or more boards tallied annually.
50,000,000 feet of Quality Lumber produced annually.
500,000,000 feet of standing Timber.

Also Pecan, Hickory, Sycamore, Oak, Cypress, Poplar, Tupelo, Circassian Figured Red Gum

Distributing Yard and Sales Office
McLean & Chelsea Ave., Memphis, Tenn. U.S.A.
Cable Address : "Sonderco"

We have Four Band Mills :
Sondheimer, La., Tallulah, La.,
Ferriday, La., Baton Rouge, La.

Walnut Lumber with Mahogany

Straight or Mixed Cars

WALNUT VENEERS

Plain---Striped---Figured---Circassian Effect

Let Us Know Your Requirements

The Kosse, Shoe & Schleyer Company

Eastern Branch
Baltimore, Md.

325 Powers Theater Bldg.,
Grand Rapids, Mich.

Main Office and Band Mill
Cincinnati, O.

WIRE AT OUR EXPENSE FOR PRICES *on the following* HARDWOOD LUMBER

HARD MAPLE
3 cars 1½" No. 1 Common & Better
4 cars 2½" No. 1 Common & Better

BASSWOOD
2 cars 1¼" No. 1 Common & No. 2 Common
3 cars 1½" No. 2 Common & Better
2 cars 2 " No. 2 Common & Better
1 car 2½" No. 2 Common & Better

ASH
2 cars 1¼" No. 1 Common & Better

SOFT ELM
3 cars 1½" No. 2 Common & Better

BIRCH
4 cars 1 " No. 2 Common & Better
2 cars 1¼" No. 2 Common & Better
1 car 2½" No. 2 Common & Better

ROCK ELM
2 cars 1½" No. 2 Common & Better

For a limited period only we are offering the above stock at attractive prices.

WHEELER-TIMLIN LUMBER COMPANY, Wausau, Wisconsin.

POPLAR

We offer for prompt shipment from Louisville, Ky., where cars are more plentiful and embargoes less stringent than at other points, the following:

5,000	5/8	1s and 2s
80,000	5/8	No. 1 Common
50,000	5/8	No. 2 Common
40,000	4/4	Saps and Selects
150,000	4/4	No. 1 Common
30,000	4/4	No. 2A Common
40,000	5/4	No. 1 Common
17,000	8/4	No. 2 Common A & B
250,000	4/4	Mill Run
16,000	5/4	Mill Run

This Poplar is Kentucky and Tennessee mountain stock. It's soft textured, shows good widths and lengths and is nicely graded.

WE CAN SURFACE OR RESAW

North Vernon Lumber Mills

NORTH VERNON, IND.
LOUISVILLE, KY. DYERSBURG, TENN.
WRITE FOR COMPLETE LIST AND PRICES

The Hyde Lumber Co.

Band Mills: LAKE PROVIDENCE LA.
Southern Office: MEMPHIS, TENN.
Bank of Commerce Bldg.
Northern Office: SOUTH BEND, IND.

MANUFACTURERS

Plain Red Gum
Quartered Red Gum
Plain Sap Gum
Quartered Sap Gum
Cottonwood, Cypress
Tupelo, Ash, Elm, Oak

CHARLES O. MAUS
Canadian Representative

American Hardwood Lumber Co.

St. Louis, Mo.
Large stock of—

Dry Ash, Quartered Oak
Plain Oak and Gum

Shipments from — NASHVILLE, Tenn., NEW ORLEANS, La., and BENTON, Ark.

British Columbia Forest Products

British Columbia Lumber Commissioner

No. 1 Adelaide St. E., Toronto
(Street Floor)

Personal calls or correspondence cordially invited from Dealers and others interested in British Columbia Woods

Telephone Main 6872. Note: We do not quote prices.

American Walnut Lumber

QUALITY

SERVICE

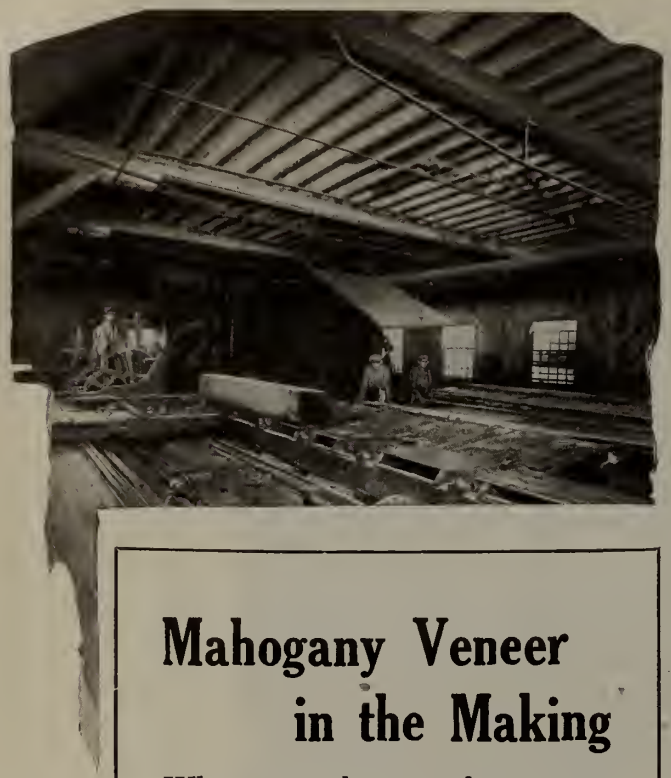
More evidence of our untiring efforts to procure the very best raw material for our product.

All Grades and Thicknesses

Pickrel Walnut Company

St. Louis, Missouri

ASTORIA MAHOGANY
LUMBER & VENEERS



Mahogany Veneer in the Making

When a mahogany log comes up to the standard set by our veneer experts, it is "quartered" in the manner which will ensure the full beauty of figure. Then away it goes on roller conveyors to the steam vats for softening, preparatory to being sliced into veneer.

The perfect co-ordination of man and machine has contributed greatly in making this the largest mahogany lumber and veneer mill on the Atlantic and Gulf Seaboard.

Astoria Mahogany Co., Inc.
1031 Steinway Ave., Long Island City, N.Y.
Succesorss to
Huddleston-Marsh Mahogany Co. Astoria Veneer Mills and Dock Co. F. W. Kirch, Inc.
Mills and Yard, Long Island City, New York
BRANCHES—44 North Market Avenue, Grand Rapids, Mich. 2256 Lumber Street, Chicago, Ill.

OAK

Plain and Quartered
Uniform Color—Soft Texture

Poplar, Ash

and other

Hardwoods

We have 35,000,000 feet dry stock—all of our own manufacture, from our own timber grown in Eastern Kentucky

Prompt Shipments

The Mowbray & Robinson Co.
(INCORPORATED)
Manufacturers
Office: CINCINNATI, OHIO

MILLS
Quicksand, Ky.; Viper, Ky.; West Irvine, Ky.

Canadian Representative:
M. E. CUMMINGS, 814 Richmond Ave., Buffalo, N. Y.

30 Million Feet Hardwoods Yearly

Manufactured by

Darnell-Love Lumber Co.

Leland, Mississippi

We own and operate two large band mills with sufficient timber to supply these mills, at present capacity, fifteen to twenty years

Cutting

Oak, Ash, Gum, Elm

Cypress, Cottonwood

and various other Native Woods

Our Specialties are—

3/8", 1/2", 5/8" and 3/4" in Gum and Oak

and

8/4" Quartered Red Gum

8/4" Quartered Red Gum Sap No Defect

WE SOLICIT YOUR INQUIRIES AND ORDERS

HAVE you considered contracting for 1920 Hardwood requirements?

Edward Clark & Sons, Limited
807-9 Bank of Hamilton Bldg.
Toronto, - Ont.

— A name worth remembering —

Thomas E. Powe Lumber Co.
St. Louis, Mo.

Manufacturers and Wholesalers of
SOUTHERN HARDWOODS
Specializing in
Ash - Oak - Gum - Poplar
Mills: PRESCOTT, ARK.—DOTHAN, ALA.

ST. LOUIS YARD
Mixed Carload Shipments —
Carry stocks of the following:

Hickory	Magnolia	Elm
Maple	Willow	Sycamore
Tupelo	Red Cedar	Beech
Cypress	Plain Oak	Quartered Oak
Sap Gum	Red Gum	Mahogany
Poplar	Ash	Black Gum
Yellow Pine		

A name that should be on your inquiry list for Hardwood Lumber

American Column & Lumber Co.
Brunson Building, COLUMBUS, OHIO
—Manufacturers of—
West Virginia
Soft Yellow Poplar
Plain White Oak
Plain Red Oak
Quartered White Oak
White Oak Timbers and Plank

Chestnut	Butternut
Basswood	Ash
Maple	Cherry
Hickory	Walnut
Beech	Sycamore
Buckeye	Black Gum
Birch	Hemlock

Oak and Hardwood Dimension Stock

Steele & Hibbard Lumber Co.
ST. LOUIS, MO.
52 Years in Business
We carry a large stock of dry
Hardwood Lumber
25 Different Kinds
Quick Shipment
Write or wire for Prices

We specialize Oak cut from Mild Texture Missouri Timber with thin sap both plain and quarter sawed.

We ship also from Sawmills direct; Red as well as Sap Gum and Poplar, both plain and quarter sawed Sound Wormy Chestnut, Cypress and Ash.

F. Huntington Smith
Canadian Representative.

Tustin Hardwood Lumber Co.

MEMPHIS TENN.

KILN DRIED AND AIR DRIED SOUTHERN HARDWOODS

We operate five mills and Memphis yard, specializing in KILN DRIED Sap Gum, Elm, Maple, Ash. *Send us your inquiries.*

Will quote low prices on following to points not embargoed

4 cars 4/4 No. 1 C. & B. Qtd. White Oak.
1 " 4/4 Fas Qtd. Red Oak.
1 " 4/4 No. 1 Com. Qtd. Red Oak.
2 " 4/4 Fas Plain Red Oak.
5 cars 4/4 No. 1 Com. Plain Red Oak.
3 " 8/4 No. 1 C. & B. Qtd. Red Gum.
4 " 8/4 No. 1 C. & B. Qtd. Sap Gum.

Johnson Brothers Hardwood Co.

(OUR NAME IS EASY TO REMEMBER)

Sales Agents:
Arko Lumber Co.
Arkansas City, Ark.

Bank of Commerce & Trust Building
Memphis, Tenn., U.S.A.

Double Band Mill Capacity
100,000 ft. per day

Manufacturers and Wholesalers

SOUTHERN HARDWOODS

3,000,000 ft. dry stock on hand and 5,000,000 in process of drying—all thicknesses, ½" to 4", plain and quartered.
White and Red Oak—Red Gum—Sap Gum—Tupelo—Black Gum — Cottonwood—Salix—Willow—Pecan—Sycamore—Elm—Soft Maple—Mangolia.

We offer for quick Sale the following Bone Dry Stock:

1 c/l 4/4" No. 1 & 2 Common Qtd. White Oak
3 c/l 8/4" No. 1 Common Qtd. Red Gum, S.N.D.
2 c/l 10/4 Log Run Sycamore
1 c/l 10/4 Log Run Soft Maple
5 cars 4/4" FAS Cottonwood, Regular Widths
1 car 4/4" No. 1 Com. & Btr. 11" and wider Cottonwood
1 car 6/4" FAS Cottonwood
5 cars 8/4" Log Run Elm
2 cars 10/4" Log Run Ash

Wire us at our expense for quotations

Aromatic Tennessee Red Cedar

CAR LOAD LOTS
OR LESS

Earthman Lumber Co.
Murfreesboro, Tenn.

Quality plus Service
AT RIGHT PRICES

Let us quote you on concave chair seat, turned office, piano, restaurant and bath-room stool tops.

Solid table tops, cabinet work; iu fact woodwork of all description.

Algoma Wood Products Co.
ALGOMA, WIS.

F. T .DOOLEY, President. T. E. JONES, Secy.-Treas.

F. T. Dooley Lumber Co.
Inc.

MANUFACTURERS and WHOLESALERS
of

SOUTHERN HARDWOODS

Plain and Quartered Oak
Cypress, Gum, Ash
Soft Maple and Elm

Send us your inquiries

Memphis ∴ ∴ Tennessee

Hardwoods

We can furnish you immediately Factory Stock including all grades and thicknesses of

Walnut, Chestnut
Mahogany, Teak, Oak
Ash, Cypress
ALSO
VENEERS
Oak, Maple, Walnut and other Fancy Woods

The McLennan Lumber Co.
Limited
MONTREAL

Felger Lumber and Timber Company

MANUFACTURERS AND WHOLESALERS

NORTHERN AND SOUTHERN HARDWOODS

Main Office:
GRAND RAPIDS
373 Mich. Trust Bldg.

Southern Office:
MEMPHIS, TENN.

Yellow Poplar Lumber Co.

Manufacturers of Band Sawed

Poplar Plain Oak
Quartered Oak
Chestnut Basswood

Capacity 50,000,000 per annum

SPECIALTY: Monogram Brand Oak Flooring

CANADIAN ENQUIRIES SOLICITED

COAL GROVE, OHIO, U. S. A.

We Offer For Prompt Shipment

PLAIN RED GUM

1 15,000 4/4 1sts & 2nds
2 150,000 4/4 No. 1 Com. & Sel.
3 120,000 4/4 No. 2 Com. & Sel.
4 14,500 6/4 No. 1 Com. & Btr.
5 30,000 6/4 No. 1 Com. & Sel.

QUARTERED RED GUM

6 15,000 4/4 1sts and 2nds
7 15,000 4/4 No. 1 Com. & Sel.
8 31,200 6/4 1sts and 2nds
9 16,000 6/4 No. 1 Com. & Sel.
10 9,600 8/4 No. 1 Com. & Sel.

PLAIN SAP GUM

11 35,000 5/8 No. 1 Com. & Sel.
12 250,000 4/4 No. 1 Com. & Sel.
13 140,000 4/4 No. 2 Common
14 75,000 4/4 No. 3 Common
15 11,500 5/4 No. 2 Common
16 10,000 5/4 No. 3 Common
17 9,000 6/4 1sts & 2nds
18 25,000 6/4 No. 1 Com. & Sel.
19 71,300 6/4 No. 2 Common
20 5,500 6/4 No. 3 Common
21 8,000 8/4 No. 1 Com. & Sel.
22 9,600 8/4 No. 2 Common
23 2,500 8/4 No. 3 Common

QUARTERED SAP GUM

24 35,700 4/4 No. 1 Com. & Btr.
25 13,000 4/4 No. 1 Com. & Sel.
26 28,000 8/4 No. 1 Com. & Btr.

PLAIN RED OAK

27 12,000 4/4 1sts & 2nds
28 200,000 4/4 No. 1 Com. & Sel.
28 120,000 4/4 No. 2 Common
30 13,000 5/4 No. 1 Com. & Btr.

QUARTERED RED OAK

31 75,000 4/4 No. 1 Com. & Btr.

PLAIN WHITE OAK

32 100,000 4/4 No. 1 Com. & Sel.
33 80,000 4/4 No. 2 Common

COTTONWOOD

34 33,200 4/4 1sts & 2nds

PECAN

35 6,800 4/4 Log Run

ELM

36 11,300 4/4 Log Run
37 40,000 12/4 Log Run

Send us your inquiries, as this is only a partial list of the stock we have at our mill

"CLAYTON QUALITY" TENSA DETA SOUTHERN HARDWOODS

UTLEY-HOLLOWAY COMPANY

General Office: 1226 Conway Bldg., CHICAGO, ILL. Band Mill: Clayton, La.

Indiana

Quartered Red and White

OAK

1,000,000 feet of dry stock carried at all times

ALSO PLAIN OAK AND ASH

We manufacture all stock carried

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
GEO. H. FOOTE, Vice-Pres. & Treas.
JOSEPH WALTMAN, Secretary

Mills at EVANSVILLE, Indiana

SPECIALS!

For Immediate Shipment

QUARTERED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.

PLAIN SAWED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.
5 " 1¼" Common.

QUARTER SAWED OAK

10 cars 1" No. 1 Com. and Btr., White.
10 " 1" No. 1 Com. and Btr., Red.

Thomas & Proetz Lumber Company

No. 3400 Hall St. St. Louis, Mo.

GUM

Sap Red Tupelo Black

Prompt Shipments any Time

Cypress Cottonwood Oak
Ash Elm Beech Sycamore
Crating Fir Spruce
Yellow Pine

INQUIRIES SOLICITED

Manufacturers & Wholesalers

Cornelius Lumber Co.

Home Office—Arcade Building, St. Louis, Mo.
Northern Office—Lumber Exchange, Chicago, Ill.
Northwestern Office—Bremer Arcade, St. Paul.
Southern Offices—Tupelo, Miss., Memphis, Tenn.
Saw Mills—Drew, Miss., Osmeek, La., Lake City, Fla.

ATTENTION:

"Auto Body and Furn. Manfgs."

We are one of the few firms in the country handling

White Ash Exclusively

We sort it to meet all requirements. **Tough** texture and **Medium** texture. Can furnish **Special Widths** and **Lengths** one to four inches thick. Write or wire when needing WHITE ASH.

THOMPSON, KATZ LUMBER CO.

Memphis, Tenn.

Cable Address "TomKats"

SPECIAL—DRY STOCK

Ready for Immediate Shipment in Straight or Mixed Cars

PLAIN WHITE OAK

		Feet
4/4	FAS	4,992
5/4	"	1,875
6/4	"	4,935
8/4	"	200
4/4	No. 1 Com.	99,523
5/4	"	8,458
6/4	"	8,190
8/4	"	5,540
4/4	No. 2 Com.	26,756
5/4	"	975
4/4	No. 3 Com.	4,278

PLAIN RED OAK

4/4	FAS	27,643
5/4	"	437
6/4	"	855
4/4	No. 1 Com.	56,005
5/4	"	9,396
6/4	"	4,447
8/4	"	1,810
4/4	No. 2 Com.	31,812
5/4	"	2,817
4/4	No. 3 Com.	15,041

QRTD. WHITE OAK

4/4	FAS	22,651
5/4	"	243
6/4	"	1,852
8/4	to 16/4 FAS	2,175
4/4	No. 1 Com.	28,720
5/4	"	14,561
6/4	"	10,237
8/4	"	1,300
8/4	to 16/4 No. 1 Com.	3,795
4/4	No. 2 Com.	5,719

QRTD. RED OAK

4/4	FAS	6,297
4/4	No. 1 Com.	17,442
5/4	"	2,112
6/4	"	1,116
8/4	"	2,240
4/4	No. 2 Com.	6,108

POPLAR

4/4	No. 1 Com.	13,395
5/4	"	1,787
6/4	"	4,297
8/4	"	2,480
4/4	No. 2 Com.	1,715
6/4	"	2,167
8/4	"	1,440

PLAIN RED GUM

		Feet
4/4	FAS	4,912
5/4	"	2,193
6/4	"	2,610
8/4	"	902
4/4	No. 1 Com.	13,482
5/4	"	12,319
6/4	"	6,045
8/4	"	5,704

PLAIN SAP GUM

4/4	FAS	26,720
5/4	"	23,990
8/4	"	4,320
4/4	No. 1 Com.	21,984
5/4	"	437
6/4	"	1,170
8/4	"	4,420
4/4	No. 2 Com.	5,453
5/4	"	2,193
6/4	"	3,360

QRTD. RED GUM

4/4	No. 1 Com.	14,686
8/4	"	1,200
8/4	No. 1 C. & B.	10,548
4/4	No. 2 Com.	41

QRTD. SAP GUM

8/4	FAS	21,120
8/4	No. 1 Com.	7,240

SOUTHERN ELM

4/4	Log Run	11,317
5/4	" "	1,334
6/4	" "	34,172
8/4	" "	10,884
10/4	" "	23,692
6/4	No. 3 Com.	1,766
10/4	"	812

SOUTH'N SOFT MAPLE

4/4	Log Run	31,642
5/4	" "	2,356
6/4	" "	5,760
8/4	" "	26,212
10/4	" "	43,724
8/4	No. 3 Com.	40
12/4	"	4,500

WALNUT

4/4	Log Run	2,900
8/4	" "	990

WHITE ASH

		Feet
4/4	FAS	22,709
5/4	"	27,106
8/4	"	10,424
10/4	"	12,097
12/4	"	4,680
4/4	No. 1 Com.	37,980
5/4	"	17,587
6/4	"	4,888
8/4	"	11,540
10/4	"	10,487
12/4	"	495
4/4	No. 2 Com.	8,318
5/4	"	1,112
6/4	"	15,253
8/4	"	1,616
10/4	"	4,605
12/4	"	21,360
4/4	No. 3 Com.	4,391
5/4	"	75
6/4	"	450
8/4	"	3,630
10/4	"	490
12/4	"	9,780

CYPRESS

4/4	FAS	10,542
5/4	"	450
6/4	"	12,165
8/4	"	1,440
4/4	Select	30,921
5/4	"	5,827
6/4	"	52,819
8/4	"	8,020
4/4	Shop	37,343
5/4	"	1,125
6/4	"	8,383
8/4	"	9,214
4/4	No. 1 Com.	72,757
5/4	"	3,818
6/4	"	4,241
8/4	"	1,680
4/4	No. 2 Com.	36,729
5/4	"	3,500
6/4	"	14,040
8/4	"	600

COTTONWOOD

4/4	FAS 6-10"	14,636
4/4	" 11 and up	6,327
5/4	FAS	4,312
4/4	BB 13-17"	1,440
4/4	BB 9-12"	2,505
4/4	No. 1 Com.	38,249
5/4	"	4,400
6/4	"	144
8/4	"	896

WRITE OR WIRE FOR ATTRACTIVE DELIVERED PRICES

Baker-Matthews Lumber Co.

Memphis, Tennessee

West Virginia Oak

Thoroughly Dry, Accurately Sawn, Soft Textured, and Uniform in Color.

Write us when needing choice stocks. All lumber produced from virgin timber of large size and excellent quality.

Twenty Million Feet Hardwood Ready for Immediate Shipment

OAK

Yellow Poplar, Ash, Hickory, Beech, Chestnut, Basswood, Walnut, Maple

THE THOMAS HALL LUMBER COMPANY

Manufacturers

CHARLESTON, - WEST VIRGINIA

M. BROWN, Canadian Representative. Address: 31 Sprucehill Rd., Balmy Beach, Toronto

Tallahatchie Lumber Company

MEMPHIS, TENN.

Manufacturers of

Band Sawn Hardwoods

Graded so as to be especially attractive to Furniture Manufacturers.

Careful attention to every detail of service.

SEND US YOUR INQUIRIES

Band Sawn Poplar, Plain and Quartered White and Red Oak— Quartered Red Gum, Sap No Defect

Below we offer, subject to prior sale and immediate acceptance, the following stock:—

ASH

4/4" No. 2 Com & Bet	10,000 ft.

BASSWOOD

4/4" No. 2 Com & Bet	30,000 ft

BEECH

4/4" Log Run	3,000 ft.
8/4" Log Run	40,000 ft.
10/4" Log Run	10,000 ft.
12/4" Log Run	6,000 ft.

CHERRY

4/4" No. 2 Com & Bet	6,000 ft.

ELM

12/4" No. 2 Com & Bet	2,000ft.

QTRD. RED GUM

4/4" No. 1 Com & Bet	22,000 ft.

QTRD. RED GUM, SND

4/4" FAS	6,000 ft.
6/4" FAS	18,000 ft.
6/4" No. 1 Com	20,000 ft.
8/4" No. 1 Com	30,000 ft.

PLAIN SAP GUM

4/4" FAS	18,000 ft.
4/4" No. 1 Common	18,000 ft.
4/4 No. 2 Common	12,000 ft.
4/4" No. 3 Common	10,000 ft.

QTRD. BLACK GUM

4/4" Log Run	50 000 ft.

HICKORY

.6/4" Log Run	5,000 ft.
8/4" Log Run	8,000 ft.

MAGNOLIA

4/4" FAS	20,000 ft.
4/4" No. 1 Com	20,000 ft.

QTRD. W. O. STRIPS

4/4" 4" to 5½" Clear	15,000 ft.
4/4" 2½ to 3½" Clear	11,000 ft.

QTRD. WHITE OAK

4/4" FAS	52,000 ft.
4/4" No. 1 Com	150,000 ft.
4/4" No. 2 Com	60,000 ft.
5/4" No.1 Com	7,000 ft.

PLAIN WHITE OAK

4/4" No. 1 Com	10,000 ft.
4/4" No. 2 Com	30,000 ft.

PLAIN RED OAK

4/4" FAS	59,000 ft.
4/4" No. 1 Com	90,000 ft.
4/4" No. 2 Com	80,000 ft.
5/4" FAS	40,000 ft.

SOUND WORMY OAK

4/4"	100,000 ft.

POPLAR

4/4" FAS Yellow	36,000 ft.
4/4" No. 1 Com	200,000 ft.
4/4" No. 2 Com	125,000 ft.

We own our stumpage and operate our own band mill in Bude, Miss., manufacturing ten million feet annually, on which we specialize in Quartered White Oak, manufactured from genuine forked leaf White Oak and Yellow Poplar of fine soft texture grown in the hills of Southern Mississippi.

Our grades are dependable and the manufacture of our stock is unsurpassed. We respectfully solicit your enquiries, which will receive our prompt and courteous attention.

L. D. Murrelle Lumber Company

General Sales Office: 1524 Exchange Bldg., Memphis, Tennessee

Band Mill: Bude, Miss.

Stimson Veneer and Lumber Co.

(Inc.)

Office and Mill: McLean Ave. and Union Belt R.R.

Memphis - Tenn.

We sell only the product of our own mills and make band sawn lumber in all Southern Hardwoods.

We specialize in Quartered White Oak, Red Oak, and Red Gum.

With allied companies we make fifty million feet annually.

J. V. Stimson Hardwood Co.

Manufacturers and Exporters

Band Mills: Memphis, Tenn., Helena, Ark.

Memphis - Tenn.

STOCK LIST

QUARTERED WHITE OAK
- 3 cars 4/4" 1s and 2s.
- 5 cars 4/4" No. 1 Common.
- 2 cars 4/4" No. 2 Common .

QUARTERED RED OAK
- 5 cars 4/4" 1s and 2s.
- 10 cars 4/4" No. 1 Common.
- 4 cars 4/4" No. 2 Common.
- 2 cars 6/4" No. 1 Common and Better.

QUARTERED RED GUM
- 10 cars 4/4" 1s and 2s.
- 3 cars 4/4" 1s and 2s Fig.
- 2 cars 5/4" 1s and 2s.
- 2 cars 6/4" 1s and 2s.
- 15 cars 4/4" No. 1 Common.
- 2 cars 5/4" No. 1 Common.
- 2 cars 6/4" No. 1 Common.

QUARTERED RED GUM, Sap no Defect
- 5 cars 6/4" No. 1 Common and Better.
- 10 cars 8/4" No. 1 Common and Better.

ASH
- 4 cars 10/4" No. 1 Common and Better.
- 1 car 12/4" No. 1 Common and Better.
- 1 car 6/4" No. 1 Common and Better.
- 2 cars 4/4" No. 1 Common.
- 2 cars 4/4" No. 2 Common.

SAP GUM
- 10 cars 4/4" 1s and 2s.
- 20 cars 4/4" No. 1 Common.
- 10 cars 4/4" No. 2 Common.
- 2 cars 4/4" 18" up Panel.
- 5 cars 4/4" 13-17" Box Boards.

PLAIN RED OAK
- 2 cars 4/4" 1s and 2s.
- 2 cars 6/4" No. 1 Common and Better.
- 2 cars 10/4" No. 1 Common and Better.

PLAIN WHITE OAK
- 4 cars 4/4" No. 1 Common Plain.

COTTONWOOD
- 2 cars 4/4" 1s and 2s.
- 15 cars 4/4" No. 1 Common.
- 5 cars 4/4" No. 2 Common.

ELM
- 2 cars 4/4" Log Run.
- 10 cars 10/4" Log Run.
- 10 cars 12/4" Log Run.

MAPLE
- 4 cars 12/4" Log Run.

For Discriminating Buyers

Dry stock ready for prompt shipment

1 Cars 1 " Fas Plain Red Oak
4 " 1 " No. 1 Com. Plain Red Oak
7 " 1 " No. 2 & 3 Com. Plain Red Oak

1 " 1 " Fas Quartered Red Oak
7 " 1 " No. 1 Com. Qtrd. Red Oak
6 " 1 " No. 2 " " " "

1 " 1 " Fas Quartered White Oak
5 " 1 " No. 1 Com. Qtrd. White Oak
7 " 1 " No. 2 " " " "

2 " 1 " No. 1 Com. Plain White Oak
2 " 1 " No. 2 " " " "

2 " 1¼" Fas Quartered Red Gum
5 " 1 " Com. & Btr. Qrtd. Red Gum
4 " 1½" " " " " "
1 " 2 " " " " " "
3 " 1¼" No. 1 Com. Qtrd. Red Gum

1 " 1 " Fas Plain Red Gum
6 " 1 " No. 1 Com. & Btr. Pl. Red Gum
3 " 1 " No. 1 Common Plain Red Gum
1 " 2 " " " " " "
3 " 1 " No. 2 " " " "

2 Cars 1 " Fas Sap Gum
2 " 1 " " " " 13" and up
1 " 1¼" " " "
1 " 2 " Common & Better Sap Gum

3 Cars 1 " No. 1 Common Sap Gum
2 " 1¼" " " " "
5 " 1 " No. 2 " " "
1 " 1¼" " " " "
1 " 1½" " " " "
1 " 2 " " " " "

1 " 1¼" Fas Qtrd. Red Gum, S.N.D.
3 " 1 " C. & B. Qtrd. Red Gum, S.N.D.
10 " 1½" " " " " "
7 " 2 " " " " " "
2 " 1¼" No. 1 C. Qtrd. Red Gum, S.N.D.

1 " 1 " No. 1 Shop Cypress
2 " 1 " No. 1 Com. "
1 " 1¼" 1s & 2s "
1 " 1¼" Select "
1 " 1¼" No. 1 Shop "
1 " 2 " 1s & 2s "
1 " 2 " Select "
1 " 2 " No. 1 Shop "
1 " 2 " No. 1 Common "

5 " 1 " Log Run Willow

1 " 1 " Log Run Elm
1 " 1¼" " " "
2 " 1½" " " "
1 " 2 " " " "
2 " 2½" " " "
2 " 3 " " " "

PROMPT QUOTATIONS CHEERFULLY FURNISHED

The

Frank A. Conkling Company

SOUTHERN HARDWOODS

Memphis, Tenn.

MILLS:
PERCY, Miss., ISSAQUENA, Miss.

Frank Purcell
Walnut Lumber Co.

Plenty of logs like the portion of our stock shown above have made possible the million and a half foot stock of well manufactured American Walnut Lumber which we now have to offer.

Prompt shipment
All grades and thicknesses
Guaranteed Inspection

12th AND BELT LINE
Kansas City - Kansas

Dacus-Richards Hardwood Co.

A. P. DACUS - H. J. RICHARDS

MANUFACTURERS
Southern Hardwood
Specializing in
RED GUM
SAP GUM
PLAIN AND QUARTERED
OAK

Randolph Building,
Memphis, Tennessee.
Mills at EVANSVILLE, Miss., and PRITCHARD, Miss.

Perkins Brothers
Kelso, Ark.

Manufacturers of
Southern Hardwoods

Quartered and Plain White Oak, Plain Red Oak, Gum Elm, Maple, Ash and Cypress

We are also prepared to cut dimension stock to order in Ash, Oak, Gum, Hickory and Elm.

Let us know your requirements.

Mercerau-Hawkins Tie Company

Huntington - W. Va.

Manufacturers and Wholesale Dealers

West Virginia and Southern

HARDWOODS

We specialize in

Oak Tie Siding
White and Red Oak
Yellow Poplar
Basswood
Chestnut and
Gum Lumber.

Canadian Sales in Charge of

C. W. PETERS

Vice President and Manager of Lumber Dept.

BEDNA YOUNG Lumber Company

Jackson - Tennessee

Manufacturers of
Quartered White and Quartered Red Oak

Please let us quote you on the following:—

1 car 5/8". FAS Qtd. White Oak, 6-9".
2 " 4/4" FAS Qtd. White Oak, 6" and up.
1 " 5/4" FAS Qtd. White Oak, 6-9".
1 " 5/8" No. 1 Com. Qtd. Wh. Oak, 4" & up.
1 " 3/4" No. 1 Com. Qtd. Wh. Oak, 4" & up.
3 " 4/4" No. 1 Com. Qtd. Wh. Oak, 3" & up.
1 " 5/4" No. 1 Com. Qtd. Wh. Oak, 4" & up.
1 " 5/4" FAS Qtd. Red Oak, 6" & up.
1 " 6/4" FAS Qtd. Red Oak, 6" & up.
1 " 4/4" No. 1 Com. Qtd. Red Oak, 3" & up.
1 " 5/4" No. 1 Com. Qtd. Red Oak, 4" & up.
1 " 6/4" No. 1 Com. Qtd. Red Oak, 4" & up.

Wake-up, Mr. Furniture Man!
Walnut is Plentiful!

AMERICAN WALNUT

"The Cabinet-wood Superlative"

Corners That Stay Square

Chests and cabinets, tables and chairs—how satisfying it is to have their corners stay tight and square, their drawers continue to slide smoothly, their legs remain true and firm through the years.

The corners and drawers and legs of WALNUT furniture have been doing these satisfying things for centuries.

Our museums show multitudes of beautiful examples which have really improved with age. (The Walnut Brochure de luxe shows engravings of many of these. *May we send it?*)

The cabinet maker worthy of the name cannot help but love AMERICAN WALNUT, that superlative cabinet-wood which has almost been the parent of his art and craftsmanship.

So it is your good fortune that there is made every day in America *FURNITURE* of AMERICAN WALNUT which will carry the lesson of your discriminating taste "even unto the third and fourth generation."

You are not forgetting that you want the pleasing Walnut Brochure? Are you? Just drop a line. (*Now* is the best.)

AMERICAN WALNUT
MANUFACTURERS' ASSOCIATION

Room 1019, 616 S. Michigan Blvd., Chicago

ALL BRANCHES OF THE FURNITURE TRADE

are feeling strongly the Effects of the series of tributes to our American Walnut which are running continuously in most of the Best Publications in America. Above is an example.

There are still a few Furniture Houses in the Country

who are giving some of their better-posted competitors a great advantage over them with the Best Trade. WHY? Simply because they "heard somebody say" that American Walnut was getting scarce. Let them ask us for THE FACTS! (See address above.)

Chas. Gill Lumber Co.

WAUSAU, WISCONSIN

MANUFACTURERS & WHOLESALERS

SPECIALIZING IN

MAPLE
BIRCH
AND
BASSWOOD

Complete Stock Crating Material

We solicit correspondence relative to all Northern Hardwoods

Chicago Office — 501 Lumber Exchange

Band Sawn West Virginia HARDWOODS

The W. C. Barlett Lumber Co.

Charleston, W. Va.

Manufacturers

ASH to WALNUT

We produce a complete line of Band Sawn Hardwoods, serving the Body and Wheel, Furniture, Piano, Cabinet and Interior Finish Trades.

If Superior Quality, Fine Width and Length, coupled with Real Service is desired, let us have your enquiries.

Chapman & Dewey Service

Time is short but you can still save money. Freight rate increase has been granted. Car shortage this Fall is a certainty. Try us for prompt shipment of dry stock.

DO YOU USE

Oak Ash, Gum, Elm, Cypress Sycamore, Cottonwood Maple?

If so, wire your inquiry at our expense. Remember that all our lumber is manufactured at our own mills from logs cut on our own timber lands. Stop and think if this does not mean the utmost satisfaction to the consumer.

Chapman and Dewey Lumber Co.

Manufacturers

SALES OFFICE: MEMPHIS, Tenn. MARKED TREE, Ark. KANSAS CITY, Mo.

D. E. Hewit Lumber Co.

Huntington, W. Va.

MANUFACTURERS

West Virginia Hardwoods

(Not Better than the Best but as Good as the Best)

FAS Plain White and Red Oak
No. 1 Com. Plain White and Red Oak
Implement Oak
Sound Wormy Chestnut
No. 1 Common and Better Chestnut
Hickory Plank
Poplar and Basswood

J. W. Darling Lumber Co.

N. W. Cor. 4th & Plum St. CINCINNATI, Ohio

In addition to our operation at Baton Rouge, La., we handle the sales of

J. H. Leavenworth & Son, Greenville, Miss.
Fisher Bros. Lumber Co. Cruger, Miss.
Kurz Brothers, Helena, Ark.

and have three buyers constantly traveling the South.

We are, therefore, in position to give the lumber consumer excellent service in

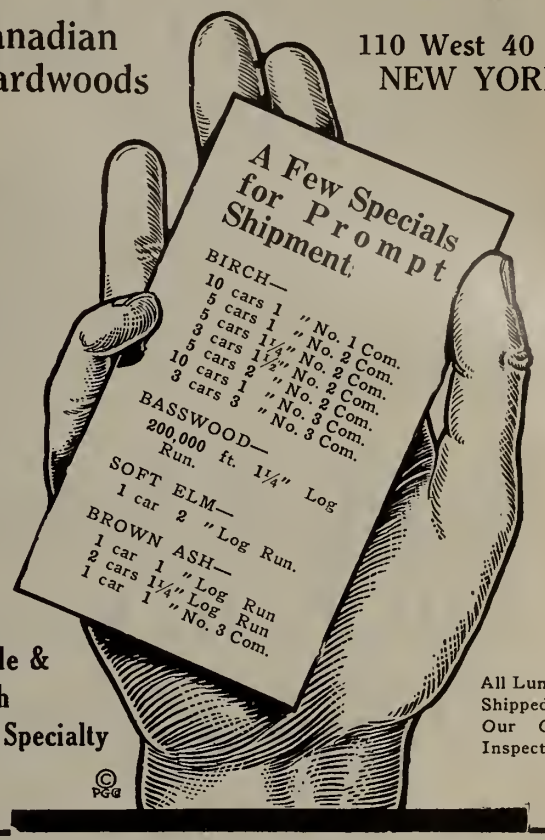
Oak - Gum - Cottonwood
Cypress and Tupelo

WAYNE LUMBER CO.

Manufacturers and Wholesalers

Canadian Hardwoods

110 West 40 St. NEW YORK


A Few Specials for Prompt Shipment
BIRCH—
10 cars 1 " No. 1 Com.
5 cars 1 " No. 2 Com.
5 cars 1¼" No. 2 Com.
3 cars 1½" No. 2 Com.
5 cars 2 " No. 2 Com.
10 cars 1 " No. 3 Com.
3 cars 3 " No. 3 Com.
BASSWOOD—
200,000 ft. 1¼" Log Run.
SOFT ELM—
1 car 2 " Log Run.
BROWN ASH—
1 car 1 " Log Run
2 cars 1¼" Log Run
1 car 1 " No. 3 Com.

Maple & Birch Our Specialty

All Lumber Shipped by Our Own Inspectors

Northern Hardwood Products

A full and complete assortment of Dry Stock

SPECIAL ITEMS OF INTEREST

BASSWOOD		BEECH		HARD MAPLE	
45M	4/4 FAS Winter Cut White	90M	5/8 No. 2 Com. & Btr.	60M	4/4 End Dried White
75M	4/4 Selects & Better	200M	4/4 No. 2 Com. & Btr.	50M	5/4 End Dried White
50M	4/4 No. 1 Common	80M	4/4 Selects & Better	20M	6/4 End Dried White
70M	5/4 FAS	65M	4/4 No. 1 Common	18M	8/4 End Dried White
40M	5/4 No. 1 Com. & Btr.	120M	4/4 No. 2 Common	200M	8/4 No. 1 Com. & Btr.
60M	5/4 No. 1 Common	250M	5/4 No. 2 Com. & Btr.	150M	10/4 No. 1 Com. & Btr.
100	5/4 No. 2 Common	100M	5/4 No. 1 Com. & Btr.	40M	12/4 No. 1 Com. & Btr.
40M	6/4 No. 1 Com. & Btr.	225M	6/4 No. 2 Com. & Btr.	50M	16/4 No. 1 Com. & Btr.

Our Facilities Include

TWO SAW MILLS COMPLETE PLANING MILL SIXTEEN DRY KILNS

THE BIGELOW-COOPER CO.

BAY CITY - - MICHIGAN

L. D. LEACH & COMPANY

FISHER BUILDING, - CHICAGO

Manufacturers

OAK	Furniture and Vehicle Dimensions Plain Sawed, Red and White Car Stock Wagon Stock
GUM	Plain and Quartered, Sap and Red
HICKORY	Flitch and Dimensions
ELM	2, 2½ and 3 inch.

Hardwood Lumber

Thirteen Band Mills
Six Planing Mills
Eleven Flooring Units
} ***Annual Capacity, 130,000,000 Feet***

It is an expensive process to convert the standing trees into lumber and deliver it to our patrons in the sizes, grades, and kinds adapted to their every need.

Not only does it cost enormous sums to buy the timber and to build mills to manufacture it into lumber but there are costs and items of expense of which the average consumer has probably never thought.

The trees must be felled in the woods and cut into logs; this requires annually 800 axes and 1000 crosscut saws.

The logs must be snaked down the mountain sides to points accessible to the skidders and loaders. This requires 270 horses.

They must be skidded and loaded and the upkeep of machines for these purposes is enormous.

They must be hauled in to the pond at the mill; this requires 350 miles of logging railroad, many locomotives and innumerable logging cars.

These costs,—to say nothing of wages,—in a short time run into millions; yet we must make the expenditures, for not otherwise can we render our patrons

AN UNMATCHED SERVICE

in supplying their needs for more than 150 varieties of lumber and kinds of stock,—the products of our unexcelled hardwood forests.

W. M. Ritter Lumber Co.

COLUMBUS, OHIO., U. S.A.

Canadian Representative: John Hall, 160 Huron St., Post Office Box 32, Toronto

The Arrow Lumber Co.

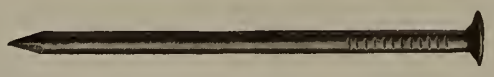
Manufacturers and Wholesalers of

West Virginia Hardwoods and White Pine

Oak Timbers Our Specialty

PARKERSBURG, W. VA.

Mills: Raleigh, W. Va. Natural Well, Va.



NAILS AND WIRE

For Every Need in the Woodworking Industry

Bale ties, Nails and Wire of every description are manufactured by us. We manufacture to your order.

Laidlaw Bale-Tie Co., Ltd.

A. T. Diggins, Toronto, Ont. H. E. O. Bull, Montreal, Que.
Harry F. Moulden & Sons, Winnipeg, Man.
Mr. Norman Jessiman, 505 Hastings St. W., Vancouver, B.C.
Head Office and Works: HAMILTON, CANADA

E. R. Spotswood & Son

INCORPORATED

MANUFACTURERS OF

Kentucky Hardwood Lumber

We specialize in soft texture Kentucky Oak—Plain and Quarter Sawed, also in Ash, Basswood, Chestnut, Poplar, Beech.

Let us quote you on your requirements—our prices are right and we can make prompt shipments direct from our mills.

LEXINGTON - - KENTUCKY

BOOKS FOR SALE

The following books are offered at special prices subject to previous sale:

"Woodwork Joints," by Evans Bros., London England; 214 pages, with 430 illustrations and a complete index of eleven hundred references. Price $1.50.

"Machine Molder Practice," recently published by the Practical Books Co. 172 pages, 100 illustrations. Flexible leather binding. Price $3.00.

"Details of Cabinet Construction," by Evans Bros., London, England; 203 pages, fully illustrated. Price $1.50.

Seasoning of Wood; A Treatise of the Natural and Artificial Processes Employed in the Preparation of Lumber for Manufacture, with Detailed Explanations of its Uses, Characteristics and Properties, by Joseph Wagner. Published by D. Van Nostrand Co., in 1917. 274 pages, illustrated. Price $3 00.

"The Kiln Drying of Lumber," a Practical and Theoretical Treatise, by Harry Donald Tiemann, M.E., M.F. Just published, by J B. Lippincott Co. 316 pages, illustrated. Price $5.00.

The Woodworker Publishing Co., Limited

345 Adelaide Street West, Toronto, Ont.

GOODYEAR

MADE IN CANADA

For Outside Drives— KLINGTITE—An All-Weather Belt

The service given on outside drives by Goodyear Klingtite Belting (formerly Extra Power) is unusual enough to be of interest to every belt user.

Not because there are a great number of outside drives—but because the outside drive is just about the ultimate test of a belt's ability.

The specially designed fabric of Goodyear Belting gives it the strength to withstand brutal outside service.

But the best of cotton will rot and whip to pieces outdoors if not protected.

So we have forced generous quantities of high-grade rubber through and through the plies of Goodyear Klingtite Belting, forming one solid unit, proof against weather and ply separation, yet flexible, pulley-hugging, efficient.

The special friction surface on Goodyear Klingtite Belts (formerly Extra Power) grips through dust or moisture and prevents slipping.

How well these belts serve is evidenced by this letter from the Beaver River Lumber Co. regarding their Extra Power Belt (now Klingtite). At last report (June, 1920) **this belt was still in service after 32 months' use,** when this mill was burned recently.

In their letter the Beaver River Lumber Co. say: "The belt driving the conveyor runs direct from a small engine to the conveyor drive. It is subject to steam and heat in the engine room and to cold and dampness on the outside. Under these conditions, there is no sign of deterioration and there is no slippage."

The same testimony is advanced by hundreds of farmers and threshermen who bought Goodyear Klingtite Belts (under their old name of Extra Power) for severe outside service on the farm.

If you have an outside drive, by all means investigate Goodyear Klingtite Belts. If you have **any** transmission drive, let a Goodyear Belting man show you how Goodyear Belts, which are good enough for outside service, will render heaping value on inside work. Phone, wire or write the nearest Goodyear Branch and a man will call without obligation to you.

The Goodyear Tire & Rubber Co. of Canada, Limited

Halifax, St. John, Quebec, Montreal, Ottawa, Toronto, Hamilton, London, Winnipeg, Saskatoon, Regina, Calgary, Edmonton, Vancouver.

KLINGTITE BELT

Improved Glue Heater

No heat controllers or other safety guards are necessary with this heater, **because it cannot injure glue.** It's simple, substantially made of copper and costs less than any other.

Let us tell you more about it.

We make any size desired.

Cincinnati Glue Heater Company
Cincinnati, Ohio

"CASCO" Waterproof Glue

Mixed Cold—Used Cold

COST

FOR JOINTING—very much less than the hide glues.

FOR VENEERING—A little more per pound than vegetable, but little, if any, more per GLUE LINE FOOT.

Hundreds of large manufacturers are using "CASCO" to produce the BEST veneered products, at no increase in cost.

The Casein Manufacturing Co.
Manufacturers of Casein Glues for twenty-five years
15 PARK ROW NEW YORK CITY
NOTE. Send for Casco Red Book. It contains much information on glue, veneer and panels.

"The Woodworker's Standard"

Write for Prices

Clean Fast Cutting—extremely flexible—uniformly coated with hard, sharp, pure Garnet—long lived—these are some of the qualities responsible for the pre-eminence of Carborundum Brand Garnet Paper & Cloth Products, stock carried in rolls, strips, belts and sheets. Can supply immediately from our large stocks.

Norman Macdonald
62 and 64 Temperance Street
TORONTO - - ONTARIO

Carborundum Brand Garnet Products Make Good with the Men

"It's up to the men and they seem to want Carborundum Brand Garnet Products. If we give them something that doesn't do the best work we soon hear of it."

So says the general manager of a live, busy Western New York furniture plant.

His men think pretty well of Carborundum Brand Garnet Paper and Cloth.

For instance, G. D. Danielson, foreman, says of that flexible belt he is using for sanding gumwood table supports—

"Mighty good stuff. Will by far outlast and cut a whole lot more than any cloth I ever used."

You get the same story all through the plant. The men appreciate what it means to work with such uniformly clean, quick-cutting, long-lived paper and cloth. So will the men in your plant.

Working samples at your request

THE CARBORUNDUM COMPANY, NIAGARA FALLS, N. Y.

New York Chicago Boston Philadelphia Pittsburgh Cleveland Cincinnati Milwaukee Grand Rapids Detroit

Eastern Handle & Dowel Company, Limited

Farm Point - Quebec

High Grade

HANDLES

AND

DOWELS

We give special attention to Hardwood Dowels of Beech, Birch or Maple

Our Motto:
Quality, Efficiency and Fair Treatment

Please send us your enquiries and it will be a pleasure to quote you

Special attention given to all wood turnings

The Peter Hay Knife Co., Ltd.

Manufacture the Best

PLANER KNIVES and CUTTERS

OF ALL DESCRIPTIONS

The Peter Hay Knife Co., Limited

GALT, ONTARIO

Overseas Reed and Cane Co.

MANUFACTURERS

Reeds, Webbing and Rattan Products

EXPORTERS

Ionia, Michigan

Subscribers' Information Form

Many letters reach us from subscribers enquiring where a certain machine, a certain kind of lumber or veneer, or some other class of goods, can be obtained. We can usually supply the information. We want to be of service to our subscribers in this way, and we desire to encourage requests for such information. Make use of this form for the purpose.

"CANADIAN WOODWORKER"
345 Adelaide Street West, Toronto.

Date.....19_

Please tell us where we can procure .....

.....

.....

.....

Name .....

Address .....

PERIOD CARVINGS

for

FURNITURE

Quality the Best

Prompt Shipment

Largest Manufacturers of Imitation Wood Carvings in the World

Unlimited facilities for the manufacturing of high grade period wood carvings in composition and wood fibre. Reproductions of exclusive designs our specialty.

CATALOGUE SENT ON REQUEST

THE DECORATORS SUPPLY COMPANY

ARCHER, LEO AND LIME STREETS

CHICAGO

Paepcke Leicht Quality Hardwoods

SERVICE

Prompt Shipments—Dry Stock—Uniform Quality and Inspection

Band Sawn and End Trimmed—Full and Uniform Thickness

Complete Product of the Log, in the Grade Purchased

Good Run of Widths and Lengths

QUALITY

ASH
4/4" Log Run .. 50,000'
5/4 Log Run .. 15,000
6/4 Log Run .. 30,000
8/4 Log Run .. 30,000
10/4 Log Run .. 20,000
12/4 Log Run ..100,000

COTTONWOOD
4/4" Box Bds., 13-17" .. .. 30,000'
4/4 1s & 2s, 13" up 100,000
4/4 1s & 2s, 6" up 30,000

CYPRESS
4/4" No. 1 Shop & Btr. .. .. 75,000'
5/4 No. 1 Shop & Btr. 50,000
8/4 No. 1 Shop & Btr. 25,000

ELM
5/4" Log Run .. 50,000'

MAPLE
10/4" Log Run .. 15,000'
12/4 Log Run .. 35,000

PLAIN RED GUM (Figured Wood)
4/4" No. 1 C. & Sel. 10,000'
5/4 1s & 2s 8,000

QTD. WHITE OAK
4/4" Log Run .. ..50,000'
5/4 Log Run 20,000
6/4 Log Run 10,000

PLAIN RED GUM (Plain Wood)
4/4" 1s & 2s .. .. 50,000'
4/4 No. 1 C. & Sel. 100,000
4/4 No. 2 Com. .. 75,000
1⅛ No. 1 C. & Sel. 13" up 12,000
5/4 No. 1 C. & Sel. 10,000
5/4 No. 2 Com.. 20,000
6/4 1s & 2s 8,000
6/4 No. 1 C. & Sel. 30,000

RED & W. OAK MIXED
4/4" No. 3 Com. .150,000'
5/4 No. 3 Com. . 60,000

QTD. RED GUM (Sap No Defect)
6/4" No. 1 C. & Btr. .. .. .. 50,000'
8/4 No. 1 C. & Btr. 40,000

PLAIN WHITE OAK
4/4" 1s & 2s .. .. 30,000'
4/4 No. 1 C. & Sel. 75,000
4/4 No. 2 Com. ..50,000

PLAIN RED OAK
4/4" 1s & 2s .. .. 30,000'
4/4 No. 1 C. & Sel. 60,000
4/4 No. 2 Com. . 75,000

SAP GUM
4/4" Panel & Wide No. 1, 18" up 15,000'
4/4 Box Bds., 13-17" 75,000
4/4 1s & 2s 50,000
4/4 No. 1 C. & Sel 100,000

QTD. RED GUM (Plain Wood)
4/4" 1s & 2s 20,000
4/4 No. 1 C. & Sel. 25,000
5/4 1s & 2s 3,000
5/4 No 1 C. & Sel. 15,000
6/4 1s & 2s 15,000
6/4 No. 1 C. & Sel. 9,000

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Maple
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Poplar

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CANADIAN
WOODWORKER
and
Furniture Manufacturer

A Monthly Publication of Trade News and Practical Information, reaching the factories producing Interior Finish, Doors, Sash, Flooring, Boxes, Aeroplanes, Furniture, Pianos, etc.

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Vol. 20 Toronto, September, 1920 No. 9

Fire Prevention Week

All woodworkers, both owners and workers, should take an active interest in "Fire Prevention and Clean-up Week," October 9th to 16th. The manufacture of wood products, owing to the inflammable nature of the raw material used, is beset with many hazards. The yearly toll taken from this industry by the destroying fiend reaches appalling proportions.

A large part of this loss is preventable. A few simple, common-sense precautions, on the part of employer and employee, would result in a worth-while reduction in the number of fires. Just think that in Ontario alone over thirty-two thousand dollars worth of valuable property goes up in flames each day. It is nothing short of a crime that this should continue when the exercise of a little care and the ordinary rules of cleanliness would check this daily reduction of our national wealth.

The owner of a plant is inclined to rest content when he has installed certain fire protection and prevention appliances and when he has a number of insurance policies stowed carefully in his safe. That is not sufficient. All such equipment should be checked regularly to make sure that it is in working order and every precaution taken to eliminate all fire hazards and danger spots. Insurance money may help replace a plant, but it will not make up for lost business and profits or help to retain customers.

As a workman in the plant you may not realize that you are vitally interested in fire protection for not having an interest in the plant you have nothing at stake. Just stop a moment. Is not your job at stake? Is that not worth trying to save ? If the plant which gives you employment were to go up in flames to-day, where would you look for employment? It is your problem as well as that of the owner or manager.

Fire prevention week is a move in the right direction, so let us boost it. Let us go a step further and make the next twelve months a fire prevention year. The effort required is not onerous, while the object aimed at, elimination of fires, is one that touches the pocket book of each individual in Canada.

Standardization of Millwork

In his article on knock down trim for residential work, which appears in this issue, W. H. Shaw touches on a question that is engaging the attention of progressive millmen on both sides of the international boundary. Standardization of millwork such as doors and door frames, window sash and frames, mouldings and other forms of detail work has been a topic for lively discussion at different gatherings held in recent months. Little real progress may have been made, yet the fact that such a subject is considered of sufficient importance to be discussed at association meetings, indicates that many woodworkers realize the value of such a step.

Someone may suggest that as far as mouldings go, there are a number of designs which are followed by the majority of millmen and which might be called standard designs. That may be so, but an examination of these same mouldings, made at different plants, would quickly convince one that they are far from being uniform. If samples of a 3½ inch "ogee" moulding were to be gathered from twelve different factories it is extremely unlikely that two out of the twelve would agree in size and contour. This is not standardization.

The development of special heads, with solid, milled cutters, for moulders and stickers has paved the way for standardized mouldings. With these milled cutters a woodworker can reproduce a design, without the slightest variation, as often as he wishes. Another woodworker operating a plant in a different part of the country could by using similar cutters make an exact duplicate of that moulding. One that would conform in every detail. The manufacturer of the cutters would work to templates to ensure absolute uniformity in every cutter sent out.

Another suggestion that would assist in standardization would be the working out and general adoption of a set of standard gauges and templates for checking the sizes and shapes of the different mouldings. Using standard gauges and milled cutters should result in uniform product.

In the article mentioned the author suggested standard-sized openings for doors and windows. This would enable a millman to cut the trim and heads for the frames and by making up large lots take advantage of quantity production. This is an application of the ready-cut house principle in a small way. Certain economies in stock and methods would be effected that would lower manufacturing costs and tend for a cheaper product. The opinions of a number of woodworkers on this subject would be welcomed.

Economy and Use of Knocked-Down Trim

Standardization of Patterns and Sizes as a Means to Increased Production and Lower Manufacturing Costs—Stock Cut to Size at Plant—Service That Will Increase Business and Profits

By W. H. Shaw

One of the subjects, which this coming year will receive special attention by builders and supply men is "The Small House." The large house is quite out of fashion. Yet the problem in the small house "Most house for the least money" doubles because in it must be embodied all the conveniences and practically all the accommodation found in the larger dwelling with the newer ideas in sanitation and conservation as well.

What was yesterday a luxury expected only by the people of wealth, has become today a necessity demanded by every working man for his family. Money making is now generally ascribed to the Canadian people as the great motive of existence. Yet there is no people to whom a dollar once possessed, has less value of itself. It is not money ,but what money will buy for which this struggle is made. We are not a miserly or even a saving people. The comforts and the luxuries of living loom so large in the public eye that no effort is too great, no endeavor too strenuous for their attainment. Possibly the spirit of competition is at the heart of the matter. "Own your home" is probably not so much that the people require these things for themselves as they are not willing that their neighbors and friends shall seem to have more, when they themselves are at the mercy of the landlord.

Smaller Dwellings the Rule

In no other line is this so apparent, with the possible exception of the automobile, as in living accommodations. The big handsome "home" has been sacrificed, even by people of wealth, to the more accommodating small house. There has been a shrinkage in the cubic contents of the family house, with a distinct sense of relief both to the man of the house, and its mistress, overworked with the care of help and a large house.

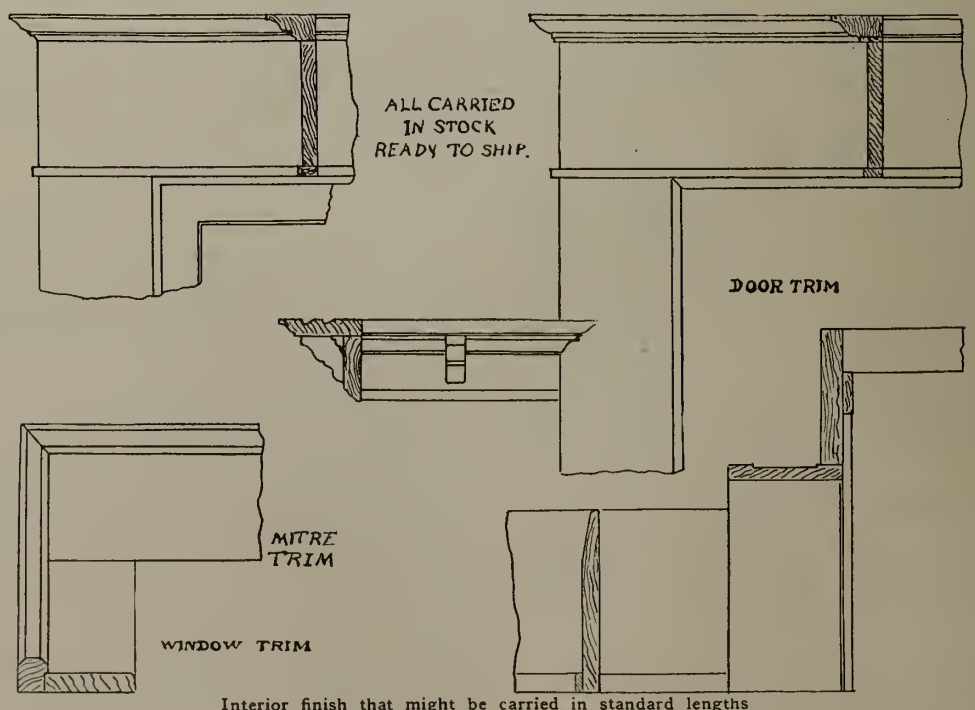
There is much building all over the country which is only waiting the final word of the owner, the capitalist and the speculator, to keep in motion all of the busy wheels of the building industry. The people must be fed, on charity if their normal work is not forthcoming. Capital has no right to retire into safety and shut off the supply of honest homes needed everywhere.

When a railway magnate propounded as his motto "Let the public be pleased" he marked the turn of the tide. The public are pleased with the "Own your own home" idea. A house is a place where we eat and sleep; a home is the place where we really live and enjoy living. That expresses the difference between the house rented and the home owned, and supplies the reason why Canada is fast becoming a nation of home owners.

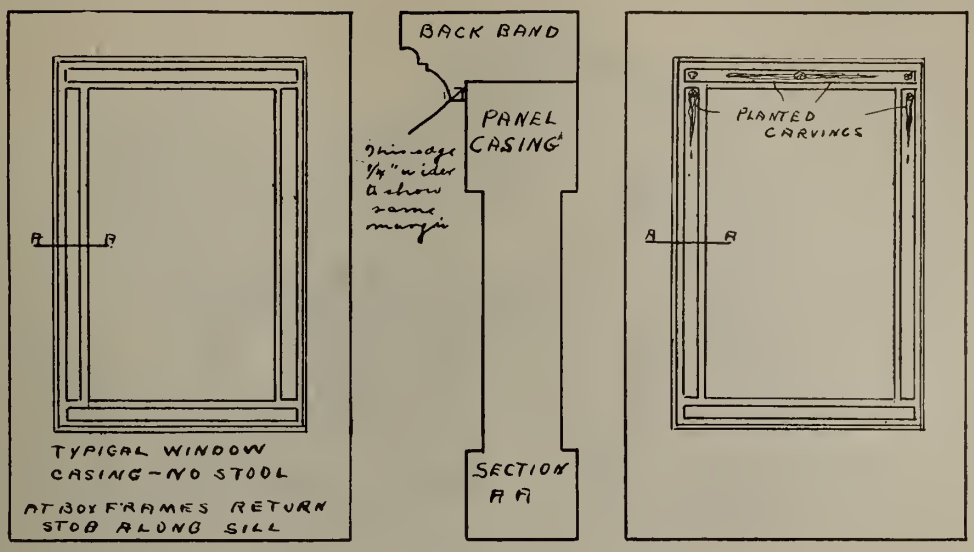
Co-operation Better Than Competition

The economic theory that competition is the life of trade is passing. The thought which has been creeping into the lives of men everywhere, that co-operation is better than competition, is not altogether altruistic. With it is the thought that in giving much we will also receive much. It comes as almost a sense of shock that business may accept the Bible mandate. Yet a big business is freely giving what has not been demanded of it and finds economic returns.

How can the millman and builder, one operating



Interior finish that might be carried in standard lengths



New design in paneled trim proving very popular

his own machinery, co-operate in this demand for homes? By economy in standardization. For instance, there are certain standard lengths, widths and thicknesses of lumber, and certain standard styles and sizes of windows, doors, window frames, door frames, in fact of every kind of millwork. Standard items can be manufactured in tremendous quantities at very low cost while special styles and sizes require readjustment of machinery and entail a waste (sometimes 33 and 1/3 per cent.) of standard sized material to meet special requirements. An appearance as artistic as one may wish can easily be produced without resorting to the expense of special materials.

Economy of Standard Designs

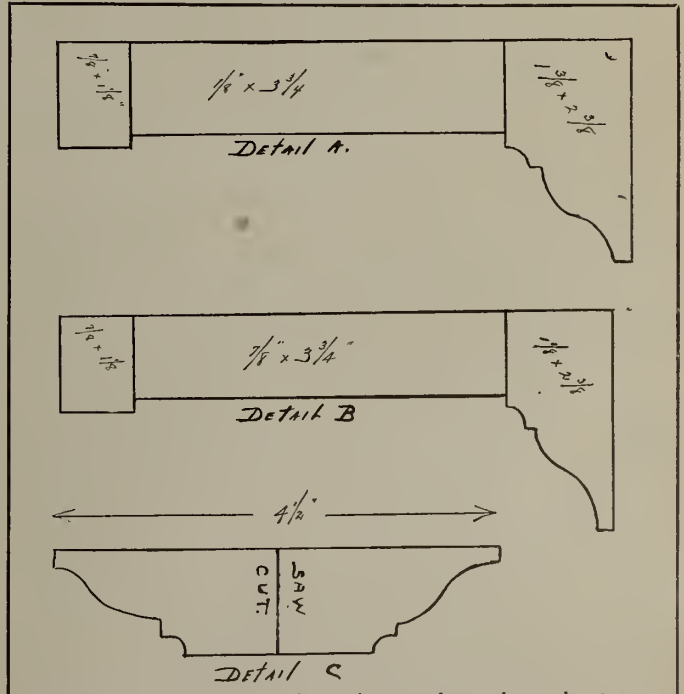
Co-operation today in one sense is "How to avoid all the usual delays, waste, disappointments. What will cut the cost of building a home. Science says, simplicity—standardize—eliminate waste.

This is the day of brain that plans for thousands at a time instead of one. Why is it necessary to manufacture individual trim for every house that is built. There is a wiser, more economical way, decide in a design, try it out and if proven true, use it many times over. Let hundreds of people reap the benefit of your design. And as this is the age of machinery, the day of producing in quantities, produce in minutes, what would take hours by hand labor.

In the matter of interior trim, would it not be better both from an economical and profitable standpoint for millmen to consider putting this on the market in an assembled form? Economy in the last few years has reduced door sizes to 2-2 x 6-6, 2-4 x 6-6 and 2-6 x 6-6 and corresponding in width in 6-8 height. If window sizes were similarily made to standard sizes, why not quote a customer on so many sides of window trim complete, so many inside jambs, with trim two sides complete? If this was carried out would the average millman have as many rippings along side his saw, or as much moulding consisting of a few feet of different designs, to be entered in his stock cards as of no value? Besides these cuttings and ends, by going into full stock for each individual job, would be producing dollars and cents instead of finding their way to the fire hole.

True we have practically only two kinds of trim to choose from—mantle head, and mitred trim, or what has become popular of late a combination of both, a square cut casing for sides and heads and mitred back board.

The mantle trim, as a stock proposition is the most acceptable, although from a material cost is slightly higher. It also has its advantages, as any shrinkage in the walls and material is not nearly so noticeable. And shrinkage is one thing that must be considered in these times, with unseasoned construction material, and since builders have been reducing the storey



Illustrating how back band can be manufactured to advantage

length to 8-6. It is a common practice to use studs cut 8 feet with a single stringer at the bottom and a double stringer at top, which is bound to show considerable shrinkage. The simpler the designs, the less labor in cleaning up. In addition simple designs seem to

(Continued on page 59)

Perspective view of house designed for Winnipeg Housing Scheme

Homes Built Under Winnipeg Housing Scheme

Terrace Houses Most Economical, but Difficult to Sell—Description of Semi-Detached Cottages—Permanent Class of Construction—Exceptionally Well Planned Embodying Labor Saving Features

By F. H. Parr, A.M.E.I.C.*

Many schemes have been submitted to the city of Winnipeg to meet the demands of small houses at a reasonable figure, but owing to the cost of land in the first instance, and the increasing cost of labor and material this year, the adoption of a small house with reasonable accommodation and cost to the prospective owner has been a difficult problem.

It was felt that a small house built within the means of the ordinary man would appear too small altogether, and would not convey from the exterior the excellent accommodation provided within, therefore, while adopting exactly the same plan, prices were considered and arrived at for the house as a single one, semi-detached and in terraces of six.

In the first instance it was considered more economical to build in terraces of six cottages, but the builder encountered such serious difficulties in the sale of the individual cottage that a general antipathy against terrace houses became evident in Winnipeg, although very popular in the East, so much so that he changed his plans to shingle and semi-detached cottages, however, the idea of building in terrace is not by any means given up, and it is hoped to accomplish the same this year.

Early in the year the writer undertook to design such a home as would meet the exigencies of the case, and having regard to economy of construction and cost of heat in the winter evolved the plan illustrated, and which is now being erected in three or four districts of the city.

A full basement is provided with cement concrete walls 10" thick rendered in cement and stucco, lighted from the rear with three windows, containing a furnace and a coal bin to store five tons, the quantity considered sufficient for an ordinary winter.

The first floor contains a small entrance lobby, a 4 in. by 10 ft., pantry 3 ft. by 4 ft. 6 in., and a hat and coat lobby at the head of the basement steps and cut off from same by a door 3 ft. by 5 ft. 6 in. The height of the storey is 8 ft. 6 in.

The verandah extends across the whole front and is 7 ft. wide, and there is a back landing and steps in the rear.

The second floor contains two bedrooms, that in the front being 12 ft. 4 in. by 11 ft. with closet 3 ft. by 4 ft. 6 in., a back bedroom 10 ft. by 9 ft., and a bathroom with full plumbing 6 ft. 3 in. square; the height of this storey is 8 ft. 6 in. at the slope line.

The outside walls are 17 ft. high and together with the party wall are being constructed with 6" by 12" by 12" hollow clay tiles with studs 3 ft. apart, and are finished with cement render and stucco on the outside and rough plaster, strapping, empire wall board and two coats of plaster on the inside.

The partitions and ceilings are lath and plaster.

The rafters are covered with shiplap, tar paper and slate shingles as manufactured by the Standard Paint Co.

The floors are carried on 2" by 8" joists which together with all studding, rafters, etc., are spaced 16" centre to centre.

The dormers to the second floor windows are thoroughly well sheathed, and covered with paper and shingles similar to the above.

Fir in doors, windows and trim together with edge grain in the floors is used throughout, and will be

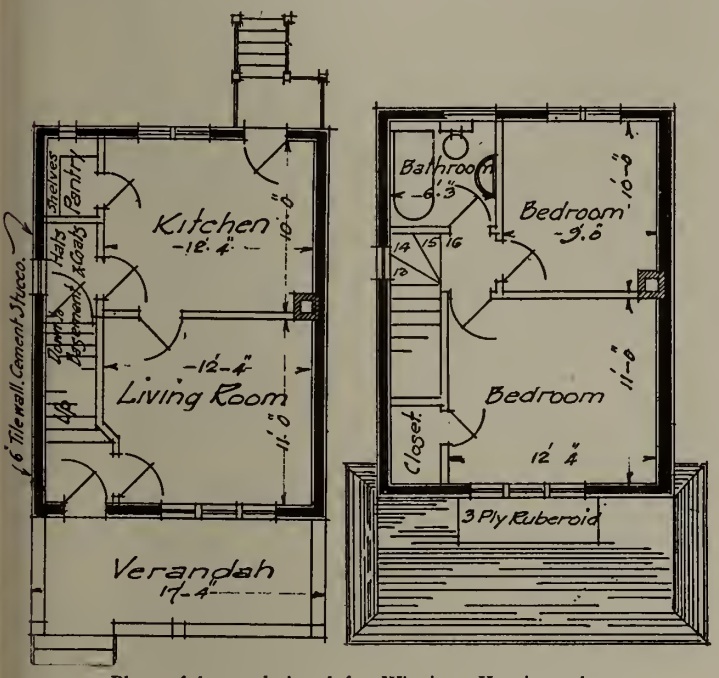
*Registered architect, Manitoba and Saskatchewan.

stained, shellaced and varnished with Manders varnish, the floors will be dressed and oiled.

The stucco coat is to be colored before being put on and the outside woodwork will be painted two coats.

The houses can be built on the following frontages: —single houses, 25 ft.; semi-detached, 50 ft.; and terraces of 125 ft. In this latter case the middle house will have 16 ft. 6 in. frontage and the end houses 29½ ft.

The city of Winnipeg grant the loan at the rate of 85 per cent. of the value of the house and lot, the



Plans of house designed for Winnipeg Housing scheme

latter not exceeding $20 per foot, and the repayment of principal and interest is spread over a period of 20 years with a combined monthly payment of $7.13 per $1,000.00 per month, the owner has the option of paying any further sum at any time without notice or bonus.

Statement of Cost

	Total Cost	City Loan	Cash Paym't	Month Paym't
Single Cottages	$4350.00	$3697.00	$653.00	$26.35
Semi-Detached Cottages	4150.00	3527.00	623.00	25.14
Terrace Cottages, Four Inside Cottages	3880.00	3298.00	582.00	23.51
Two Inside Cottages	4140.00	3519.00	621.00	25.09

No charge is made by the city for inspections, and the cost of transfer, etc., is included in the above cash payment, of course., to the above must be added the yearly taxes and insurance.

The scheme was worked out by the writer for Col. Norman J. Lindsay, of 402 Bank of Nova Scotia Building, Winnpeg, who will complete a number of the houses this year.

The writer has had considerable experience in municipal work and administration in connection with sewerage and sewerage purification particularly on the septic tank system, water supply and pumping, roads, etc., together with town planning and municipal housing schemes, which experience has proved of considerable value in connection with the plans described in this article.

Economy and Use of Knocked-Down Trim

(Continued from page 57)

suit the public demand. We are living in an age of almost "white interiors" and the plainer the surface of all wood work the better for an enamel finish.

Details A and B show the sections of plain trim with different sized cap moulds. C illustrates a very economical method of producing a cap mould. Material of 1½ x 5 in. or 1¼ x 5 in. stock as desired is run in long lengths to any required pattern, with corresponding double edge, then cut off in suitable lengths to work on square heads of doors and windows. Return heads to pattern on shaper, and then rip on fine rip saw, thus eliminating any bench work on mitre return, and also less fear of endwood being torn.

Panel Casing New Feature

Another very economical trim, one which is used very extensively by one of the leading young architects of this city, is the "panel casing," both in hard wood and trim for enamel finish. This casing is all square cut, and is very easily cleaned. As both sides are moulded, one is always sure of getting good edges. Used in special bedrooms, with the addition of a few compo crestings planted in the panels, corresponding with the bedroom furniture, a very neat effect is accomplished.

The greatest contribution, lumbermen, millmen and contractors can make towards satisfying the demands of their customers for homes is knock-down millwork.

Each millman who avails himself of the knock-down millwork service is serving the home builder and himself, eliminating delays, waste, disappointments, and above all cutting costs.

Market for Pianos in Egypt

Pianos, phonographs and other musical instruments are said to be in good demand in Egypt and other far eastern countries.. The present is the time for manufacturers of these instruments to introduce their goods into Egypt under most favorable circumstances, and it is pointed out that the market undoubtedly presents one of the most promising openings for the industry, in view of the greatly increased purchasing prosperity of the inhabitants as a result of the country's immense prosperity during the last few years. Turkey is another market which offers an undeniable scope. This market cannot be captured, however, unless something more substantial than catalogues be used. Articles de luxe find a ready sale at present among those who made money during the war.

Joint Rates Have Gone Into Effect

The order of the Railway Commission authorizing increases in the joint rates on traffic across the international boundary, has gone into effect. This order was made on the application of the American Railway Association, which represented to the Railway Commission that increases had been authorized by the Inter-state Commerce Commission on the United States roads, and that the rates authorized by that body should be made applicable to international joint rates. The order applies to all rates and charges which were increased under the order of the Inter-state Commerce Commission.

Are Lower Furniture Costs a Probability?

Labor and Material Controlling Factors—Demand Slack at Present—Retailers May be Playing a Waiting Game—Outlet for Surplus Overseas

By R. W. Wells

It is always interesting, and at times profitable, to speculate on the immediate future and to endeavor to forecast the trend of events, with their probable effect on general conditions, manufacturing costs and the different markets. Two questions of vital interest to furniture manufacturers are manufacturing costs and the probable demand for their product.

Is a decline in manufacturing costs, with a consequent reduction in selling prices, a probability in the near future? The three chief items entering into the cost of an article are, those of labor, and of raw materials as well as production. Let us examine each item separately and see if any declines are probable.

Efficiency of Labor Not Improved.

There has been no recent reduction in wages in any of our furniture factories. In several producing centres increases, averaging about 10 per cent., have been put into effect in the past few months. Production per man apparently has not increased, showing that there is not any marked improvement in the efficiency of labor. On the whole it would appear as if it would be safe to assume that labor costs will not show any decrease for some time to come.

Uncertainty marks the raw material markets. The different items entering into the manufacture of furniture are fluctuating from time to time. Lumber and finishing material have dropped in value, lumber about 5 per cent. and finishing material 8 to 10 per cent. A closer examination of the material list indicates that other items such as glue, hardware, packing and upholstering materials, are still on the upward trend. The increase in the latter articles more than offset the drop in lumber and finishing material. Again it is doubtful if many furniture makers stocked up heavily with lumber or other items when prices were at their peak, so that a slight drop in certain lines would not have any effect on present costs. Even on a falling market, and that does not seem probable, it would be some months before the lower values would show in cost figures.

Lessened Demand Means Higher Costs.

The question of production is a little more involved. If the amount turned out drops off, the cost to produce increases; for the ratio of overhead is higher as production falls. Production depends primarily on demand. At the moment the furniture market is quiet, in fact, buying has been slow for several months.

A survey of the retail field shows that business is fairly good in the smaller towns and rural districts and quieter in the larger centres. July and August are usually slack months so that a falling off in orders should not occasion any alarm. In spite of the prevailing slackness some of the larger retailers have been doing a good volume of business. As near as can be ascertained these same merchants have not been making any efforts to replenish their stocks. This may mean that they are playing a waiting game or they may be of the opinion that furniture prices are going to tumble. With a few months' orders on their books, the manufacturers can afford to sit tight and calmly await results.

In the ordinary course of events business should pick up during the coming weeks. Good crops, at good prices, seem to be the rule. This usually precedes an increased volume of trade. Should trade continue quiet for the fall months, it is to be hoped that no attempt will be made by the furniture manufacturer to stimulate sales by cutting prices, especially when such reductions are not warranted by lowered manufacturing costs. Such a movement, even in a small way, would demoralize the market for furniture and tend for even greater uncertainty.

In the event of a prolonged lull, it would be far better for the manufacturer to seek an outlet for his surplus by catering to an outside market. Good furniture, well made and well finished, is in strong demand in Great Britain and other European countries, and is commanding good figures. Other markets that are short of furniture are South Africa and South America. Australia is fast becoming independent of outside assistance as far as furniture is concerned. These markets can be worked to best advantage through a live, overseas agent. Finding an outlet for any possible surpluses would tend to stabilize the Canadian market. As an indication of the demand in outside fields, the British furniture manufacturers exported furniture to the value of $3,500,000 during the first six months of this year, this in spite of a shortage at home. This stock went largely to France, Belgium, South America and Egypt.

If business picks up before Christmas the retailer who refrained from buying did not play his cards correctly. If it remains dull, the manufacturers would simply play into the hands of the retailers, if they attempt to cut prices and compete for business. In any event as near as one can judge, lower manufacturing costs will not rule for the balance of this year, at least.

Furniture Manufacturers' Association in New Offices

The offices of the Furniture Manufacturers' Association have been moved from the Bank of Hamilton Building, Yonge St., to the Bank of Hamilton Building, Annex at 8 Colborne St. The new offices are very much more commodious than the old stand and will give ample space for the carrying on of the work of the association with a greater degree of comfort and efficiency. In laying out the offices a sliding partition has been installed so as to provide for an assembly room where the general meeting may be held. The offices vacated by the association have been taken over by the Home Furnishings Bureau.

Don't step over running belts if you have tails to your coat, or you may become part of the moving machinery.

Keep the bearings clean, free from oil, dust and fluff, as it is very likely to get alight during this hot weather.

Keeping Close Tab on Orders and Shipments

Simple System Facilitates this Work—Gives Perpetual Inventory—Triple Check on Outgoing Shipments and Invoices—Indicates How Lot Should be Finished

By Furniture Manufacturer

A very necessary part of the office work in any furniture factory is to keep an accurate and convenient record of all orders and shipments. The simpler the system can be, provided that the necessary information is promptly available, and that there is no sacrifice of accuracy, naturally the better.

I will outline a system I have used for many years, not with the idea that it is the best—for there may be better methods for all I know to the contrary—but with the hope that if any reader has had any difficulties in this department, he may be able to find something in this article that will be of some assistance to him. In the first place then when an order is received, it is at once copied on to an order sheet. This sheet which is given a serial number, is ruled in such a way as to provide spaces for all the information required, somewhat as shown in the accompanying illustration.

Using Indexed Cards Advantageously

When the orders for the day are copied on to these sheets (and of course the sheets may be ruled in any way you like to provide for information not specified in this sample) each article on the order should be entered on a card. These cards, an outline of which is shown, are placed in a card index tray, each in its indexed position, so that you can tell immediately how many unfilled orders you have for each article in each finish, and where they are to go to, also how many you have in stock in each finish available for sale.

As soon as the 6 No. 99 were shipped to Jones & Co. a line would be drawn through the "6" in the quantity column and the "12" in the last column but one. A "6" would be placed under the "12" in the last second column, showing the number of No. 99, in No. 20 finish in stock available for shipment.

Gives Perpetual Inventory.

The details of this plan will readily be grasped, I hope, by anyone interested and I shall not elaborate upon them, but one point I want to make is that you can instantly tell from the cards what orders you have on hand for any article. Whom they are on order for, and any other detail you may care to put on the card. The card also serves as a perpetual stock record for each article, if you record in the proper column the quantity and date started, the finish, when benched and change and figures in the quantity and the finished column when goods are shipped. Another purpose is served by these cards; we will suppose the 48 No. 99 started on July 20th (as per card) are benched, the card gives you information as to how the 48

99

Our No.	Their No	Customer	Quan	Col.	Fin.	Started	White	Finish #20	Finish G.O.
1000	954	J Jones & Co.	6	20	Dull	48	10	12	10
1009	72	B Smith	4	G.O.	"	July 20			
1017	2700	H Brown	6	#20	"				

Indexed card containing details of orders

should be finished, and you can have your finishing instruction made from it.

Now when we come to shipments; you have a list of the goods sent from the finishing room to the trimming and packing room each day, and you find amongst others 12 No. 99 in a No. 20 finish. You turn up card 99 and find 6 are for Jones & Co. and 6 for Brown & Co. You turn to order sheet No. 1000 and No. 1017, both located promptly because they are in serial order, and shipping tags are made from the

Date July 18/20

Order Sheet

Our Order No. 1000
Their Order No 954

Wood & Wood
Toronto Ont

Ship to John Jones & Co. Winnipeg, Man. via C.N.R.

Quan.	No. of article	Color	Finish	Price	Date Shipped	Date Shipped	Date Shipped	Remarks
6	#98 Oak	#20	Dull	$42.00		Sept. 1/20		
12	#98 Mah	#15	Wax	$54.00	Aug. 3/20			
8	#97 Oak	#20	Polish	$40.00	Aug. 3/20			
10	#46 Oak	G.O.	Varn	$25.00		Sept 1/20		

Details of order sheet used

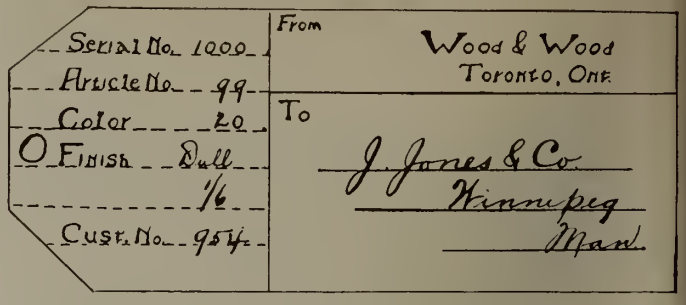
order sheets and handed to your shipper. At the end of his day's shipping your shipper hands a list of goods shipped to the office and as he has only shipped goods for which he had tags, and these tags were made from the order sheets, it follows that his list must correspond with your order sheet, and this serves as a double check.

Allows Triple Check on Shipments

Needless to say your shipping bills are also made from the order sheet, as well as your invoices, and as "things which are equal to the same thing are equal to each other," your invoices must correspond to your shipping tags. Your shipper's list will be compared to your invoice. In this way you have a triple check. In an experience of over twenty years of shipping, I do not recollect a single instance of an article being wrongly shipped under this system, or of an article being shipped (and this is of the most vital importance) without being invoiced.

Just a word in reference to the shipping tags. I stated above that shipping tags would be made from the order sheets, and would also say that it is well to have the shipping tags ruled in such a way as to provide for all necessary information to the shipper.

The space containing figures 1/6 is for the purpose of showing the quantity of this particular article in this shipment, viz., 6, of which this tag goes on the first, hence 1/6. The next tag would be 2/6 and so on.



Special shipping tag used

The advantages of this system are that you have your customers in alphabetical order, that you have all your orders serially numbered, that you have each article you make card indexed and both orders and stock lists on the cards, that you have a triple check on shipments. Further, there is very little duplication of work.

What Constitutes Adequate Fire Protection

More than Chemical Extinguishers, Sprinklers and Hose—Woodworkers Have Many Special Hazards—Careful and Constant Supervision Required —Bicarbonate of Soda and Sawdust Good Extinguisher

By F. T. Daniels

From the standpoint of the insurance underwriter, fire protection means much more than sprinklers, chemical extinguishers and hose streams. It is difficult for him to separate protection from the details of construction and the general fitting up of the plant. To him it means much that boiler house and shavings vault shall be well separated from the main work rooms, that dry kilns shall be of fire resisting construction and with ample spaces around and above the lumber. He also desires that the processes shall be properly located relative to each other and that in all cases there shall be ample room and proper facilities for the maintenance of clear aisles and excellent conditions of order and neatness.

For present purposes we may assume a plant well constructed and arranged in its main features and pass to the more specific items of protection. The matter of power is well worthy of a passing word. No doubt up to within a comparatively short time, the steam engine as the prime mover with shaft and belt transmission, has been most in favor. It is necessary that every reasonable means be taken to avoid friction, Shafting should be carefully maintained in alinement and ample room left at passages for belts, to avoid trouble. It should also be easily possible to reach all parts for cleaning and lubricating; of course good lubrication is very essential. Electric motors are coming into favor and there is no reason why electric power, properly managed, may not be entirely acceptable. It is not usually advisable, however, to employ individual motors, though some of the more modern enclosed types of motors present little hazard .

The heating system should preferably be steam coils or hot water radiators. In any case pipes should be kept at good distance from floors and walls and provision made against resting any materials on the tops of coils or radiators. It should be easily possible to clean thoroughly below and around all heating apparatus. There are many cases on record where steam pipes have for years passed near wood work without causing fire. Finally, fires have resulted under apparently no new conditions. The fact is, that a very long time may be needed for the wood to be reduced to a charred state, but having reached this point it is set on fire with comparative ease.

For the lighting of a woodworking factory, electric incandescent lights are satisfactory. The wiring should be done in the best manner, using conduits for the important lines. Fuse boxes should be made of non-combustible materials and so placed as to be free from dust and inflammable gases. Fuses of a correct voltage should be used. The same care should of course be exercised with respect to switches. Keyless lamp sockets are no doubt safest but not always practicable. Key sockets, if used, should be well constructed. The cost of good sockets is so slight that there is no excuse for using inferior devices. Where there are inflammable vapors, as in dip rooms, vapor-proof lamps should be used. In places where lamps are especially liable to be broken they should be protected by strong wire guards. Many accidents to lamps may also be avoided by connecting them through flexible electric cord an inch or two long instead of making a hard connection to the circuit.

Dipping Tanks Extra Hazardous.

Dipping tanks are well worthy of special attention. They should be provided with covers held open by fusible links and so arranged as to close by gravity in case of fire in the contents of the tank. The tanks should also have drain pipes of ample size leading

*Blackstone Mutual Fire Insurance Co., Providence, R. I.

from the bottom to some safe place of discharge outside the building. A quick opening valve should be placed on the drain pipe and located at such point as to be readily and safely accessible.

Glue pots may be heated by steam, hot water coils or by electricity. Gas should be avoided if possible. If it must be used, rubber tubing should in no case be employed, but all connections should be made with iron pipe. Guards should be provided, if necessary, to prevent inflammable materials from coming into contact with the flames. If electric heaters are used, the circuit should contain small red "pilot-lights" which shall show while the heat is under the pots. These lights should of course be so placed that they will be visible from all points in the room so that there may be no excuse for leaving the heat on at improper times.

Special Receptacles for Waste.

In well ordered plants there will be standard metal cans for the reception of oily rags and waste, and close supervision to see that these possible sources of spontaneous combustion are not left where they can do harm. For the same reason, overalls and jumpers of workmen will not be placed in wooden lockers or hung against partitions. Metal lockers should be used and these will be placed well away from partitions and preferably on a floor of non-combustible construction. Some careful managers will not allow the use of any lockers, but require that clothing be hung on metal racks. This has an advantage, for lockers are too often the receptacles of much objectionable material. A recent fire of considerable magnitude showed plainly that greasy clothing should be hung far enough away from other combustibles so that the clothing may be consumed without doing further damage.

Automatic sprinklers are too well known to need description and their value has been so amply demonstrated that no one should need to be convinced that they should be installed in every factory where there is combustible construction or occupancy. They should be supplemented, however, by an ample supply of fire pails or chemical extinguishers. There is considerable difference of opinion as to which of these is better, as "first aid." The fire pail is the simplest, and immediately suggests its use at the start of a fire. Quite often it appears desirable that both fire pails and extinguishers should be supplied. Another important adjunct is the small hose. This is usually 1¼ inch unlined linen with ⅜ inch nozzle.

Treated Sawdust Good Agent.

It should be remembered that water, however applied, is not a good extinguishing agent for fire in such materials as gasoline, paint, varnish and japan. For this kind of fire, the sand pail is also discredited. It has been found that a good extinguishing agent is sawdust mixed with bivarbonate of soda in the proportion of ten pounds of the latter to a bushel of sawdust. This mixture should be kept in bins near the point of possible need and a part of the outfit should be a long-handled shovel ready for instant use in applying the sawdust.

Another excellent means of extinguishing such fires is found in the use of extinguishers of the usual form charged with the constituent elements of "foamite." On applying this to the fire, a thick blanket of foam is produced which floats on the surface of the burning material and gas is liberated which smothers the fire. It is highly important, however, that for any given service, the extinguishers shall be provided in numbers and capacity sufficient to entirely smother the fire which may result from the amount of the combustible material to be used.

Lastly, it must be kept constantly in mind that no protective system can do itself credit unless it is maintained in perfect condition, and that no factory is running at maximum safety unless all combustible waste materials are promptly removed to points where they cannot do damage. The greatest danger to the protective system is that valves controlling the water are so often left closed after repairs to the piping system or for a variety of other reasons. The most careful and constant supervision should be given by the factory management to see that all protective agencies receive perfect maintenance and that those who are concerned in their use understand their construction and the conditions under which they can best perform their mission. Perfect order and neatness of the plant added to a proper fire protective system, will go very far to insure that the plant will not be interrupted by fire.

Workmen Lose As Well As Owner

Fire Prevention Vital Problem of Employee—Closer Co-operation Between Owner and Workman—Care and Cleanliness as Antidote—Large Proportion of Loss Preventable

By Geo. F. Lewis, Deputy Fire Marshal of Ontario

Self-satisfaction and contentment with present conditions is a most dangerous factor in the life of an individual, a business, a community or a nation. No great thing has ever been done without a vision and there exist in every community the forces and the ability to solve that community's problems. They may be and frequently are, undeveloped, but they are none the less there. These forces must be sought out, stimulated, trained and developed, and then applied to problems of the community. Efficiency follows organized effort.

A normal man or woman is bound to be vitally interested in the health, happiness and general welfare of the community in which he or she lives; and, according to the laws of nature every man is equally interested in the progress and prosperity of the business with which he is connected and which is functioning to give him a livelihood.

The lumber and wood-working business from a fire prevention standpoint has peculiarities of its own and these conditions should be carefully studied and corrective as well as preventive measures adopted to protect and safeguard the individual business from fire so as to insure its continuity as well as its permanency as a going concern, one which has probably taken many years to establish.

Stand on Common Ground.

Here capital and labor stand on a common ground, for while capital may be partially protected against

loss by fire insurance, labor has no protection and quickly finds that its means of support has vanished. To the man behind the bench, therefore, I most strongly appeal for co-operation in the Fire Prevention Campaign now sweeping broadcast throughout the land. Causes run in parallel lines. The great cause of fire and the great cause of disease are the same. Care and cleanliness are the antidote for fire as well as the antidote for disease. Eighty per cent. of the fire disease is preventable.

Wastefulness is one of our besetting sins, and fire waste is an economic crime, caused principally by carelessness and indifference. The fire waste in Ontario, not including forest fires, during the year 1918 amounted to $15,673,240. Caused by 9,740 fires. In 1919 the loss in the province was reduced to $10,514,-232 or 33% less than the year before. This saving of over five million dollars to the province was largely due to the support and co-operation of the magazines, the press, and the people, in the work of "fire prevention."

The enormous fire loss of the North American Continent amounting to more than three hundred and fifty million dollars annually, is one of the most important contributing factors to the high cost of living. What is burnt is irretrievably lost. To make up this stupendous amount of money an indirect tax is levied on every man, woman and child in the country. It is assessed on everything we eat, drink and wear through insurance premiums, collected and distributed by the insurance companies. The more fires we have the more the insurance companies must collect to pay the losses, and the less we have to spend for other things. The bread you eat and the coat on your back are insured through all their transitory stages; and finally you pay the cumulative premium when you buy the wholesome loaf and the suit of clothes.

Enormous Economic Waste.

Let me emphasize in the strongest manner possible that millions of dollars' worth of our substance is going up in smoke every month. Warehouses, grain elevators, factories, dwellings, lumber yards, mills, boots, dry goods, the products of the farm and of the forest are being destroyed by fire at the rate of thirty-three thousand dollars a day in this Ontario alone.

Two out of every three fires occur in our homes, which is a serious matter to contemplate when we consider the housing problem and the high cost of building material. It is yesterday's dirt that always starts the fire. The factories and industrial plants are, however, responsible for the big losses. Approximately five per cent. of the entire number of fires occur in this "Classification" and are responsible for nearly fifty per cent. of the total amount of the annual loss.

More than four times as many people are burned to death every year in Canada than are killed on steam and electric railroads. It is estimated that thirty thousand human beings are sacrificed yearly to the fire demon on the North American Continent. Fire is a good servant but a bad master.

Is there anything more important for us to do than help stop this wanton destruction of life and property, eighty per cent. of which is preventable. When the people decide to put the same energy into production and the conservation of necessities that animated them during the war, social unrest will be dissipated and high cost of living problems will be quickly solved.

This direct loss of millions, and an indirect loss of millions of dollars more, can be prevented and the money thus saved used to build up the resources and assets of the country if our merchants and manufacturers would but stop and think what precautionary measures should be taken in their individual cases. In your business the necessity of taking preventive measures, and the need of adequate protection are paramount. Study out your requirements, diagnose the case, and adopt the best and most practical methods of preventing fire. Avoid accumulations of rubbish, shavings and litter as you would the devil. If there is nothing to burn it is hard to start a fire. Next to order and cleanliness, inspection, automatic sprinklers and watchman service should be adopted.

Maintain Adequate Protection.

Have a reliable, mechanical check on your watchman that cannot be tampered with. Let him make his rounds every fifteen or twenty minutes. It will keep him awake and prevent thieves, firebugs, and boys playing with matches, from taking advantage of long periods of time elapsing between rounds.

In addition to having chemical fire extinguishers, of approved design, located at convenient points, it is well to have fire buckets, filled with water also scattered around. For effective work in quenching a fire add three-quarters of a pound of bi-carbonate of soda to each gallon of water in fire pails and casks. In unprotected places these may be kept from freezing by adding calcium chloride in varying quantities; ranging from half a pound of calcium chloride per gallon of water at twenty-nine degrees Fahrenheit to five and a half pounds where the temperature goes down as low as 50% F.

Automatic sprinklers are always on the job and when properly installed with sufficient water supply at proper pressure, and the equipment maintained in a constantly operative conditions have proven to be the most reliable and satisfactory fire extinguishing device in use. Out of fifteen thousand fires tabulated by the National Fire Protection Association where sprinkler systems have been installed, eighty-five per cent. were extinguished by one sprinkler head.

Forbid smoking in your premises unless in a room of fire-proof construction especially set apart for the purpose.

Forestall Spontaneous Combustion.

Spontaneous combustion frequently takes place in oily waste or heaps of rags soaked with oil; also in piles of sawdust, especially if it is very fine. Standard waste cans with self-closing lids should be used as receptacles for oily waste or oil-soaked material and as these become useless they should be burned in the furnace every day before closing.

Fire doors should be kept closed when not actually in use, especially at night, and they should always be kept free from piles of merchandise or other obstruction.

Faulty construction, an important topic in itself, is a serious fire menace. Openings in fire walls or small apertures made for pipes should be properly protected or closed up. Through these small openings fire travels very quickly.

No matter how young, how inexperienced, how insignificant our physical strength may be, or how small a part we may be assigned in the cast of life's drama, we have potential resources that can be applied in the work of conserving the lives and resources of our people. Especially is this obvious with regard to the prevention of fire.

The Art of Perspective Drawing

The Ability to Make Perspective Sketches is an Asset to Every Woodworking Employee—Obtaining Sizes From Photograph or Perspective Sketch—Securing the Perspective

By Arthur Kirkpatrick*

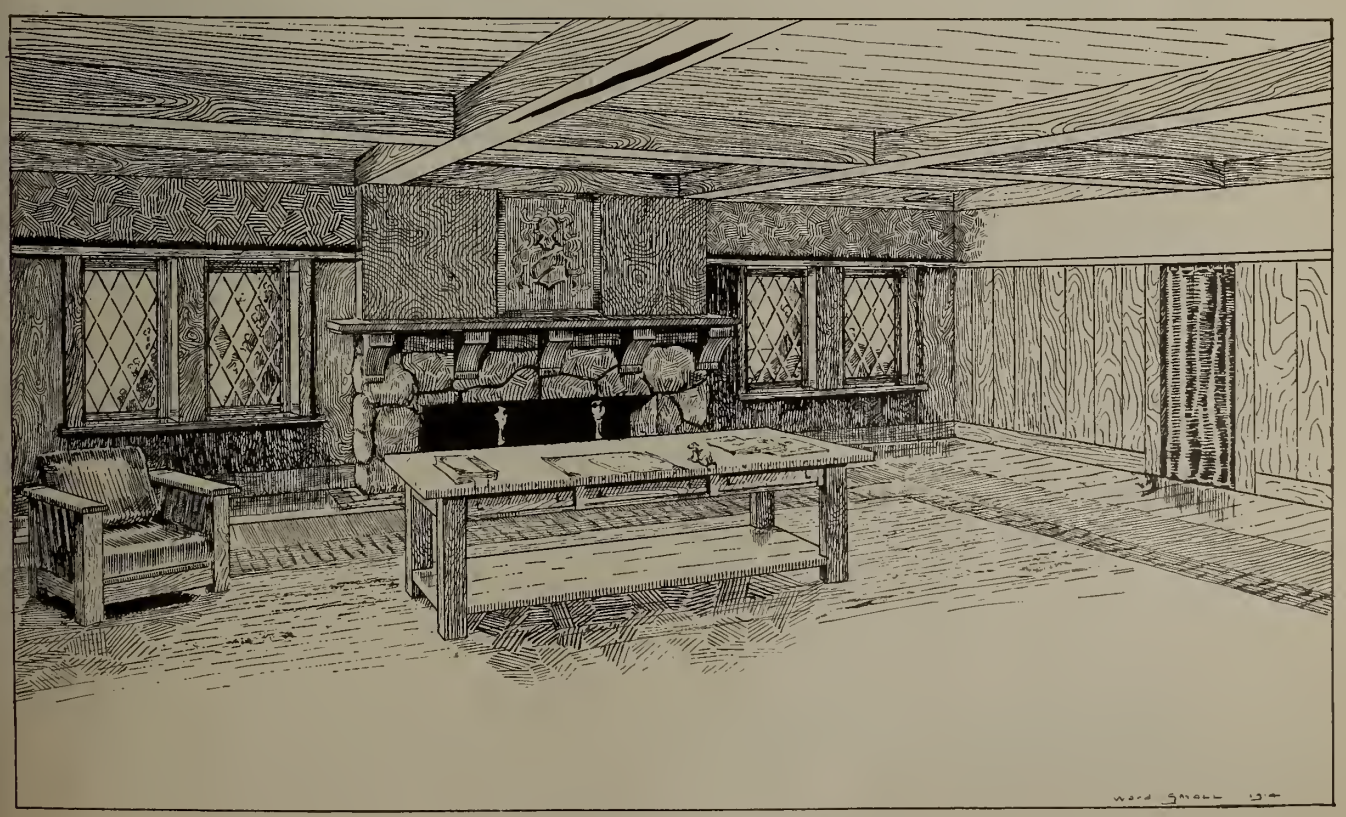
There is no manufacturer of furniture, no superintendent nor foreman of a furniture factory who has not found it necessary, at some time, to illustrate, or to make plain his ideas by drawing, thus saving long verbal explanations. The ability to make a quick pencil sketch in correct perspective requires some knowledge, and a study of the rules of perspective will repay these men manifold.

There are a few fundamental laws of perspective which are easily understood, and when one works in accordance with these laws, he will surely produce results. There are still other laws, beautiful to comprehend, but not absolutely essential to practical sketch application as used in the furniture factory. For instance, all light, shade and color are different degrees of vibration which proceed from the object viewed by the eye. There is no power in the lily which goes out to the sun, the sun's heat and light come to the lily. As it is buffeted about by the worldly winds, the lily reaches up, nods, and breathes out its perfume as if in praise and adoration. Neither is there a power in man which goes out to the landscape. The landscape comes to him, it enters through the windows of the soul, and is recorded by the law of the great Artisan on the scroll of character. The burning of incense shows man's first faint effort at emulating the lily, for the upward drift of the smoky odor gives the outward and visible impression which natural law performs in secret. Man, too, is buffeted about by the desires and passions of the world, and must needs return some beautiful thoughts of good character—equivalent to the lily's perfume. Thus even in such a mechanical study as perspective drawing, one may "consider the lilies of the field—how they grow."

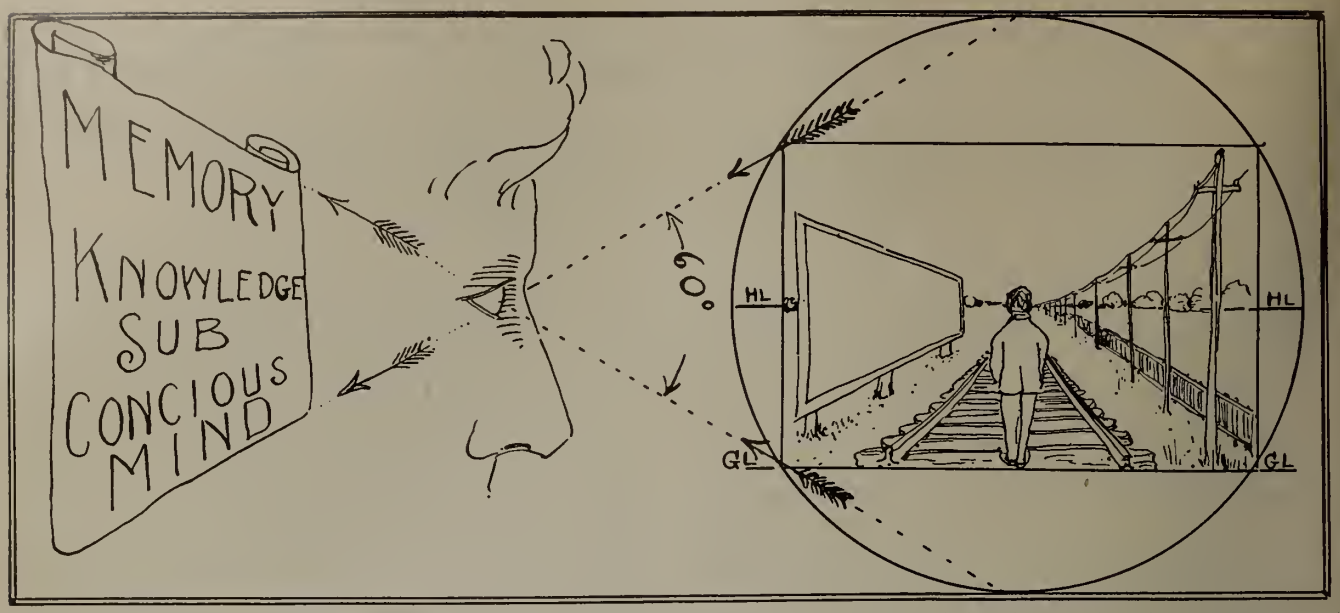
The method nature uses to aid us to visualize distant objects with a relative knowledge as to their size, shape and color is called perspective. A drawing or diagram made for the purpose of illustrating this method is called a perspective drawing. Perspective drawing is usually described in two divisions, ariel and lineal perspective. Ariel perspective pertains to the drawing of clouds in their different formations so that the required distant effect in landscape drawings and painting is secured. Lineal perspective refers to all diagrams and drawings made up of lines, showing objects varying in position, shape and apparent distance from the eye. Lineal perspective is the kind furniture workers are most interested in on account of its application to the many problems of the furniture factory.

One will note, in beginning a study of this kind, that erect or vertical lines which are parallel and appear to coverage should never be drawn as they appear, but vertical. All horizontal lines not at right angles with the observer will meet on horizon line and the places of meeting will be designated as Vanishing Points or V. P. The horizon line is always on a level

*Instructor, Grand Rapids School of Designing, in the "Furniture Manufacturer and Artisan."



Drawn by student from instructions given

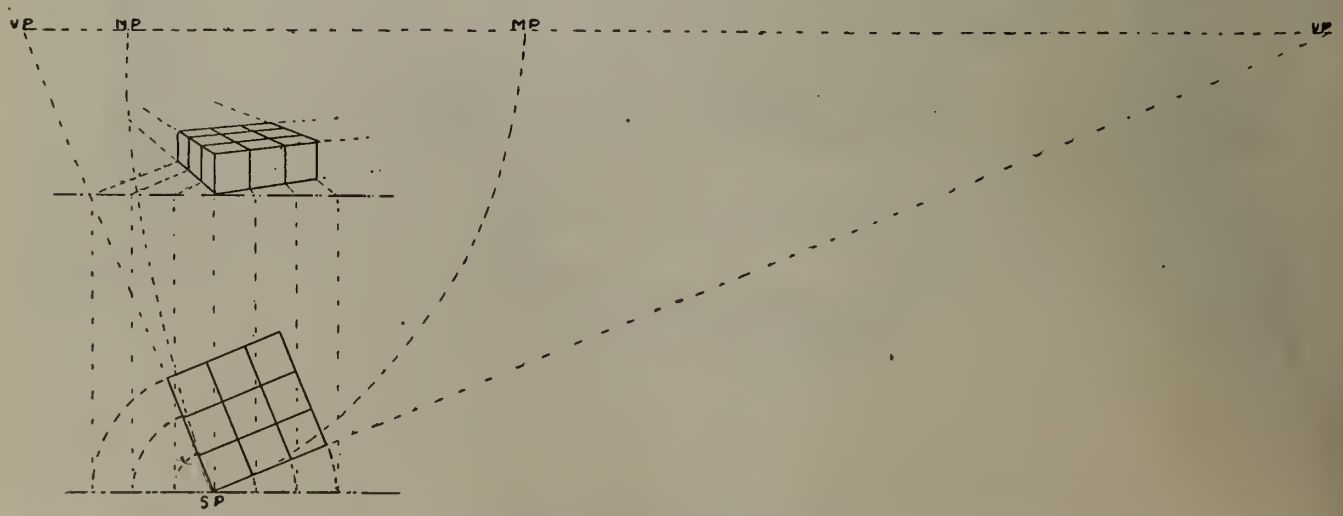


The scope of man's vision is about 60 degrees, and a picture drawn or painted must be represented within this scope in order to appear natural to the observer

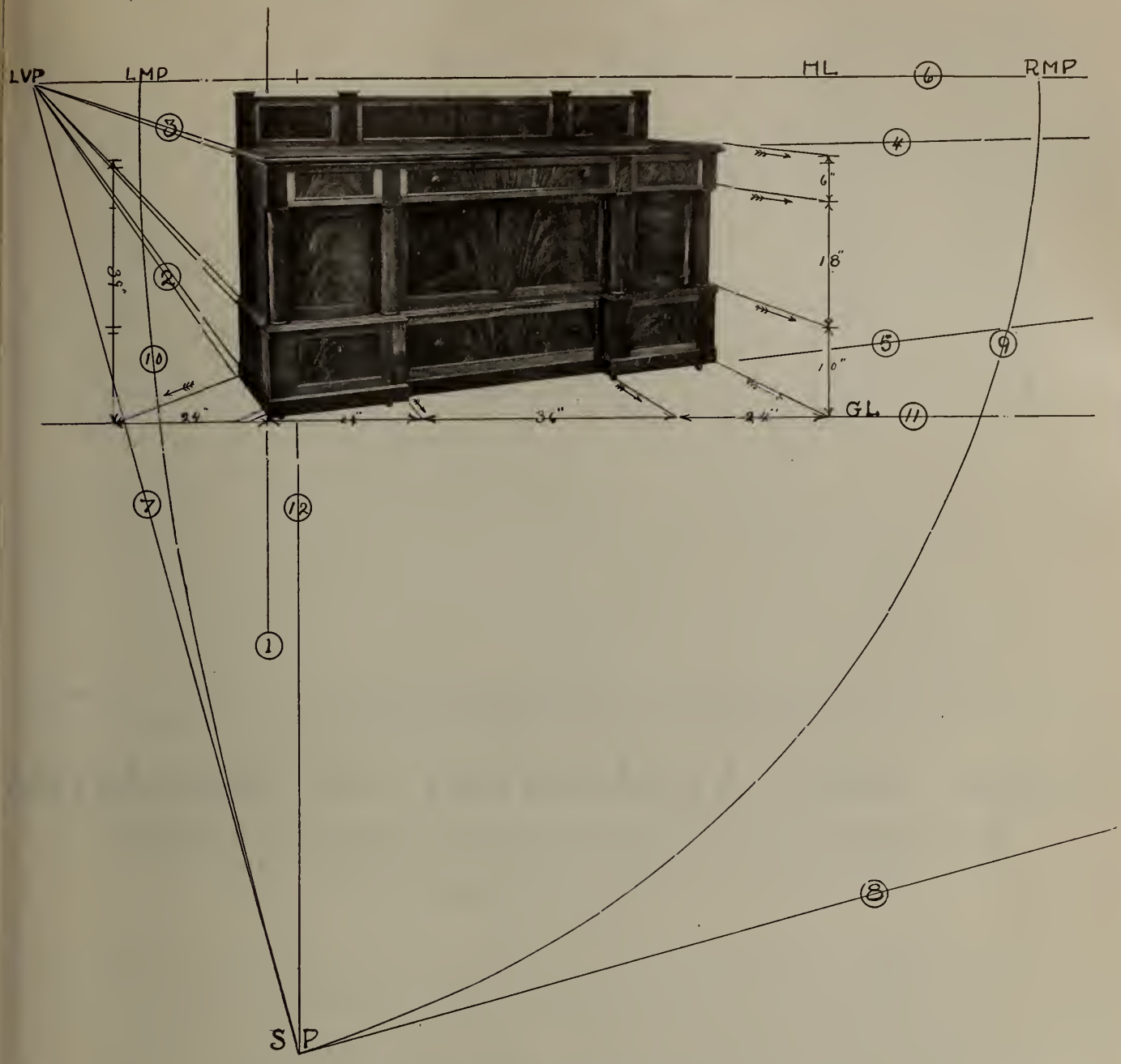
with the eye, that is, it represents the eye height in the picture of drawing. In a landscape, this line is formed where the sky and earth appear to meet. The horizon line will be marked on the diagram as H. L The lower edge of the picture is called the ground line or G. L. All measurements which pertain to heights of objects are taken from the measuring lines. The ground line must be the base for all measuring lines. The apparent height and size of an object depend upon the square of the distance represented between the object and the observer. Measuring lines and measuring points will be designated as M. L. and M. P., respectively. In a general way, one will notice that all lines above the level of the eye tend to fall toward the horizon line, while all lines below this level will rise to the same line, and will have a common place of meeting, at the vanishing points.

These few rules, jotted down in apparent confusion, will be more easily nderstood if studied with explanatory diagrams. One will find it interesting and instructive to take a paper and pencil and work out a perspective drawing with the purpose in mind of aiding one's self to a better understanding of the working laws back of this study. Commence by laying out a plan of the object to be drawn, next place a station point below the plan and mark S. P. This station point represents the point one stands upon when viewing the object. As the scope of human vision is about sixty degrees, be sure to place the point far enough below the plan so that the plan will easily come within the sixty degrees. Next draw lines from tha station point to a line representing the top edge of the picture, which is called the picture plane, and marked P. P. These lines should be parallel to the sides of the plan, and if the plan is square the lines will be at right angles with each other. These lines are called parallel lines, and are market P. L. upon the diagram. The parallel lines will meet the picture plane directly over the vanishing point, V. P. When you have established these lines to your satisfaction, follow the instruction lines marked with arrows to complete the drawings.

One will find it very difficult to put the fundamental laws into intelligent order without many examples explaining special features of this many-sided study. Suppose some customer has a photograph of a certain piece of furniture which he desires reproduced. He does not know the length, width or height, still he likes the general proportions as represented in the pitcure. To work out a whole detail of this piece would hardly be considered a task by one understanding the laws of perspective drawing. If he can draw a picture from a sectional plan, he can, by reversing his operations, draw a detail sectional plan from a picture. If any reader of this brief synopsis of the art of perspective



Showing method of drawing pile of blocks



Illustrating method of obtaining sizes from photograph or perspective drawing*

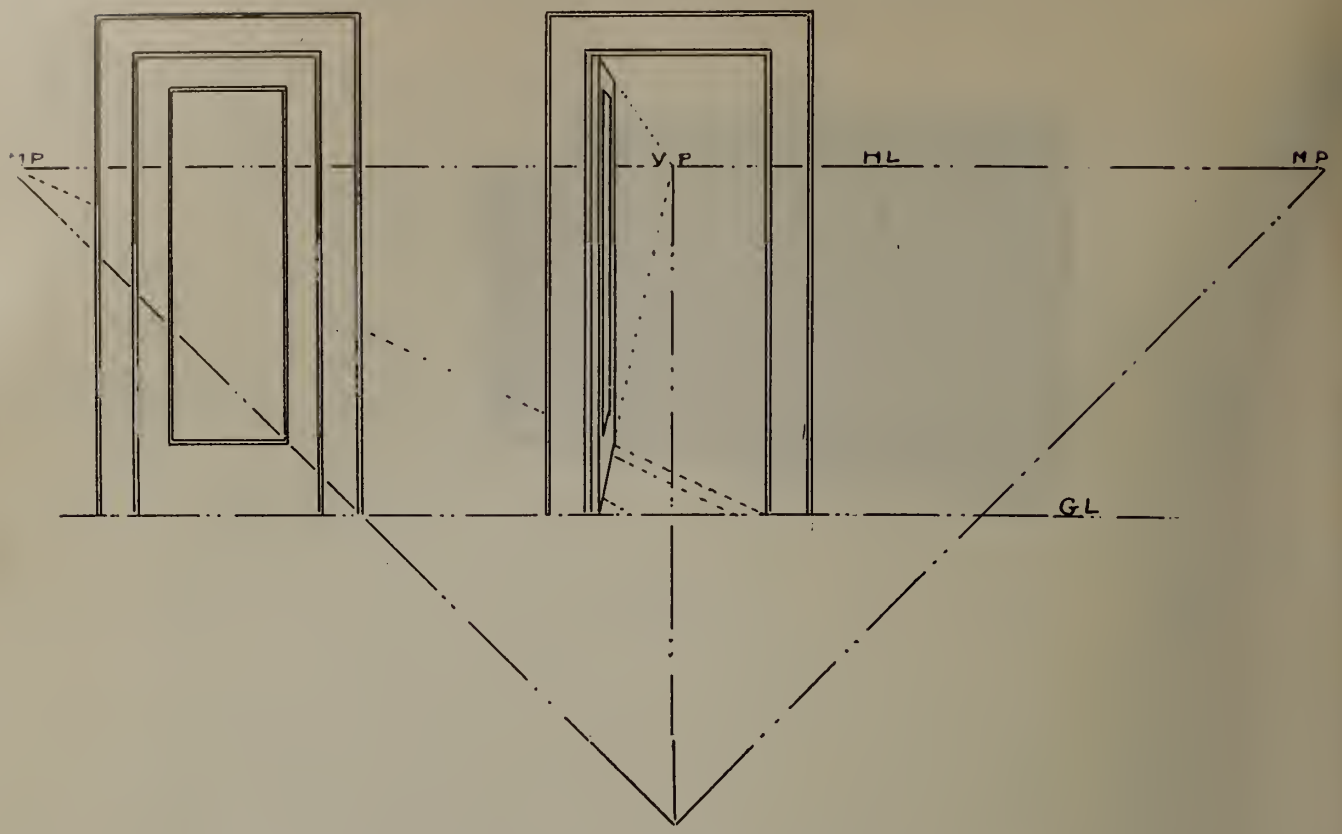
drawing be inspired to further study, he should endeavor to work in such a way as to lead him from the simple to the complex by a series of plates which are progressive in their subject matter.

As the student receives more light on this subject, he will see that pictures are not alone in the working of the law, for there is a perspective of evolution of history, of man's character, and of the growth of language from our most remote ancestors apeing at natural sounds down to the wonderfully complex but comprehensible methods of learning now in use.

Horace Dodge, an American automobile magnate, is building a yacht that is to cost in the neighborhood of $1,000,000. When completed this will be one of the most expensive private yachts in service on this continent. The boat is to be 250 feet long and is built for both inland lakes and ocean travel.

*First place the picture on a drafting table in accordance with the perpendicular line marked 1. This line should be drawn in line with the nearest corner of the object. Next draw lines, 2, 3, 4, 5, extending same to the right and left until they meet, and unite the two meeting points to a line marked 6. Line 6 is called the horizon line, and the places where the returning lines meet are called vanishing points. From the vanishing points, draw two lines at right angles to each other. These lines, marked 6 and 7, should meet under the nearest corner of the picture, and the place of their meeting is known as the station point. With the left vanishing point as a center and the station point as a radius, strike an arc or curved line and mark 9. Where line 9 intersects the horizon line (6), it furnishes the right measuring point marked R.M.P. Duplicate the operation from the right vanishing point and it will give you line 10 and the left measuring point (L.M.P.). Next draw the ground line marked 11 on the diagram. This line will be parallel to line 6, the horizon line, and will touch the lower edge of the picture. This line 11 is the base line for all measurements. Use the measuring points as centres and draw lines indicated by arrows, and the result will be that you obtain spaces on the ground line that represent sizes of the different parts of the picture.

By a general comparison, we find the base mould to be three inches wide, and using this measurement as a scale, we are able to determine the other measurements. The top is 24 by 84 inches, allowing for casters and top it is 39 inches high without the back, that it has an 18 inch column turned from 3 inch stock, that it has an offset in the base of 2½ in. Line 12 is called the vision line, and by it we are able to figure that the camera was nine feet from the object, and that the lense was 52 inches from the floor. With this knowledge at his disposal, any good draftsman can detail in full the object thus unfolded.



The lines on top and bottom of closed door are parallel and at right angles with the observer, while the lines on top and bottom of open door are retiring and therefore converge at a vanishing point upon the horizon line

Value and Application of Standards

Figuring Standard Time—Allowance Made for Rest Period—Calculating Percentage of Efficiency—Team Work Desirable Asset

By James J. Martindale*

(Second of series)

Consider the Indian with his pack making the portage. As far as the path over which he makes his journey is concerned, this has probably been in existence for many years. The Indian has no control over his route except for the occasional chopping out of some fallen tree obstruction. His track maintenance cost is nil. Nature supplies the footing, renewing it from time to time by her ever-bountiful supply of grass here, fallen leaves and twigs to cover up this sharp point of rock, or fresh moss on the side of that large stone where it was torn off last year in a nasty fall.

However, the Indian has control over his own dress and the load he is to carry. He can plan, schedule, route and dispatch himself. Firstly, as far as his dress is concerned, he is always ready for the job. Whoever heard of an Indian having tight and painful mocassins or boots or clothes? His footwear and the looseness and support of his clothing are all helpful to his task and not a hindrance—he has standardized his clothing to his own particular requirements.

Comfort and Efficiency Go Together.

The load will be placed most carefully. The heavy articles will be put at the bottom of the pack and the corners of any sharp pointed substance will be well protected by the plentiful use of socks, clothing, etc., so the load will feel comfortable to his back. When the packing is completed the load will be "hefted." It may be pounded on the ground two or three times in order to settle it and probably tried on the back to see how it fits. The load will then be picked up, carefully adjusted as to the location of its supporting straps and the journey commenced.

A pace which could be kept up for hours if necessary would be started. At certain intervals, a relief to tired muscles is obtained. When desiring to rest, the pack would not be removed from the back but a log would be found against which the Indian might sit, with the bottom of his pack resting thereon.

In the case above mentioned, the Indian has standardized his operating conditions in so far as he is able. He knows he can maintain a pace of 2½ to 3 miles an hour over the uneven path, provided he has a load comfortable to carry. He finishes the task in a comparatively fresh condition.

Analyzing Plant Conditions.

The problem of the manufacturer is similar to that of the Indian. He has no control of the troubled road over which he has to travel today. He, himself, cannot prevent coal strikes, switchmen's strikes, lack of steel or scarcity of wood. But he can control to a considerable extent his own immediate plant surroundings which have so much to do with the success or failure of his enterprise.

How should the manufacturer go about this problem? 1. Analyze plant conditions to discover plant

*James E. Morrison Co., Industrial Engineers, Detroit, Mich.

troubles. Find the congested (tight shoes and clothing) which hold up the flow of production. 2. Ascertain the best manner in which to control and move the material—is the trucking adequate and proper—does it function at the right time or is it generally late? 3. Are the plant conditions such—considering light, sanitation, air, etc., that the worker feels in a good frame of mind? Can he do his best—is the "load" he has to carry made comfortable for him—has he no distracting, disturbing sharp points of worry to prevent his continuous efforts?

Perhaps it is necessary to spend months in bettering conditions before a beginning can be made in the setting up of marks of accomplishment, or it is at times possible to make a start on the work of standardization in some well developed department and devote needed attention at the same time to other departments which are out of date in the conditions surrounding the worker.

Not to be Done Haphazardly.

In any event, in taking up betterments of this nature, it is most essential that the official in charge be relieved of his usual routine duties, to devote his entire working time to the problems in hand. Where industrial work has been inaugurated by the home organization, failure has marked many such attempts, principally because such work has been considered just as an additional burden to an official already well loaded up with his regular duties.

When this work has been accomplished, an acquaintanceship among the workmen has been made which is most important. They have been benefited, Vexatious troubles have been reduced—the spirit of the department or shop improved—"Individual Responsibility" is being experienced. The men gain faith in the company and their bosses.

Did you ever sit in an "eight" or play on an "eleven" and notice how those awkward actions, those faults due to inexperience, slowness or over-zealousness are slowly overcome and in time the men made to work as a unit? But to accomplish that change, the conditions of action or work must be right. The seat runners of an "eight" have to be well oiled,—the foot rests adjusted to each oarsman—the oar locks made to fit the man using the particular oar. The movement of all backs and legs and arms and wrists of the crew of an "eight-oared shell" must be synchronized. Any obstruction to the properly timed slide of one man can throw the whole boat off its keel and disrupt the swing of oars and the "run" of the shell.

Teamwork and Individual Responsibility.

The conditions to be striven for in the shop are similar to those exhibited in a well-trained "eight"—teamwork. Individual Responsibility, lack of annoying discomforts — everything so planned that the worker can do his best for the success of his department and company—is able to devote his mind continuously to the task in hand.

Assuming the betterments necessary and preliminary to the study of the jobs themselves, under way and substantial improvements obtained, what is the next step? It is a matter of recording facts and using horse sense in analyzing the information obtained for the purpose of setting standards.

In figure 1 is shown a sample time study form. It will be noted that observations of each elemental operation have been made and set down making a total of 100 observations in all. At the left under the column heading Sub. Oper., are noted the symbols applying to each elemental operation. The symbols are used as a means of shortening labor in naming the operations. At the right is shown a column for "low" time and one for "allow" time. The "low" time column is used to record the low time appearing in each operation. It is merely a guide to the observer in setting up his "allow" time.

The judgment of the observer is displayed in the times set down in the "allow" time column for each

JAMES E. MORRISON CO.
EFFICIENCY ENGINEERS
DETROIT, MICH.

OPERATION Assemble Top to Frame PART NO.

TIME STUDY

SIZE

DEPT. Assembly { MAN NO. 4062 RATE .375 TYPE
HELPER NO. RATE STYLE

OBSERVER DATE May 22, 1920. TIME BEGUN 10:02 A.M. TIME STOP A. M. P. M.

MACH. NO. DESCRIPTION Fit & Glue Top Panel for Mod. X. Cabinet.

GADCO 32745

SUB. OPER.	TIME																					LOW TIME	ALLOW. TIME
1	.30	20	22	23	26	28	30	20	20	24	26	20	19	18	20	20	26	30	20	26		18	.20
2	3.40	3.80	3.75	3.40	3.30	3.32	3.41	3.33	3.30	3.35	3.42	3.90	3.34	3.30	3.28	3.42	3.60	3.30	3.36	3.34		3.28	3.31
3	60	65	69	60	65	62	61	67	63	60	62	67	63	62	64	66	60	68	67	60		60	.60
4	1.10	1.05	90	78	80	84	86	88	87	79	80	90	1.20	2.00	88	90	86	80	90	80		78	.83
5	29	25	30	32	28	27	25	30	33	40	24	26	31	29	30	27	25	29	25	28		24	.26
TOTAL	5.29	5.95	5.86	5.33	5.29	5.33	5.43	5.30	5.33	5.38	5.34	5.93	5.65	6.39	5.30	5.43	5.57	5.37	5.28	5.28			5.20
AVERAGE																							

KEY TO SUP-OPERATIONS:-

1 Place cover frame on bench
2 Fit and mark cover for top panel
3 Drive & trim sprags
4 Glue
5 Clamp

5.20 x 20% (Allowance) + 5.20 = 6.24 Min

$\frac{6.24 \text{ Min} \times 100}{60} = 10.4$ hours per 100

Time study card showing how operations are analyzed

sub-operation for the purpose of building up a standard time of the whole operation. The splitting up of an operation into its elements as shown, permits the observer to form a close estimate of the time necessary for each elemental operation, which built up with the other elemental operations into a complete operation, is more representative of the true possibilities of the job than if times were observed only on the complete "floor to floor" operation. The summation of the elemental times in the "allow" column gives a total time for the complete operation of 5.20 minutes per piece. This figure is compared to the totals on the horizontal line marked "total," as a check upon the judgment displayed in setting up the supporting figures for the "allow" time column.

Rest Period a Factor.

A standard time is that time which an average man after a reasonable period of instruction and experience can equal. It therefore must include, in order to be just, a reasonable allowance for rest periods and personal necessities of the worker. This allowance is in the form of a percentage and ranges from 10% up. On light work such as sewing where the operator can sit down most of the day, 10% or 12½% is sufficient. On work requiring greater effort and therefore resulting in more fatigue, a higher percentage must be allowed.

Frederick W. Taylor, in his Masterpiece, "Shop Management," gave a 30% allowance for shovelling. In moving pig iron or carrying very heavy loads, a greater allowance would probably be necessary. In the case illustrated, the allowance percentage being 20%, a total standard time of 6.24 minutes per piece is obtained. For convenience, this is changed to an hour per 100 basis by multiplying by 100 and dividing by 60 and the final standard time is 10.4 hours per 100 pieces. If one operator turned out 70 pieces in 8 hours, his standard hours would be 7.28 and his efficiency 91%. It is expected that the average operator after experience, can attain and continue to equal this figure of 10.4 hours per 100 pieces while the expert will exceed it. This is as it should be.

Application of Ball Bearings to Shapers

Enables Higher Spindle Speeds to be Maintained—Smoother Work and Increased Production—Lower Power Consumption and Freedom From Trouble—A Few Timely Suggestions

By G. C. V. Hewson

Few developments in recent years have so completely revolutionized woodworking machinery as the application of ball bearings. The primary cause for this remarkable change has undoubtedly been the ever increasing cost of labor. To compensate for higher wages, it became necessary to increase production and this could be accomplished most readily by increasing the speed of the individual machine. It was soon found, however, that there was a very definite limit to the speed at which bronze and babbit bearings could be operated. What was more natural than that the more enterprising designers should turn to ball bearings in an effort to eliminate this difficulty.

The first attempt to apply ball bearings to woodworking equipment on a commercial basis, was made in Sweden in 1907. The scheme proved a success from its inception and ball bearing equipped woodworking machines rapidly developed into an accepted standard in Europe, as well as on the North American continent. The success of this movement was marked; for

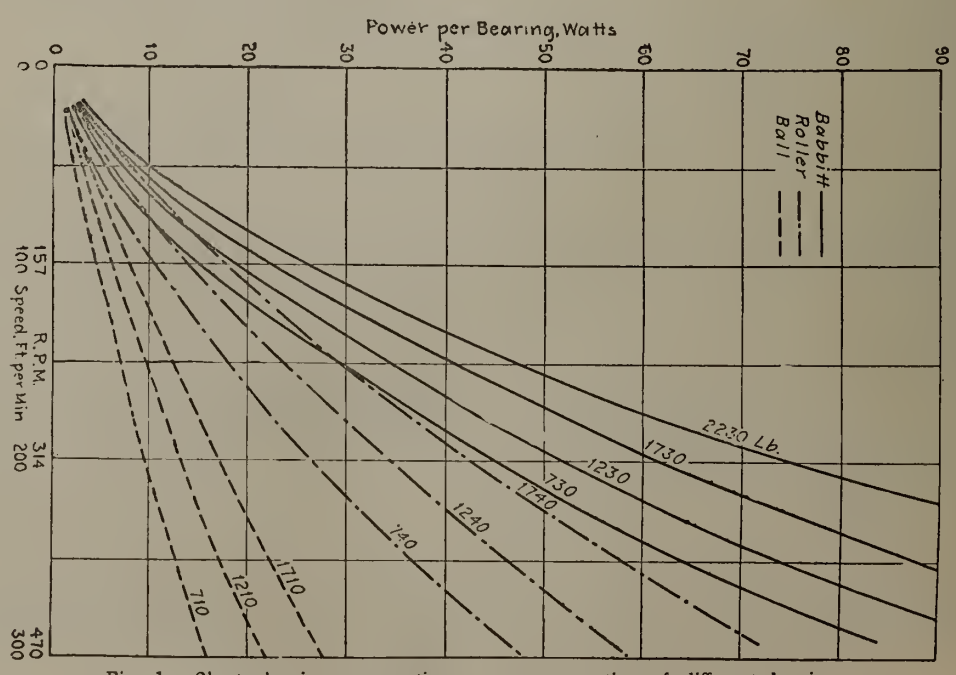


Fig. 1. Chart showing comparative power consumption of different bearings

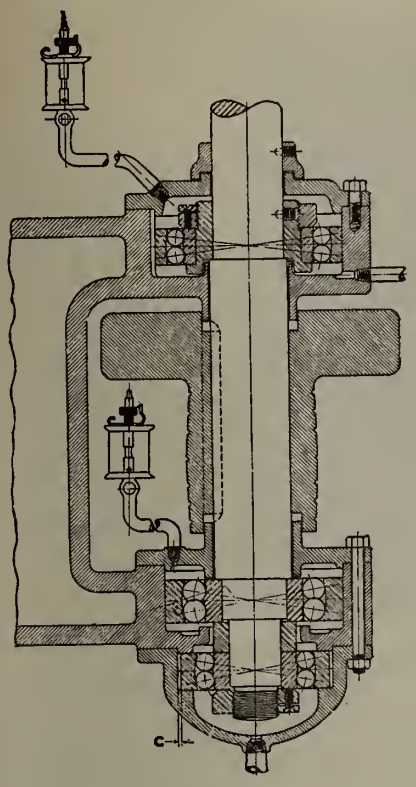


Fig. 2

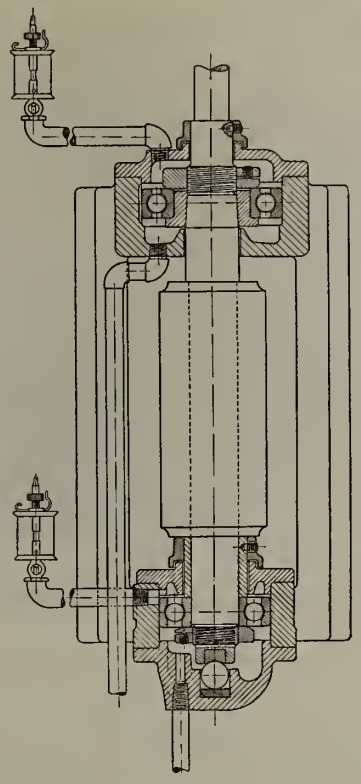


Fig. 3

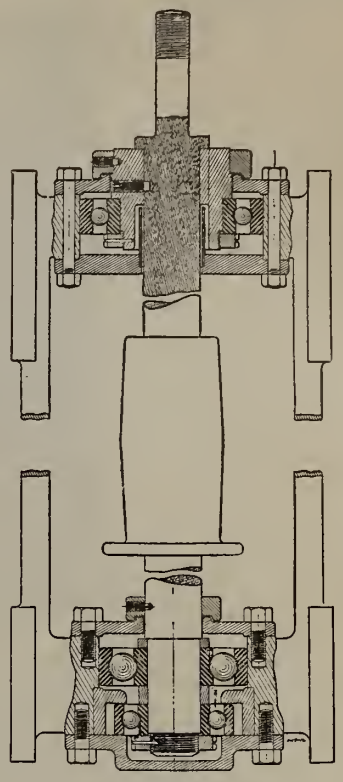


Fig. 4

not only was the primary essential of high speed obtained, but numerous other advantages were secured as well, such as: better work, less power, less oil, cleanliness, accuracy of alignment and freedom from hot boxes with the consequent reduction of fire risk and saving of time through the elimination of shutdowns.

Effects Saving in Power

One of the machines to which these advantages apply most effectively is the shaper, because of its necessarily high speed, and the fact that the friction loss in shapers with plain bearings is from 60 to 70 per cent. of the power delivered at the belt. About 65 per cent. of this lost power can be saved by the use of ball bearings. This means a saving of from 40 to 45 per cent. of the total input power.

The difference in power consumption between plain bearings and ball bearings is shown in Fig. 1, each curve giving the power required per bearings (of the kind indicated), to run a shaft, under the load, and, at the speed, shown, and it will be seen that the excess of power for babbitt over ball bearings increases for all loads with the increase of speed.

The lowest coefficient of friction of well lubricated plain bearings is about .025, whereas good ball bearings have a coefficient of friction of approximately .003 and within very wide limits, this is independent of speed. As an illustration, a machine which required five horse power to overcome the friction of well lubricated plain bearings would require 5 x .003/.025= 3/5 horse power when equipped with ball bearings.

But of far greater importance than this saving in power is the extent to which the spindle speed may be increased. The result of this is two-fold. In the first place, the higher the speed, the greater production becomes. A well designed ball bearing shaper will turn out about twice the work of a plain bearing shaper with the same number of spindles, secondly, the higher the spindle speed the finer the finish that is given the product, irrespective of whether it is cutting with or against the grain, so that very often sanding is not required. This is of importance, because sanding usually means considerable expense and in shaper work it often amounts to twice the cost of the work itself.

Mounting of the Spindle

In designing a spindle mounting, it should be remembered that the shaft is short or medium and its speed is high. The radial load carried is light, but in addition there exists a small amount of end thrust, due to the weight of the spindle, which must be taken care of.

Fig. 2 shows a mounting where SKF self-aligning bearings are used and it is a design which has proved extremely successful in practice. The upper and middle radial bearings carry the radial load, whereas the lower bearing is held only for thrust. It may seem curious, at first sight, that a radial bearing should be used for this purpose instead of a thrust bearing, but a little consideration will reveal the reason.

If a thrust bearing be run above a certain speed, governed by the size of the bearing, the centrifugal force will cause so much strain and wear on the ball retainer, that fracture soon occurs. Thrust bearings with ordinary pressed steel retainers, may be operated to speeds giving a centrifugal force not in excess of 8.8 lbs. A radial bearing, however, is not effected in this way and serves the purpose of a thrust bearing admirably, where the thrust is not large. In this design provision is made, for a separate drop sigh:

Fig. 5. Preston double-spindle ball bearing shaper

feed oil cup for each bearing housing. A light grade of oil, free from either acid or alkali, should be used.

Drive Pulley Provides Momentum

The drive pulley on the spindle of Fig. 2, has a certain amount of extra metal, so distributed about the shaft, as to form a flywheel. This provides sufficient momentum to carry the spindle through an extra heavy cut, such as a knot, without any appreciable drop in speed and renders the speed fluctuation in such a machine very small.

In the fourth illustration, a spindle is shown mounted on Hess-Bright rigid annular bearings and in this as well as the former cases the upper and middle bearings are merely subjected to radial loss, while the lower one takes the thrust. The same general conditions obtain when rigid bearings are used as when self-aligning are employed, so that the question of relative merit is a difficult one. The self-aligning bearings has the advantage of a ball retainer which is quite open at the sides, thus permitting a freer circulation of the lubricant around the balls than in the rigid type. The latter has a closed side retainer and at high speeds, such a retainer tends to throw the oils off again. But this is merely a matter of opinion, as the whole question of proper lubrication of vertical spindles at high speed will probably be reconsidered. It seems possible that some scheme of forced circulation with a centrifugal pump at the bottom of the shaft could be cheaply and effectively employed.

The two applications just given may be used for what might be termed medium speeds; that is up to about 8000 R.P.M. Above this speed, some arrangement similar to that illustrated in Fig. 3 should be adapted, as certain stresses, negligible at low speeds, become great enough to warrant attention when the velocity of rotation is very high. This matter, however, is too complicated to be considered here. The point to be noticed, however, in this case is that the thrust is taken on a ball at the lower end of the spindle instead of a bearing.

The pulley in this application is held on the shaft, not by a key, as in the former case, but by being pressed firmly against the shaft shoulder at the top, by the nut at the lower end, and the intervening sleeves and bearings. In this way the balance of the spindle is maintained. Where a key is used, it tends to cause vibration, as no method of balancing will completely offset the key at the R.P.M. usually employed. For the same reason an endless leather belt, shaved down to a uniform thickness, should be used on the spindle pulley. Any type of belt lace or fastener is bad, and is likely to cause trouble.

Two Typical Applications

The machines shown in Fig. 5 and 6 have both been on the market for several years and have amply demonstrated that the claims of the makers have been more than fulfilled. Fig. 5 gives a machine built by

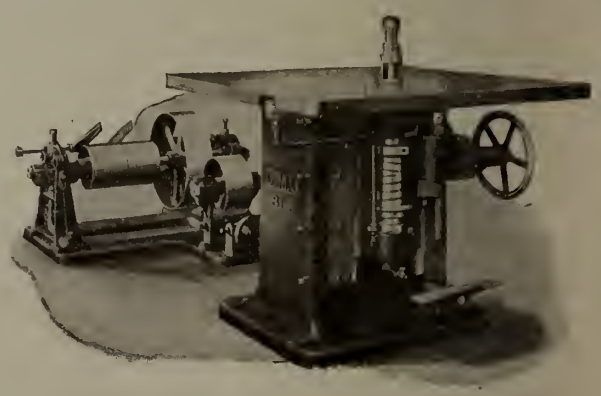


Fig. 6. C. M. C. ball bearing shaper

a company which was the pioneer in Canada in the application of ball bearings to woodworking machinery. It runs at 7000 to 8000 R.P.M., and the spindles are mounted on bearings of the self-aligning type. They are driven by spindle pulleys with sufficient metal properly distributed, to give the necessary flywheel effect. It will be noticed that these pulleys have also a spiral air groove which has proven quite effective in maintaining cool running. The shaper in Fig. 6, is very similar to the one illustrated in Fig. 5, and is also a Canadian product.

How Long-Bell Manufacture Oak Flooring

High Temperature and Humidity in Kiln—Left in Cooling Sheds 72 Hours—Conveyor Belts Help Lower Costs—Edgings Utilized for Dowels

By C. H. Murphy

During the winter months it is necessary, in order that we may properly kiln dry our lumber, to put it on stocks and let it stand on the yard for at least four months. In the summer time we can easily put it through our kilns in proper shape after it has been air-dried for ninety days.

In the loading end of our kilns we carry about 90 per cent. humidity, which we get from live steam blowing through perforated pipes. By using humidity, we thoroughly heat up and saturate the lumber before the drying process starts in. The temperature at the loading end is approximately 160 degrees. As the lumber works itself through the kiln the percentage of moisture that comes in contact with the lumber lessens, and at the discharging end we carry 175 degrees of heat and 50 per cent relative humidity. This dries the stock down to about 6 per cent. moisture content.

Low Moisture Content Not Advisable

Experience has taught us that it is not wise to kiln dry lumber below a moisture per cent of 6 per cent., for the reason that it will absorb moisture after standing in thoroughly dry sheds, to the extent of 6 per cent to 8 per cent. So if it is dried below 6 per cent., you naturally have more expansion to take care of after the flooring is worked. We operate twelve dry kilns, and it takes from seven to nine days for the lumber to go through.

The lumber is carried in the cooling sheds, and after about 72 hours it is run into flooring. We find it is necessary to hold it that long so as to prevent having what we term oversize flooring when it goes on the job, which is caused by the lumber taking on more moisture after being run, and naturally expanding.

After the lumber has been out of the kilns the proper length of time, it is sent into the factory and put through the rip saws, ripping the widths that the board will make most advantageously. From the rip saws the strips drop on a traveling chain, and the different widths are pulled in behind the proper machines. Those pieces with large defects go to the knot saws, where the defects are cut out, and the pieces laid where the side-matcher feeder can easily handle them.

Stock Matched on Milling Machines

The strips are placed in bins behind the side-matchers, where the side-matcher feeder picks them up and places them on an automatic feeding table which feeds the side-matchers. From the side-matchers the flooring, tongued and grooved, goes to the end matchers, where the defects are cut out, and the end matching done.

Our side-matcher equipment at the present time consists of three Yates machines and one Wood machine. We believe we are the only oak flooring manufacturers using the Yates milling machine, and we feel that the work done on the milling machine is far superior to anything that can be done on the old style machine. With this machine the stock is fed through edge-ways instead of bat, and it is absolutely impossible to find a knife mark. We also think that the side-matching machine on these machines is much better than can be done on the old style machine.

Conveyors Lower Handling Cost

After the stock passes through the end- matchers, it is graded and dropped into a conveyor running into the bundling room, where the stock is sorted for grade and length, each grade and length being put into a box When one bundle is accumulated it is taken out of the box, put on benches and racked up, 12 pieces to the bundle in 13/16 and ⅝ and 24 pieces to the bundle in 5/16 and ⅜. All flooring is tied with wires, and after being tied is placed on trucks and sent to the storage sheds, where each grade is kept in a separate pile.

When shipment is made, the stock is laid in the car and tallied with an adding machine. The lumber and flooring is never exposed to the weather from the time it is put into the kilns until it reaches the customer. Care is taken in selecting good roofed box cars in which to load our flooring, so as to prevent the stock being damaged by getting wet in transit. In the manufacture of flooring the utmost care is used in seeing that the stock is properly manufactured, both as to side-matching and end matching, and extreme care is used in the grading.

Complete Check on Each Operation

As you know, every piece of flooring carries our trade mark "Long-Bell Forked Leaf Brand" and each machine is numbered so that we know exactly what operator produced the flooring. Different colored crayon is used in marking the grades so that we know for a certainty which grader graded it, what unit of men bundled it, and in fact we have a check on the manufacture all the way through, and can easily tell who is responsible for flooring of excellent manufacture, as well as for any mis-manufactured or improperly graded stock.

In the factory, in addition to the flooring equipment, we operate a dowel unit, which produces about 1,500,000 dowels per month, ½-inch in diameter, 5 inches long. The dowels are made from edgings we get from the rip saw in ripping our stock to the proper widths.

Oak lumber is manufactured a little differently from pine. We have all kinds of widths to contend with, where pine is manufactured on specified widths. For example, we may get a board to the rip saw that is 5¼ inches wide, and the next one may be 10⅞ inches wide, or it may be any width up to 36 inches. The average width of the boards is about 9½ inches.

Extreme care is used in selecting lumber of a uniform color, and so the trade is assured of a very uniform color and texture in our flooring.

According to reports recently issued there are several thousand mahogany stumps in Nicaragua that could be taken out at a profit. These run from 3 to 6 feet in diameter and from 10 to 12 feet in height. The grain is very close and has a fine figure, thus making them the most desirable part of the tree for the manufacture of fancy veneers for high-grade furniture.

"What I Saw at the Canadian National"

Displays Both Interesting and Instructive—Wood Working Machinery and Equipment—Fine Work of Techical Schools—Furniture and Other Wood Products

By W. E. Clarke

With more to see, learn and enjoy than ever before the 1920 Canadian National Exhibition held in Toronto, August 26th to Sept. 11th, was, taking all things into consideration, one of the most successful exhibitions ever held in Canada. While the attendaance record set up last year was not equalled, the number of paid admissions were well over the million mark, to be exact 1,152,000.

Naturally when the editor of the "Canadian Woodworker" asked me to prepare a descriptive article, covering this stupendous affair, I gasped. One could fill a good-sized book without exhausting the material supplied by the countless, varied and interesting exhibits. However, when he explained that I was to deal with the exhibits from the viewpoint of a woodworker, covering only those of special interest to the woodworking industry, I gladly accepted.

Interesting Machinery Exhibits

Machinery Hall with its many displays of new and improved wood and iron-working equipment should have first call on the attention of the manufacturer and workman who prides himself on being up to date in his ideas and methods. Entering from the east one was confronted by the booth of the P. B. Yates Machine Co., of Hamilton, manufacturers of woodworking equipment. Here they were showing their well-known type of G2 edging and jointing saw. This machine is fitted with overhead arbor with endless feed underneath to carry the work beneath the saw. A special safety kick-back is provided to protect the operator from flying edgings and slivers. Extremely accurate work may be done on this machine. If desirable, the stock may be glued without further correcting. Another machine shown was the C3 Yates moulder. This small machine is rigidly constructed and produces smooth work at fast feels. Samples were shown of oak picture mouldings, run at 50 feet per minute. These were so smooth and well-finished that sanding or cleaning up was not required. Special heads fitted with milled cutters is the secret of this fine work. The far corner of the exhibit was taken up with a Yates No. 431 endless bed 3-drum sander. The endless bed is fitted with specially designed rubber discs which enable narrow and short stock or stock showing slight variations in thickness to be sanded to advantage. A newer machine shown was the S2 edge sander. This was only recently placed on the Canadian market. It is a very handy machine and is capable of doing accurate, smooth sanding on straight and curved edges. In addition to the fine equipment, a number of special flooring, shiplap and moulder heads were on display, such as expansion flooring heads, square and round heads, heads with milled cutters, jointing heads, etc.

The Garlock Walker Machinery Co., Limited, of Toronto, were on hand with their usual display of high-class woodworking and ironworking equipment. The woodworking machines shown included as American No. 25 straight edging and jointing saw, an American No. 2 double cut-off saw, an American knife grinder and two pattern makers sanding machines. The No. 25 edging saw is of the well-known straight edging and jointing type, that does such accurate work. It is fitted with two feed chains and four feed rolls. Very short stock can be ripped on this machine. The American No. 2 double cut-off saw is made to handle stock up to 48 in. wide and 8 ft. long. The saws are adjusted for distance by means of a hand-wheel. This is a very handy machine where there is a lot of equalizing or sizing to be done. It can also be used for ordinary ripping and mitering. The knife grinder on display was of the automatic type and was designed to handle both thick and thin knives. It produces very smooth and accurate work. The two sanders, one disc and one vertical spindle, were made by the Canadian Sander Mfg. Co., Brockville, Ont., and were specially designed for pattern makers' use. They were fitted with direct-connected electric motors, enabling them to be placed anywhere in the shop. Ironworking equipment was on display in the shape of lathes, drill presses, shapers, milling machines, grinders, precision tool-room equipment and machine tools of many kinds. One drill press that attracted a lot of attention was fitted with special chuck and cutters for making irregular holes such as square, octagon, hexagon, triangular, etc.

The A. R. Williams Machinery Co., Limited, of Toronto, occupied a space facing the western entrance. They showed both wood and ironworking machines. The woodworking equipment was represented by a Preston double spindle ball-bearing shaper and a Beach combination saw with jointing and boring attachment. The Preston shaper is of the high speed, ball-bearing type, described elsewhere in this issue. Driving the spindles at high speed not only increases production but results in a smooth, better-finished cut. This reduces the amount of sanding required to a negligible quantity. The Beach combination saw was a wood framed machine rigidly constructed for motor drive. It consisted of rip and cross-cut saw, together with a 6 in. jointer and boring attachment. A wide variety of work could be executed on a machine of this type. Ironworking equipment was shown in the usual variety, including lathes, shapers, heavy duty miller, filling machine, drill presses, etc., together with tools and equipment.

An interesting booth that attracted considerable attention was that of the Elliot Machinery Co., of Belleville, Ont. Here was displayed the well-known Elliot combination woodworker, together with a number of supplementary machines. Two combination woodworkers, together with jig saw, drum sander and planer, comprised the exhibit. The Elliot woodworker is so constructed that two men may work on it at the same time. It can be used for such operations as ripping, crosscutting, mitering, dadoing, jointing, boring and many others. The supplementary machines are belt-driven from the motor or engine on the woodworker. The planer is a new addition to the line. It is a small, compact, efficient machine having a capacity of 16 in. x 6 in. It is fitted with friction

feed and worm gear reduction, thus doing away with the usual train of gears.

Varied Displays of Equipment

The Goodyear Tire & Rubber Goods Co. were showing a complete line of mechanical rubber goods and conveyor and transmission belting, including their well-known "Klingtite" brand (formerly "Extra Power") of transmission belting. The mechanical rubber goods consisted of steam, water and air hose, together with packing of all description and other similar products.

The Dodge Mfg. Co. of Canada, Limited, Toronto, Ont., made an attractive display, consisting of their line of transmission equipment, including such items as pulleys in wood, iron and pressed steel friction clutches, hangers and boxes, couplings and collars, transmission ropes, gearings and other forms of transmission equipment.

Two new features were included in the exhibit of the Bond Engineering Works, Limited, Toronto. One was the Bond loose ball bearing counter-shaft and the other a new Bond patent single adjustment friction clutch. In the ball bearing counter-shaft the shaft remains stationery, the idling and driving pulleys being mounted on S.K.F. ball bearings. The advantages claimed for this counter-shaft are a saving in power, freedom from vibration and bearing trouble, and the use of a lighter countr-shaft. The single adjustment clutch is so constructed that the different shoes may be adjusted singly or as a unit. Another feature is that the shoes may be removed and replaced without dismantling the whole clutch. Other articles on display included Bond hangers, pillow blocks, spiro and plate couplings, etc.

The Acme Steel Goods Co. of Canada, Limited, Montreal, in their display were showing a line of corrugated fasteners, both plain and divergent, the latter pulling the pieces together with a draw. Box-strapping and box and pail fasteners of different kinds, together with bale ties, etc., were also shown.

Attracted Large Crowds

One other demonstration held in this building which, while not connected with the woodworking industry, was of sufficient general interest to warrant a little space, was the cutting of steel by the oxy-acetylene method. Large steel plates, 1 in. in thickness, were cut in various shapes with blow torches. The work was done as neatly and smoothly as if it had been cut on a band saw from a 1 in. board. The cutting was carried out at a speed of about 2 ft. a minute, the flame making a clean cut, leaving a kerf or groove about ⅛ in. wide. By the use of a pantagraph arrangement, various designs could be worked out in the steel. It is needless to say a large crowd gathered whenever any cutting was being done.

The displays of the work of the different technical schools, shown in the Government Building, attracted my attention in my role of woodworker. The examples, on view, not only included the usual simple elementary models so common to manual training work but included many examples of fine furniture and other more pretentious articles, which showed a fair amount of skill on the part of the pupils, both in execution and in design. This display should tend to disprove the oft-heard statement that technical schools merely give a smattering of practical knowledge. If a pupil can construct an oak buffet or table or winding stair or make a beautiful carved taboret or chest having a well-matched, figured veneered top, he has acquired practical knowledge that should stand him in good stead in any factory. The technical and other similar schools should receive the whole-hearted support of every employer of skilled labor. Without institutions of this kind it is a question where the skilled mechanics of the next generation would come from.

An attractive showing of B. C. forest products was to be found in this same building. This was in charge of the newly-appointed British Columbia Lumber Commissioner for the east, Loren L. Brown. The display included samples of the different commercial woods of that province in various finishes, also samples of numerous products made from B. C. woods. Several pieces of furniture were on display, simply to show the variety of uses to which these woods might be adapted. One set, consisting of library table and upholstered chair, that attracted considerable attention was made of B. C. fir and finished in a dark driftwood effect, known as "Sugi" finish. Two fine examples of B. C. timber proved of general interest. One was a piece of clear fir 3 in. by 15 in. by 32 ft. and the other a clear Sitka spruce deal 3½ in. x 12 in. by 30 ft. The booth itself was nicely panelled in B. C. woods, making an attractive and educational display.

Hollerith Sorter Received With Interest

A stroll through the Process Building revealed the exhibit of the International Business Machines, Limited, of Toronto. This consisted of a wide range of time-recording and time-keeping clocks in different sizes and designs for different uses. Some were entirely automatic, changing at specified times from "in" to "out," also from shift to shift. The Hollerith electric tabulator and the Hollerith automatic sorter, were the subjects of unusual attention. With these machines a vast amount of valuable information is recorded on cards by a system of holes. These cards, when passed through the sorter, may be sorted to bring out any information required. After sorting, the cards could be passed through the tabulator, which would give various totals, covering the desired information. These machines are designed specially for cost-finding and keeping and figuring pay rolls.

Another exhibit of interest in this building was that of the Flint Varnish & Color Co. This was included within the display of the parent organization, the Canadian Explosives, Limited, of Montreal. The showing consisted of practically the full line of their well-known Flint varnishes and colors, including stains, enamels, dyes, fillers, varnishes, etc. The display was tastefully arranged and showed the line to good advantage.

Many Showings of Wood Products

Another phase of the exhibition that interested me in my role of woodworker was the displays of the manufactured wood products made by woodworkers themselves. The space at my disposal is too limited to attempt to describe in detail or even list these exhibits. Several well-known furniture manufacturers were showing lines of upholstered furniture and davenports. The same holds true of the number of makers of kitchen cabinets and refrigerators. Cedar chests were found in several booths while toys and woodenware were on display in others. Portable or sectional houses and garages were represented by several exhibits. Through standardization and the use of templets the sections of these structures are built so that the bolt-holes come together, thus making for easy and quick assembling. This one feature alone is doing a lot to increase the demand for sectional buildings.

General view of plant of Trenton Cooperage Mills, Limited, Trenton, Ont.

Would Reach from Toronto to Vancouver

Huge Quantity of Staves Manufactured by Trenton Plant—Production Costs Lowered by Labor-Saving Installations—Description of Manufacturing Operations

Little is written or heard about the manufacture of cooperage stock, yet this is a large and important branch of the Canadian woodworking industry. A number of large plants, employing many hundreds of men, are equipped for the quantity production of staves, hoops and heading. The size of the branch

W. A. Fraser, manager and proprietor of the Trenton Cooperage Mills, Limited, Trenton, Ont.

of the woodworking industry can best be judged by the value of its products which in 1919 ran from $4,000,000 to $5,000,000.

One of the larger of our cooperage plants is that of the Trenton Cooperage Mills, Limited, Trenton, Ont. This plant has a daily output of 45,000 staves, 30,000 hoops, 3000 sets of heading and 500 barrels. Figured in annual output, this would run approximately 5,000,000 to 6,000,000 staves, 3,000,000 hoops, 250,000 sets of heading and 120,000 barrels. In addition about 500,000 ft. of lumber is cut and disposed of each year. Some idea of the amount of stock produced may be gathered from the fact that if the 6,000,000 staves produced yearly were to be placed end to end they would form a continuous line which would reach from Toronto to Vancouver, B. C. The total amount of timber worked up annually is in the neighborhood of 2,500,000 ft.

The wood used is largely elm. Smaller amounts of pine, poplar and basswood are worked into heading stock and also made into sawn staves. It has been found that elm is admirably suited for the manufacture of coiled hoops, in fact, to date, a satisfactory substitute for this wood has not been found, and makes a good cut or sliced stave, so that naturally it is preferred by most manufacturers of cooperage stock. The clear, straight-grained material is made into hoops and the balance worked up into staves. Some of the American plants are using red gum for cutting staves, and while this makes a good stave, it is not at all suitable for hoops.

The raw material in the shape of elm, pine, poplar and basswood logs is purchased in the open market, largely from the farmers and owners of small timber tracts, and in addition a fair proportion comes from the company's own holdings in North Hastings. About six camps were operated last year in these limits. The mill at Trenton enjoys an almost ideal location as it has trackage and deep water frontage. This enables logs to be brought in from the surrounding county by both rail and water and also assists in the distribution of the finished product. Trenton itself is the hub of a network of railways. The C. P. R., G. T. R. and C. N. R. run through the town and in addition a number of smaller local lines serve the adjoining districts.

Efficient Handling of Material

The logs are all lumped in the booms and fed to the log haul-up. At the present time there are about 1,000,000 ft. of material in the water and on the bank. At the head of the log haul is a power drag saw. Here the clear stock for the hoops is picked out and bolted to length. This is sawn into 1½ in. plank. The balance of the logs are cut into planks and squares for staves. The sawyer must follow the grain closely for the staves must be sliced so as to show the edge-grain. The pieces drop from the rotary saw on to live rolls which carry them to a large trim-saw. This saw cuts the stock into bolt lengths.

These bolts, together with the hoop plank, drop on to a chain conveyor and are carried to the steaming and boiling vats. The hoop stock is piled in large, open tanks and boiled, while the stave material is placed in close retorts and subjected to steam for about twelve hours. The temperature and dryness of the steam is varied according to the condition of the wood. When the material is green and full of sap and moisture, a dryer steam is used.

The accompanying rough sketch will give an idea

of how handling is reduced to a minimum and production speeded up. The material is carried past the trim saw on live rolls, then drops on the endless chain conveyors which carry it to the tanks and steaming chambers. The long hoop stock is laid out on a wide table and then piled into the vats, while the stave material is picked right off the conveyor and placed in the steaming retorts.

Slicing Staves and Bolts

Each chamber holds about 2½ cords of material. About 25 cords of staved wood constitutes a day's cut for the slicer. This amount would about fill 10 retorts. As 12 retorts are provided, there is always one or more empty. Thus the men are filling an empty chamber at one side while on the other side a number of men are unloading another one. As the bolts are taken from the steaming chamber, they are piled on trucks and peeled. The bark comes off very readily when the wood is hot. The loaded trucks are run to the equalizing saws, which consist of two saws mounted on one arbor, together with cradle, where the bolts are cut to the exact length required. The saw operator piles the sized stock on a small table, which is within reach of the operator of the stave cutter. In this way excessive handling and lost motion has been to a large extent eliminated.

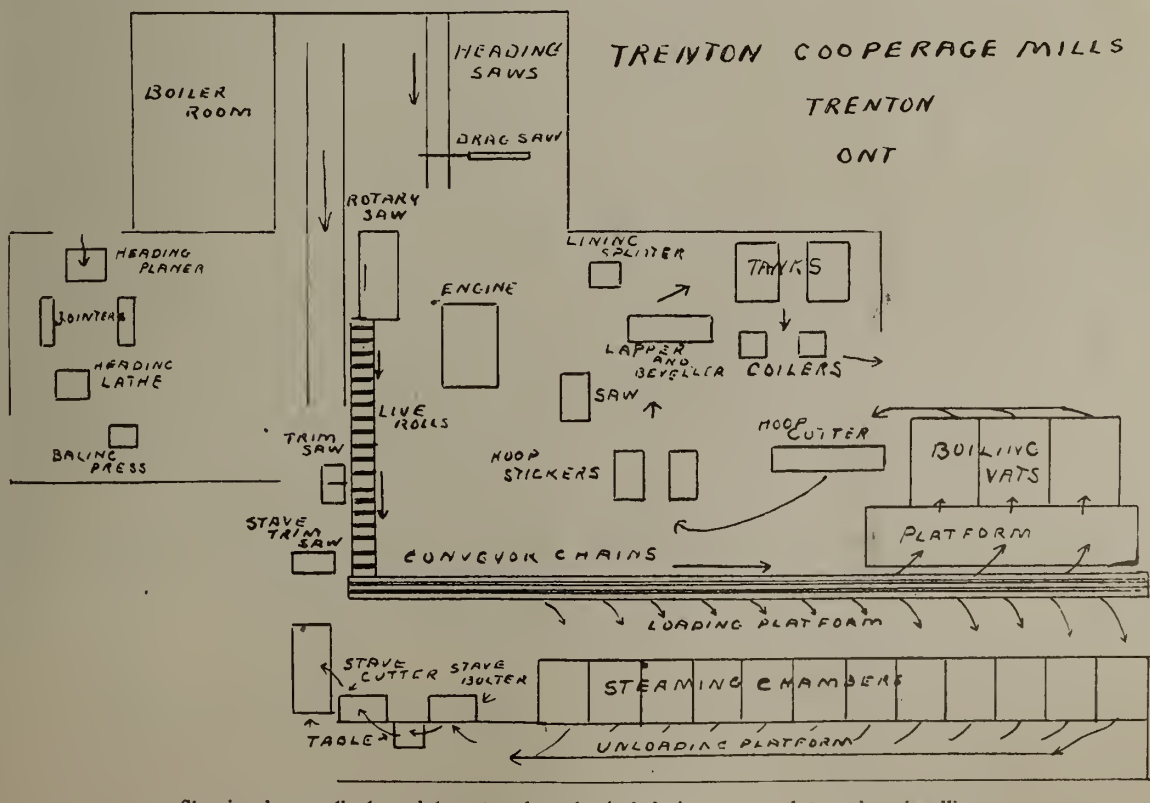
The staves are sliced on a large knife which works them to the radius of a 20 in. circle. This radius may be varied to suit the requirements of different sized barrels. With this machine one man can cut about 45,000 staves in a day's run, but to do this he does not lose very much time. A helper working behind the stave slicer sorts the staves as they are cut. The good ones are loaded on wagons and taken to the drying shed, while any that will make shorter staves, such as those required for kegs, are passed to a trim saw where they are brought to length. The very narrow pieces and the cull material go to the furnace room. It is not all burned, however, as the best is picked out and shipped to an American glass manufacturer who uses it for making crates. The stave cutter must be quick and must use good judgment as he is required to turn his material so that the staves will show an edge-grain. If cut on the flat there is a great tendency to warp and in addition they flatten out instead of retaining the curve.

Staves Air Dried in Large Sheds

The cut staves are hauled away to the drying shed and yards which embrace about 10 acres. Here they are piled so that the air will circulate freely. If the circulation is not good, there is a tendency for mildew to form. About 40 days is sufficient to remove all surplus moisture, though the time varies depending largely on the weather conditions. When dry, they are joined on foot jointers to the bilge required by the coopers and then packed in bundles. If the staves are required bevelled and crozed for the heading, they are run through an automatic machine which trims, bevels and crozes both ends This is usually done before they are joined to bilge. The stock is now ready for assembling or shipping.

The hoop material follows a different route. After being removed from the chain conveyor, the hoop stock is placed in large tanks where it is boiled. It then goes to the slicer, which cuts it into thin strips. These strips are made thin on one edge. To secure this taper, the plank is tilted automatically at every second cut. The hoop strips are run through a special sticker which dresses the two edges and rounds the outside corners. These machines are designed so that two pieces may be run through at a time.

The strips are now passed through an automatic machine which trims them to length, points one end and bevels the other end for the lap. They are next



Showing how well planned layout and mechanical devices are used to reduce handling

placed in tanks and boiled and then coiled on special machines. The hoops are made up in coils or rolls containing 10 hoops. These coils are piled in the yard and air-dried. Before being placed on the barrels, the hoops are again dampened. The boiling and subsequent air-drying tends to make the stock tough, strong and pliable.

Heading Made in Separate Department.

The heading material is bolted to short lengths, cut into ½ in. pieces on a swing cradle saw and then either air or kiln-dried. The dry material is taken to the heading mill where it is planed on one side, both edges jointed and then cut to shape on a machine which, if necessary, bevels both edges so as to fit the crozers in the barrel staves. The heading is placed in a press and wired in bundles containing 40 pieces or 20 sets.

In assembling, the staves are set up with temporary hoops known as "tresses," and placed over a barrel heater. The heat tends to dry out any moisture which might remain in the stave and also sets the stave in the shape of the bilge. If the staves used have not been bevelled and crozed, a special machine trims, bevels and crozes the whole end of the barrel. Permanent hoops are now forced on and the bottoms put in place which completes the assembling operations.

Both steam and electric power are employed. At one time a large motor was used to drive the rotary saw employed in breaking out the logs. It was found that this was not satisfactory, as there was not sufficient momentum or weight to maintain the speed when a long, heavy cut was encountered. A steam engine was installed to replace this motor and an adequate supply of power insured. The group drive is used in the motor installations. Thus, if an accident occurs to the transmission of any one department, it does not necessitate stopping the whole plant. One motor drives the hoop-making group, another the stave-cutting machines and a third the heading equipment, etc. Steam for the engine, vats and retorts is generated in two boilers. The fuel is sawdust, bark from the stave bolts and part of the cull staves. This leaves the trimmer blocks and slabwood to be disposed of for domestic fuel. The sale of this wood brings in a considerable amount of revenue. The sawdust and refuse from the saws is fed to one furnace by a chain conveyor. This material accumulates in sufficient quantities to keep this furnace going as long as the plant is in operation.

The Trenton Cooperage Mills was formerly operated by the Atlantic Sugar Refineries, Limited, but was taken over in 1918 by Messrs. Fraser & James, who operated under the name of the Trenton Cooperage Mills, Limited. Mr. W. A. Fraser recently acquired the interests of his partner and is now sole proprietor of this progressive concern.

The Sample Board Method of Testing Lumber

Simple Way of Figuring Moisture Content—Saves Necessity of Drying Sample Every Time Test is Made—Quick and Fairly Accurate

By J. B. Maas*

I is perhaps needless to say, with the present high costs of lumber, that in drying this stock it must be brought through the drying process in the best, easiest and quickest manner, for the modern idea of efficiency is "to arrive at some desirable end, you must do it by the best, easiest and quickest way." This definition most surely applies to drying lumber under the present conditions. The stock must be in the best condition; it must come out in the quickest time, and it must be put through in the easiest way.

The figure "3" seems to be related in some way to a dry kiln, for, in drying lumber properly, we have three principles that are fundamental. The three, when found together, put any kiln under absolute control, but with one of these missing, the other two are of little value. These three are :Ample heat or radiation, direct circulation and a method of controlling humidity. You can readiiy see, if heat and humidity are present, but circulation is absent, the result attained is practically nil. The same result will be attained if either of the other two principles is lacking.

It is the purpose, in this article, to take for granted that the operator does have the three factors mentioned above, and consequently will be able to follow consistently any good drying process which may be prescribed.

Simplifying the Operations

Every technical process seems mysterious to some people and extremely simple to others. I have noticed that the expert operator of any sort of machinery or apparatus invariably reduces his methods to the simplest terms. He seldom indulges in all of the phases of scientific research and data regarding the subject with which he may be dealing. On the other hand, by long practice and great familiarity with his work, he has reduced his operations to a few simple moves.

The drying of lumber offers great opportunities for a similar treatment on the part of the operator.

A great amount of knowledge regarding forestry and timber physics is undoubtedly worth while. Such knowledge increases the value of the operator's judgment and makes it easier for him to know his work. However, with or without such knowledge it is possible to reduce the proposition of kiln drying to a simple basis by what is known as "The Sample Method."

Selecting and Marking Samples

Now, in drying lumber, if you know at all times just the percentage of moisture present, half the battle of drying is over, for then it is but a question of using common sense to apply these principles. For example, in drying a charge of lumber, the practice consists of selecting two or three sample boards that are an average of those to be dried; then bring them to the cut-off saw; saw off one foot or so from one end and discard this piece. Now cut a cross section piece, about ¾ in. to 1 in. thick and mark it in this manner: K4T1SA. The significance of this symbol would be as follows.

Kiln 4	Truck 1	Left side (A side)
K4	T1	S.

K4T1SA

(The operator can use any other system of marking which will enable him to maintain the identity of the pieces).

The next cut on the board will be a piece two feet

*National Dry Kiln Co., Indianapolis.

long, which is marked the same as the one-inch disc. From another board repeat the process, marking each piece according to the place in the kiln it is go. For instance, the next piece may be K4T6B. Have some system of marking. I generally put the two-foot pieces marked "A" on the left side of its respective truck and those marked "B" on the right side. Use as many samples as you want. I generally find four to six in a kiln is sufficient, if they are representative pieces.

Weigh Disc and Sample

Now, weigh these discs up on a gram scale and mark the green weight on the chart headed "Green Weight of Disc," then place on heater to dry. Next paint the freshly cut ends of the two-foot pieces with a graphite paint, mixed with rosin. This is to keep the piece from drying out through the ends.

Weigh these pieces on a scale graduated to pounds and 1/100 of a pound, and record the weights on your chart, under heading "Green Weight of Sample." This done, place your two-foot samples in their respective trucks, about two-thirds the distance up the pile.

When the discs that are on the heater are thoroughly dry (that is, when they lose no more weight), weigh them again and mark this weight on chart under heading "Dry Weight of Disc." Now, by subtracting the dry weight of disc from the green weight of disc and dividing by green weight, we have the percentage of moisture, based on bone dry weight, but was present in the piece originally.

Example:

Green weight of sample ... ... 82 grams
Bone dry weight of sample ... ... 66 grams
Evident weight of moisture ... ...22 grams
22 grams ÷ 66 grams = 33-1/3 moisture content.

That is moisture content figured on percentage over bone dry.

Calculating Final Weight

Further, by assuming the wood itself to be unity, or one, and everything over that to be the percentage of moisture, we can readily figure out the weight that the two-foot sample will be when it is absolutely dry. This can be done by dividing the weight under heading "Weight of Green Sample" by one plus the percentage of moisture found in the green disc. This result is then marked under heading "Calculated Dry Weight of Sample."

Example:

Gross weight of sample . ...8 pounds
Eight pounds ÷ 1.33-1/3 = 6 pounds, or bone dry weight of sample

At this time the operator can also make calculation as to the future weight of samples when they are as dry as desired.

For instance, if it is desired to dry down to 5 per cent., the final weight of the above sample will be 6 pounds + 5 per cent. (4.8 oz.) = 6 pounds 4.8 oz.

With this result found in each different piece, the rate of drying or the current percentage of moisture at any time can be known by simply taking the two-foot samples from the kiln, weighing each individually and jotting down its current weight. When this is accomplished, replace samples in kiln again and subtract the calculated dry weight(as noted on chart) from the present weight of sample, and divide this by calculated weight, and the result will be the current moisture per cent. of lumber in kiln.

Application of Method

The following is an example of using the sample method of drying. In the first column we have the kiln and sample number. Taking K4T1A, for instance, this means Kiln No. 4, Track No. 1, A or left side of pile.

In the next column we see 44.40 grams, or the weight of green 1 in. disc. Adjoining this we see 36,20 grams, or the weight of the disc after being thoroughly dried. Now by subtracting 36.20 grams from 44.40 grams, we get an answer of 8.20 grams. Now, by dividing this by 36.20 grams we get 22.6 or the percentage of moisture that was in the disc originally.

In the next column, headed "Weight of green sample," we find 4.43—or this is the weight in pounds of the two-foot piece on the scale. The calculation oven dry weight of sample is secured by dividing 4.43 by 1 plus 22.6 per cent., or, figuring to nearest unit, 1 plus 23 per cent. The 1 is the unit of the wood itself and the 23 is tthe excess weight due to moisture. The result of dividing 4.43 by 1.23 gives us an answer of 3.60, or the weight of the two-foot piece when it is bone dry.

Now, supposing after ten days' drying the sample was taken out, and, after weighing, was found to be 4.00 pounds exactly. Then, by subtracting the calculated oven dry weight from the present weight, we get 40, and then by dividing this by 3.60 we get 11 as an answer, and this means at this exact time we have 11 per cent moisture in the sample. Suppose a few days later the sample weighed 3.80 pounds; then, by dividing by 3.60, we find the then present moisture to be 5.5 per cent.

Oak Barrel Not Strong Enough

The barrel in which the ill-fated Bristol barber, C. G. Stephens, unsuccessfully attempted to shoot Niagara Falls, was made byRoberts & Son, of Tottenham, Eng. This huge barrel was 6 feet high, 2 2inches heads and 32 inches in bulge. It was built of 10 years seasoned English oak, with convex heads to withstand external pressure of concussion. The barrel is bound by many massive hoops. The manhole frame and cover are similar to that used on large steam boilers, with bridge screwed down to tighten the joint. The opening is 18 inches by 12 inches. The air space would permit a man living only about 12 minutes, so a special breathing apparatus was installed to provide a supply of oxygen and purify the air.

That the attempt was unsuccessful is past history. The barrel was not strong enough to withstand the tremendous strains and pressure. One of the iron bands snapped shortly after it was placed in the water, probably due to the swelling of the wood. After the barrel containing Stephens went over the Falls it was never seen again, only a few fragments being picked up.

Sample Number	Weight Green Disc	Weight Dry Disc	Per Cent of Moisture	Weight Green Sample	Calculated Oven Dry Wt. of Sample	Current Date 4-20	Moisture 4-24	Pert Cen 4-30
K4T1A	44 gm.	36.20 gm.	22.6	4.43	3.60	11	5.5	
K4T3B								
K4T6B								

Illustrating how sample method is used

Distribution of Canadian Hardwoods

Stands of Different Woods Defined--Birch Most Important Native Wood—Conservation and Protection of Timber Resources—Greater Utilization of Waste

By R. G. Lewis*

Canadian manufacturers, using wood as a raw material, are no doubt well aware of the limited supply in Canada of such woods as hickory, oak, walnut, and cherry and they probably have a very good idea of the extent of the supply of the more common and more plentiful hardwoods, such as birch, beech, and maple; but it might be of interest to many manufacturers to outline the natural distribution in Canada of the more important hardwoods. In the first place it might be well to remind you of the fact that there are no woods of commercial importance found in Canada and not found in the United States. In most cases the supply in the United States of those woods which are common to both countries exceeds the supply in Canada.

On account of the rigors of the climate in the extreme northern part of Canada tree growth of all kinds comes to an end long before we reach the shores of the Arctic Ocean. The extreme limit of tree growth may be roughly indicated by a line drawn from the the mouth of the Mackenzie River, southeast to the mouth of the Churchill River on the Hudson's Bay and following the shores of the bay so as to include the greater part of the peninsula of Labrador. South of this line the treegrowth is represented by spruce, balsam, tamarack, poplar and jackpine; at first stunted and distorted by the extreme climatic conditions. Further south improving and developing into heavier stands which ultimately form the vast pulpwood resources of the Dominion in the East, and the local supply of saw timber in the northern parts of the Prairie Provincecs. The only hardwood which might be of interest to the wood turning industry in this type is the paper or canoe birch. This tree is abundant throughout Canada but only reaches commercial sizes on the most favorable sites. The popular species are also present and may in time become commercially important although they are at present looked on as tree weeds and are used only for firewood, rough construction and for wood pulp.

As we approach and cross the height of land dividing the waters of the St. Lawrence River from those of Hudson's Bay, we find a different type of forest. The white and red pines, the hemlock and cedar become important constituents of the forests and the more valuable hardwoods appear in turn as we proceed southward.

Commercial Hardwoods Confined to Southern Parts

It should be understood that the hardwoods of Canada are largely confined to the southern parts of the province of Ontario and Quebec and to the Maritime provinces south of the St. Lawrence River. West of the province of Ontario the commercially important hardwoods are almost entirely lacking from the existing forests. North of the Prairie Provinces the only deciduous trees are the poplars and birches. In the province of British Columbia, the forests are also almost entirely coniferous. There is a Pacific Coast oak, a birch and a maple which are sometimes sawn into lumber, but they do not occur in commercial quantities.

*Forestry Statistician, Ottawa.

We may therefore confine our attention to the Eastern provinces and commencing at the north we find the black ash and white elm the first important hardwoods to appear. These two trees are not found in quantity north of the Transcontinental Railway in Northern Ontario. In Quebec the northern limit of the black ash extends through the northern part of the province until it reaches the Gulf of St. Lawrence at Anticosti Island. The white elm in Quebec is not found north of the height of land. Both trees are found in the Maritime Provinces.

Birch Most Important Hardwood

The yellow birch which is Canada's most important hardwood at the present time and is more limited in its distribution than either of the preceeding species. It is not found in quantity west of Lake Superior. From this lake to the east its northern limits extends to Lake St. John in Quebec and also reaches the Gulf of St. Lawrence at Anticosti Island.

While the maple leaf is Canada's national emblem, the maple is not our most important hardwood. There are three species of maple of commercial importance in Canada, the hard or sugar maple and the two soft maples commonly called the white or silver and the red. The hard maple and the red maple are not found extensively north of Lake Superior in Ontario nor Lake St. John in Quebec. The white or silver maple is still more limited in its distribution, but is not so important commercially as the other two species

There are a dozen or more oak species in Canada, the most important of which is the red oak. This tree follows the same distribution in a general way as the yellow birch and the hard and red maples. The white maple, the beech, the white ash, the basswood, and the white oak are not found north of Sault Ste. Marie in Ontario nor the city of Quebec in Quebec Province. There are six hickory species in Canada, the most widely distributed being the butternut hickory which is found as far north as a line drawn from the neighborhood of Parry Sound through Central Ontario and Quebec to Three Rivers in the latter province. The hickories are unknown in the Maritime Provinces.

Butternut follows the same distribution in Ontario and Quebec but reappears in southern New Brunswick. Black walnut and sycamore are confined to the western peninsula of Ontario, and a narrow strip of territory along the north shore of Lake Ontario, and found elsewhere in Canada. The tulip or yellow poplar, the sassafras, and the chestnut are found only in the southern part of this western peninsula of Ontario, chiefly along the north shore of Lake Erie.

Have Limited Distribution

From these remarks it will be seen that the distribution of hardwoods in Canada is very limited. The extensive hardwood forest which covers the central eastern states, extends northward, across the border into Canada, but as it extends it loses tree after tree as the climate becomes more and more severe until the black ash, the poplars, and the paper birch, alone

(Continued on page 114)

Standard Specifications for Nailed and Lock Corner Boxes

Specifications of National Association of Box Manufacturers Endorsed by Society for Testing Materials—Specifications Canned Goods Cases Revised

Standard specifications for wood boxes has been the aim of the National Association of Box Manufacturers through their specification committee. This committee has been endeavoring to develop standard specifications that could be applied to boxes for different commodities. After much labor these specifications have been completed, except for two clauses, namely, a specific rule for outlining allowable defects in lumber and a general rule dealing with the reinforcing of boxes by attaching metal strapping, and have been approved by the association. The American Society for Testing Materials has endorsed these specifications:

This society at its recent convention in Asbury Park, N. J., adopted tentative standard specifications for wooden boxes (nailed and lock-corner construction), together with specific specifications for canned foods cases. These specifications are printed below.

The American Society for Testing Materials is an association of corporations and individuals, interested in industrial science and chemistry, formed for the promotion of knowledge of the materials of engineering and the standardization of specifications and the methods of testing. The society functions in creating its standards for shipping containers through its Committee D-10, of which John A. Newlin and T. R. C. Wilson of the Forest Products laboratory, Madison, Wis., are the chairman and secretary, respectively. The committee is made up of those who are engaged in various lines of research study on packing box construction, and of those who are most active in encouraging the work of standardization.

The following report of Committee D-10 was presented to the members of the society at their last meeting and was adopted as tentative standard for the society. A year hence these specifications will be voted upon and if then approved, will become permanent either in their present form or as modified.

Proposed tentative general specifications for wooden boxes, nailed and lock-corner construction.

These specifications are issued under the fixed designation D....; the final number indicates the year of original issue, or in the case of revision, the year of last revision.

Issued, 1920.

1. Types of Boxes Covered. These specifications are intended to apply to wooden boxes of nailed and lock-corner construction, and are directly applicable to all the styles of boxes.

1. Material

2. Seasoning. The lumber shall be thoroughly seasoned, that is, shall have an average moisture content of 12 to 18 per cent., based on the weight of the wood after oven-drying to a constant weight.

3. Defects. All defects in the lumber that materially lessen the strength of the part, expose contents to damage, or interfere with proper nailing, shall be eliminated.

4. Manufacture. Ends, sides, tops, bottoms and other parts of a box shall be well manufactured and cut true to size.

II. Grouping of Woods

5. Grouping of Woods. The principal woods used for boxes are classed for the purpose of specifications into four groups, as follows:

Group 1. White pine, Norway pine, aspen (popple), spruce, western (yellow) pine, cottonwood, yellow poplar, balsam fir, chestnut, sugar pine, cypress, basswood, willow, noble fir, magnolia, buckeye, white fir, cedar, redwood, butternut, cucumber, Alpine fir, lodgepole, jack pine.

Group II. Southern yellow pine, hemlock, North Carolina pine, Douglas fir, larch (tamarack).

Group III. White elm, red gum, sycamore, pumpkin ash, black ash, black gum, tupelo, maple, soft or silver.

Group IV. Hard maple, beech, oak, hackberry, birch, rock elm, white ash, hickory.

III. Dimensions of Parts

6. Thickness of Parts. (a) The thicknesses called for in specifications for boxes of any given commodity will, unless otherwise specified, be understood as applying to woods of Groups I. and II.

(b) When the material is specified (for Group I. and II. woods) of the thicknesses indicated in the following table, woods of Groups III. and IV. may be used with the following permissible reductions in thickness:

Specified Thickness of Parts (Group I and II Woods)	Allowable Reduction in Thickness if Group III and IV Woods Are Used
5/16 to ½ in. incl	1/16 in.
Over ½ tto 1 in., incl	⅛ in.
Over 1 to 2 in., incl	¼ in.

7. Permissible Variation in Thickness of Parts. The permissible variation below the thickness of parts specified in Section 6 shall not exceed one-eighth of the thickness of the part.

8. Width of Parts. (a) The maximum number of pieces allowed in any side, top, bottom or end of a box shall be as follows.

Width of Face	Maximum Number of Pieces
5 in. or under	1
Over 5 to 8 in., incl	2
Over 8 to 12 in., incl	3
Over 12 to 20 in., incl	4
For each additional 5 in. in width of face	1 additional piece may be used

(b) Two or more pieces Linderman-jointed shall be considered as one piece. No piece less than 2½ in. in width at either end may be used in any part, except for cleats or battens.

9. Surfacing of Boxes. The outside surfaces of boxes shall be sufficiently smooth to permit of legible marking.

10. Joining. (a) Ends 1 in. or less in thickness, if made of two or more pieces, shall be either (1) butt

jointed or matched and fastened with two or more corrugated fasteners; or (2) cleated.

(b) The size of corrugated fasteners to be used shall be as follows:

Thickness at Ends	Size of Corrugated Fasteners
7/16 in.	1 by 3/8 in.
3/4, 13/16 and 7/8 in.	1 by 5/8 in.
5/8 in.	1 by 1/2 in.

Schedule of Nailing

11. Kinds of Nails. (a) All nails specified in these specifications are standard coment-coated box nails.

(b) If other than cement-coated nails are used, 25 per cent. more nails shall be driven than specified for cement-coated nails. Plain nails driven through and clinched may be used for cleating.

12. Size of Nails. The size of nails to be used is determined by the species and thickness of the material in which the points of the nails are held, and shall be in accordance with the following table:

Size of Cement-Coated Nails for Different Species and Thickness of Material.

(The sizes of nails are given in "penny.")

Note: If the designated penny of nail is not available, the next lower penny shall be usesd, and the nails spaced proportionately closer.

13. Spacing and Number of Nails. (a) The spacing of nails holding the side, top or bottom to the ends of a box shall be as follows:

Sizes of Nails, "Penny"	Space When Driven Into Side Grain of End	Space When Driven Into End Grain of End
6 or less	2 in.	1¾ in.
7	2¼ in.	2 in.
8	2½ in.	2¼ in.
9	2¾ in.	2½ in.
10	3 in.	2¾ in.

(In order to ascertain the number of nails to be used, divide the width of the side, top or bottom [or length of cleat] by the spacing specified for the size of nails to be used. Fractions in the result greater than ¼ if the points of nails are to be held in the end grain, and greater than ½ if the points of nails are to be held in the side grain, will be considered as a whole number.)

(b) The spacing of nails holding the top and bottom to the sides of a box shall be 6 to 8 in. When material in the sides is less than ½ in. in thickness, side nailing shall not be used unless otherwise specified.

(c) No board shall have less than two nails at each nailing end. Where cleats of thickness not less than the thickness of the ends are used, approximately 50 per cent. of the nails shall be driven into the cleats.

14. Driving of Nails. Nails shall be driven flush.

(Overdriving of nails materially weakens the container.)

15. Strapping. Specifications to be supplied by the committee when the information is available.

Specifications for Canned Goods Boxes

Proposed revised tentative specifications for wooden boxes, nailed and lock-corner construction, for the shipment of canned goods.

Serial Designation: D 44—20 T.

These specifications are issued under the fixed designation D 44; the final number indicates the year of original issue, or in the case of revision, the year of the last revision.

Canned Foods Boxes. Issued, 1917; revised, 1920.

Wooden boxes of nailed and lock-corner construction for the shipment of canned foods shall comply with the tentative general specifications for wooden boxes, nailed and lock-corner construction (Serial Designation: D.... ..20 T) of the American Society for Testing Materials, except as otherwise provided in the table below:

Commodity	Type of Box Construction	Minimum Thickness of Material in Top and Ends	Sides†	Bottom†	Maximum Gross Weight of Box and Contents, lb	Permissible Variations in Inside Dimensions of Boxes
Canned Foods in Metal Cans (Fish, Meats, Fruits, Vegetables and Other Foods)	Nailed	5/8	5/16	5/16	90	Inside dimensions of boxes shall not exceed the exact length and width of contents by more than ¼ in., nor the exact depth of contents by more than 1/8 in.
	Lock-Corner	7/16	7/16	5/16	50	
		½	5/16	5/16	50	
		5/8	5/16	5/16	90	

*The thickness specified apply to boxes of Group I, II and III woods. When woods in Group IV are used the thicknesses may be 1/16 in. less than those specified.

†When one-piece sides and two-tops and bottoms of woods of Groups I and II are used, materially may be 1/32 in. thinner than specified. When rotary-cut gum lumber is used in one-piece sides and tops and not more than two-piece bottoms, the thickness may be 1/16 in. less than specified for woods of Group III, minimum thickness ¼ in.

Species of Wood Holding Nails	Thickness of Ends or Cleats to Which Sides Tops and Bottoms are nailed, in								Thickness of Sides to Which Top and Bottom Are Nailed, in		
	3/8. or less	7/16	½	9/16	5/8	11/16 or ¾	13/16	7/8	Less than ½	½ to 9/16	5/8 to 7/8
Group I woods	4	5	5	6	7	8	8	8	4	6	7
Group II woods	4	4	5	5	6	7	7	8	4	5	6
Group III woods	3	4	4	5	5	6	7	7	3	4	5
Group IV woods	3	3	4	4	4	5	6	7	3	4	5

Cost Figures on Cigar Boxes

At a meeting of the National Cigar Box Manufacturers' Association, held in New York recently, it was suggested that a national cost sheet be adopted by all the member manufacturers. From the cost figures presented the average cost of producing cigar boxes per thousand was computed as shown on the following itemized list:

Cigar Box Cost Sheet

Amount of lumber used in cutting up 1000 boxes; 1250' including waste.

Average Cost of Labor

Sawing and sorting	$ 4.90
Wood printing, 3 M Imp	1.62
Nailing	2.59
Sanding	1.29
Trimming	.97
Hinging	1.40
Pulling nails and cleaning	.99
Lining and cutting labels	.77
Pasting and papering	17.31
Glue machine operator	.89
Packing for delivery	1.61
Delivery	1.28
Foreman	2.48
Utilities	4.36
	$42.46

Material per 1000 Boxes

Ink	$ .14
Nails	1.03
Sandpaper	.11
Hinge cloth	1.14
Glue for labels and hinges	.80
Edging	4.20
Lining paper	1.83
Flaps and top sheets	.81
Paste	.59
Twine	.62
Paper wrapping	.44
Fibre boxes	3.81
	$15.52

Overhead per 1000 Boxes

Salaries	$10.11
Depreciation	1.22
Bad debts	.22
Travelling expenses	1.06
Dis. and Exchange, Dis. .06, Ex. .06	2.70
Insurance	1.29
Ex. office	1.16
Burden	1.97
Taxes	2.02
Auto service	.68
Advertising	.21
Rent, power, light, heat	2.74
	$25.38
Average cost	$83.36

The Wooden Shoe Sole

Wooden shoes and wooden soles for leather shoes are coming into greater use than formerly in this country, though the change is not very rapid or among people of all classes. It is a factory or a worker's footwear. The wooden sole keeps out water that would soak through a leather sole, consequently the wearer's feet remain dry under circumstances which would subject them to dampness if leather were worn. The wooden sole being warmer, the wearer's health is better during winter. Maple and beech are the best sole woods; and the most frequent wearers are miners, stable keepers, foundry men, teamsters, brewers, car conductors, and street workers. Lumber for soles is sawed two inches thick, but the thickness is reduced in manufacturing. Such a sole is much cheaper than leather and wears much longer. Noisiness and appearance constitute the principal objection to wooden soles.

Wood Box Manufacturers to Meet in New York

The twenty-first semi-annual meeting of the National Association of Box Manufacturers will be held at the Commodore Hotel, New York city, on October 7th and 8th.

Trade problems that concern the wood box industry and its allied industries will be discussed, and an interesting and profitable meeting is promised. The meeting of the association are always marked by cordial good-fellowship and practical common sense, and are growing in popularity.

Secretary Burr requests us to announce that all who are directly or indirectly interested in the production of wood boxes will be cordially welcomed to this meeting, whether they are members of the association or not. Non-members who wish to attend are requested to inform W. D. Burr, secretary, 1553 Conway Building, Chicago, Illinois, who will arrange hotel reservations, if desired.

Canadian Exhibit in London

The Department of Trade and Commerce, formerly the Canadian Mission in London, England, is to be congratulated on its enterprise in organizing and bringing to a successful issue the exhibition of Canadian goods held in London at the Agricultural Hall last month. The exhibition is the first of its kind ever held in Great Britain, and in view of the gratifying results it augurs well for Canadian trade in Europe; it is not too ambitious to suggest that the exhibition may be the precedent to others. Canada produces a comprehensive range of goods which are not made in Europe and others of a competitive nature which, it has now been established, will command a ready market.

Safe Guard Automatic Sprinkler Systems

In every part of the South there are manufacturing plants that have systems of automatic sprinklers installed for fire protection, and with the coming of real winter weather the danger of these being put out of commission by freezing looms large. Insurance Commissioner James R. Young, fire marshal for North Carolina, urges that these sprinklers be thoroughly safe-guarded against freezing, as an impaired sprinkler system is a liability and not an asset.

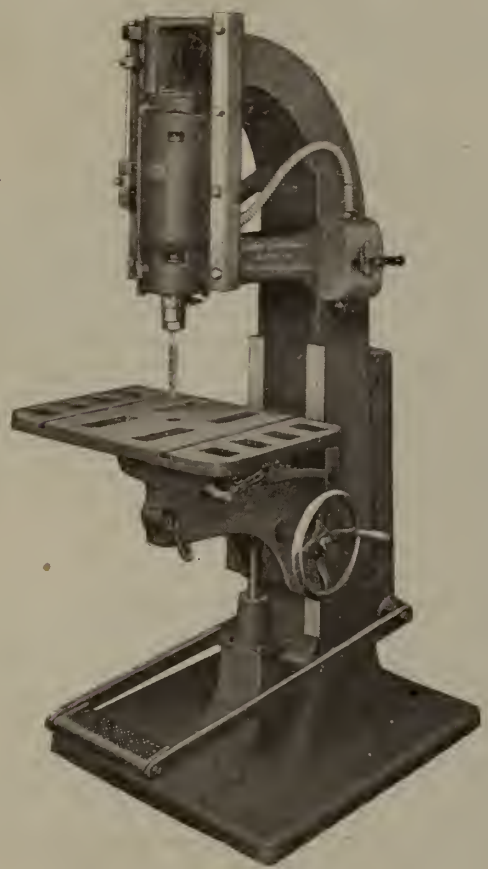
This inspection and precaution against freezing should include making sure that the heating plant is adequate for extremes in weather that may be expected; that the system is in thorough order with parts and supplies of all sorts at hand for any repairs that may become necessary; that all drains are in proper condition, and that any part of the system in any way exposed by windows, doors or between the ground and the first floor are amply boxed in and insulated against freezing.

The commissioner urges that the nightwatchmen, as well as workers about the plant generally, should be instructed thoroughly as to the use of all fire apparatus and the purpose and methods of handling all valves and connections. He suggests that fire extinguishers should be recharged something like once a year, to assure their being in perfect working order, and they should be insulated against cold if kept in exposed places.

Machinery & Equipment

Direct Motor Driven Vertical Boring Machine

Another application of direct motor drive in the construction of a wood working machine is shown below. It is a direct motor driven Single Spindle Boring Machine made by Baxter D. Whitney & Son, Inc., Winchendon, Mass. An alternating current motor having a speed of 3450 r.p.m. is mounted directly on the spindle in place of the pulley. The housing of

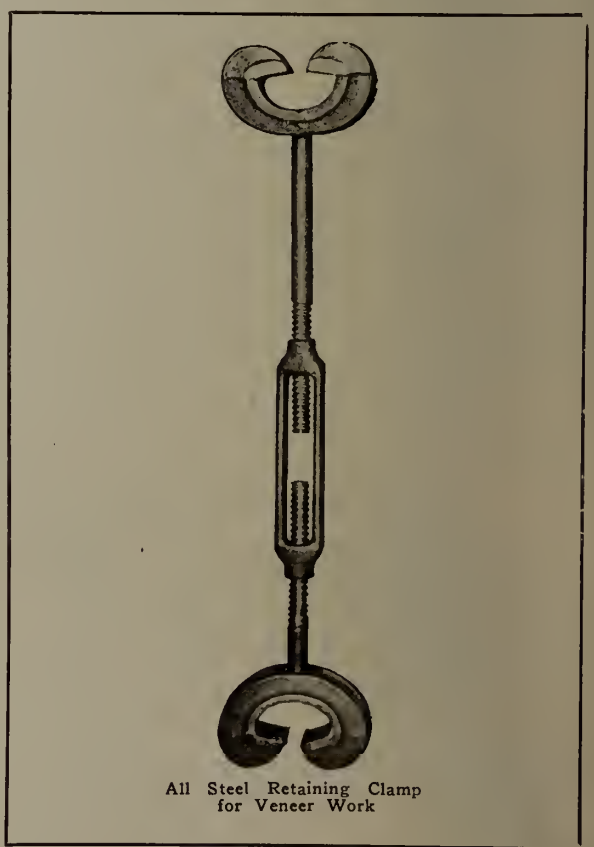


Whitney motor driven boring machine

the motor is made a part of the head that carries the motor and boring spindle, all of which is raised and lowered to the work as a single unit. This method of mounting the motor eliminates all extra bearings as the same bearings serve for the boring spindle and motor. The table is supported by a bracket having a vertical adjustment by means of a handwheel and screw. It can be turned end for end or can be tilted 45 degrees. A pointer and scale shows the angle at which the table is tilted. The boring bit is instantly brought down to the work by foot pressure on the treadle. By releasing the pressure the head is quickly raised and the bit withdrawn from the work by counter balanced weights. The spindle runs in self-oiling ball bearings especially designed for high speed. The motor on the spindle is started and stopped by a safety first enclosed switch mounted on the machine. This machine can bore holes to a centre of 32 in. and a depth of 9 in. and from ¼ in. up to 1½ in. in diameter. Some of the advantages claimed for this type of boring machine are: The elimination of countershaft and belts and a saving in floor space; it can be erected and operated in any desired place, regardless of shafting; it is an independent and compact unit; has a constant and steady bit speed and a true and even-running spindle; there is no slowing up of the spindle due to belt slippage. The manufacturers will be pleased to send interested parties descriptive booklet of this machine.

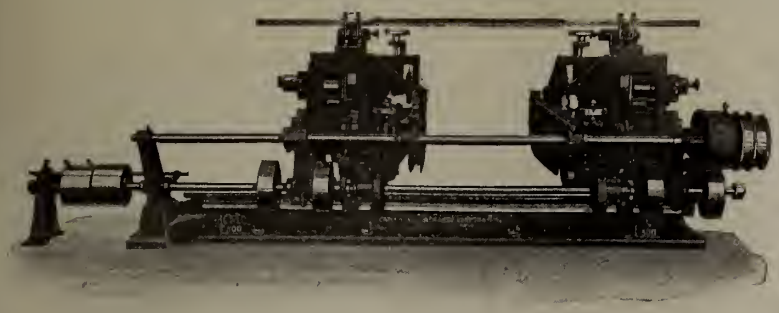
All Steel Retaining Clamp

A new all steel retaining clamp for veneer and panel work is being placed on the market by the Empire Tool Works of Toronto. The head used is exceptionally strong, being made of a solid steel casting. The rod or bolt is cold rolled steel and is threaded and riveted to heads. A special heavy thread running about four to the inch is used with the turnbuckle. This heavy thread is very much stronger than the ordinary V type and will wear longer, stand greater strains and give better service. The head is designed to suit the standard 4 in. I beam, used with veneer presser. The

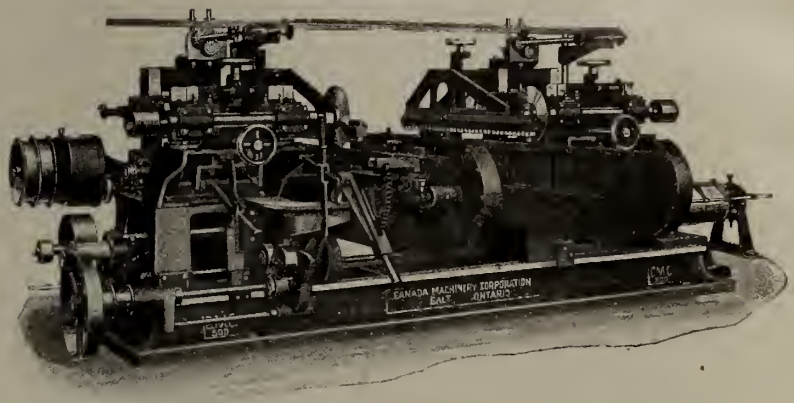


All Steel Retaining Clamp for Veneer Work

clamps are made in four lengths to suit presses of different capacities. Special lengths may be secured. The accompanying cut showing this clamp gives a fair idea of its rugged construction. It is designed and built for service and strength. For further information write the Empire Tool Works, Toronto.



Rear view of Double end tenoning machine



C. M. C. Double end tenoner. Front view

C. M. C. Double End Tenoner

The accompanying illustrations show two views of the new double end tenoner recently placed on the market by the Canada Machinery Corporation, Limited, Galt, Ont. Some of the features of this machine are the rigid support given all working parts by the heavy bed, the centralized control of all operating handles and levers and the independent drive to the tenon heads, cape heads and cut-off saws. It is designed to cut tenons from 1½ in to 28 in. wide and from ¼ in. to 4 in. thick. Will work from 7 in. to 66 in. between shoulders. The cut-off saws will trim stock from 7 in. to 78 in. The sliding base is moved to and fro by screw and reversible friction drive and may be locked in any position. The bearings are all large and solid. Standard wing type tenon heads are used. Three adjustments are provided for saw yokes. Vertical for depth of cut, horizontal for length of tenon and horizontal across machine to take up slack of belt. One cape head is used for door work while ordinary tenoning requires two heads to straddle the different sized tenons. The feed chain is open style and milled from steel. The links are 4 in. centres. The rear view shown shows cape heads and drive. The tight and loose pulleys are 12 in. x 8 in. and are driven 900 r.p.m. About 10 to 15 h.p. is required. May be had for motor drive, direct connected, if desired. Full particulars may be had from the above mentioned firm.

Another interesting truck exhibit was that made by the Packard Motor Car Co. Here they were demonstrating a special log-loading attachment for their trucks. This consists of a winch attachment driven from the engine, which is used to pull the logs from the ground on to the trucks. With such an attachment logs may be handled very expeditiously and at a reduced cost.

Mitering and Trimming Machines

The well-known Fox mitering and trimming machines are now being manufactured by the J. A. Fay & Egan Co., of Cincinnati, Ohio. This line consists of foot mitering machines and universal wood trimmers both bench and heavier type. The mitering machines are made in two sizes, one with a vertical stroke of 7 in., the other 4½ in. While these machines are designed primarily for mitering a squaring gauge is furnished which may be set to cut any angle from 45 deg. to 90 deg. The trimmers are made in different sizes, the heaviest type cutting a block 8 in. high. The bench model will trim at all angles between 45 deg. and 90 deg., while the larger machines give a wider

Fox trimming machine, heavy type

range 30 deg. to 135 deg. The carriage, which carries the knives, is operated by means of a rolling gear which meshes in the rack on the bed and another rack in centre of carriage. The power is thus applied at the centre of carriage, the operating lever moving in the same direction as knife. The J. A. Fay & Egan Co. will gladly furnish full particulars on application.

Upholstering and Trimming

Mohair as an Upholstering Fabric

Combines Luxury and Durability With Good Taste—Gives Many Pleasing Effects

If the average buyer or decorator was asked to name the most durable upholstery fabric, says a writer in the "Upholsterer," he would undoubtedly name mohair; if, on the other hand, the same man was called upon to name the most luxurious upholstery fabric, his reply would be the same, for, strange as it may seem, the mohair fabrics of today have the reputation of being the most luxurious textile in the market and at the same time the most durable. Mohair fabrics are, of course, not a new material. As far back as we can remember mohair textiles were an important material for the covering of furniture and for curtains. But some of the mohair fabrics we knew intimately thirty years ago would hardly be recognized as belonging to the same family as the fabrics of today.

Thirty years ago one of the most inexpensive coverings for upholstered furniture was an embossed Utrecht velvet or mohair plush. It was about twenty-four inches wide, solid color, and embossed in a wide variety of patterns, and it was employed in combination with bands of silk sash. At that time also a better quality of mohair plush was in common use for the covering of railway car seats, and it is perhaps due to the fact of its extraordinarily common use that it was not considered to possess the aesthetic qualities necessary for fine decorative work. An improvement of style developed in connection with the use of mohair plush for Pullman car upholsterings, but even then the full beauties of mohair pile fabrics had not been appreciated, and only in the last four or five years has there been anything like an equivalent appreciation of the aesthetic value of this outstanding textile.

Mohair materials get both their wearing qualities and their beauty of texture from the material employed, which is the soft, silky hair of the Angora goat, which sometimes grows eight inches or more in length. The animal takes its name from the town of Angora, in Turkey, from which country it has been introduced into South Africa and also the United States. The very finest grades of Turkish mohair are comparable to silk, and it is sometimes difficult for the uninitiated to distinguish between a very fine Turkish mohair velour and a silk velour of similar weight.

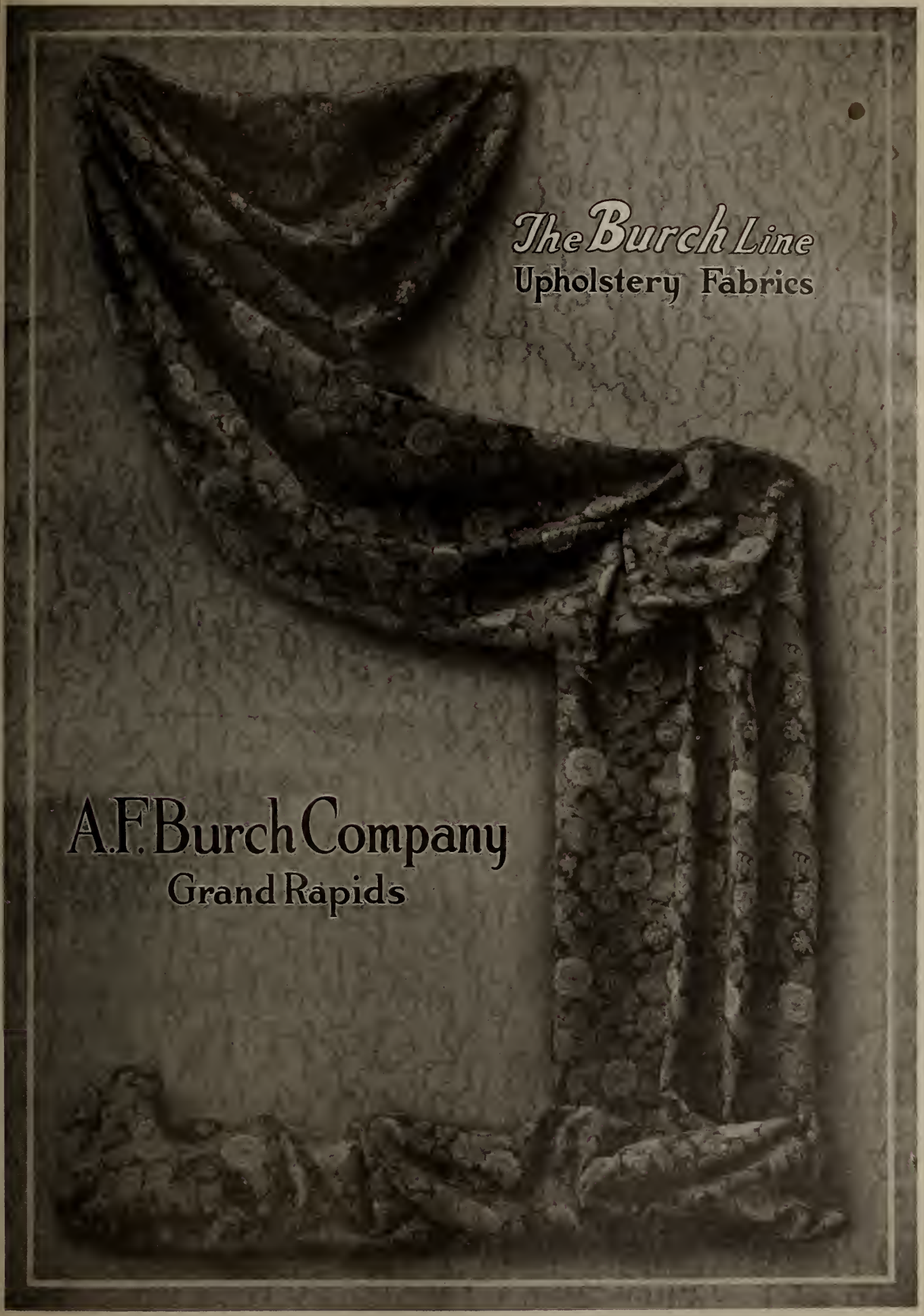
Commercial mohair velours of to-day show many modern developments. The embossed velour of thirty years ago no longer appears, but by a combination of jacquard weaving, of embossing, of shearing and subsequent steaming and finishing, a great variety of interesting fabrics are produced. Then there are also those which in the weaving produce alternate rows of cut and uncut pile, as well as those having the pile entirely made up of loops and others in which all the loops are cut. None of these various operations, by means of which a great variety of surfaces are produced, detract in any sense from the wearing quality of the material employed. Mohair furniture coverings invariably outwear the under upholstering, and there are records of railway-coach seats surviving constant use for periods of eighteen to twenty-five years.

In the very fine grades of plain mohair plushes, particularly in the dark shades, one often notices a sort of smoky effect or a bluish bloom, making it appear as if the fabric were dusty. This is due to the ends of the upright hair, the dye appears only on the sides of the hair, while the ends of the same are in reality minute tubes, too small for the eye to see, but their volume creates a difference in color caused by seeing only the ends of the hair.

Deep-upholstered Wicker Chair

During recent years wicker furniture has steadily grown in public favor. One sees in the retail stores wicker chairs with loose cushions, pads, seats and backs, wicker settees, tables, bed and living room furniture and even the wicker phonograph. One of the newer wicker pieces to be placed on the market is a heavily-upholstered wicker arm chair, a chair that rivals the popular Chesterfield for appearance and comfort. The back and seat is upholstered with springs and a good grade of hair. A spring edge has been added to the front of the seat. The bottom of the chair where the springs rest is specially constructed for strength and is reinforced with hazel supports. A chair of this type combines both lightness and strength and should tend to increase the popularity of wicker furniture.

Light, strong and comfortable


The Burch Line
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Who Makes the Best Foreman?

Should Foreman be Promoted from Ranks or Secured from Outside Organization—Most Important Duty of Manager—Essentials to Consider

Though it is not always recognized as such, the choosing of a foreman is often a task of great difficulty to a factory manager. Opinion among factory executives differs widely on the question of who makes the best foreman. Should he be promoted from among the shop operatives or should he be imported? What are the essential qualities of a foreman? These are only a few of the factors in the situation. Everyone will agree that the ideal foreman is often difficult to find; when one considers some of the jobs he is expected to fill, the difficulty can readily be appreciated. He is the go-between, so to speak, between the workers and the management, and is frequently reviled by both.

The men in the shop often distrust him; indeed, some look on him as a spy. A lazy manager will delegate everything to him and then will haul the unfortunate foreman over the coals because he has not done everything, and at once. These are not all the troubles of a foreman. He often has to act as rate-setter to his shop, help set up jobs, interpret drawings, requisition materials, inspect finished parts, and act generally as a combined schoolmaster, ambassador and dry nurse to perhaps fifty ungrateful men under him and an unappreciative manager, ever demanding increased effort, above him. Needless to say, much depends on the foreman in a works. Given the right man, he is probably, though not officially, the supreme authority and the wise counsellor of management and workers alike. Given the wrong man the result is chaos.

Some Desirable Qualifications.

If one toured the factories of this country and sought advice from the managers of those factories on the supreme essential of a foreman, it would probably be found that tact, loyalty or executive ability would head the list. Tact is certainly an essential; a foreman without tact will always do more harm than good. Loyalty to the firm is again essential for the same reason. Executive ability, in handling a shop full of men whose actual trade experience may be greater than his own, is indispensable in a good foreman.

Trade experience is necessary, especially in any specialized job, as men will invariably respect a superior who knows more of their own jobs than they themselves do. If a foreman is in a position to deal with any technical query brought up by his own men, his place in their estimation will ascend by leaps and bounds. Couple this with executive ability and the foreman will be as near the ideal as it is possible in human nature to get. Foremen will, if given the opportunity, often suggest improvements in methods of manufacture or design that will be the cause of saving perhaps hundreds of dollars. Before a foreman will do this, however, it is necessary to have his confidence and to show him that his opinion on such and such a matter is entitled to respect and consideration on the part of the management. By so doing, the management will instil self-confidence into the foreman. If his suggestions are turned down again and again he will begin to think that either he or the management does not know the business. Further, the foreman's authority must be upheld. Any foreman, however capable, will hesitate to take up a position if he is not sure of the adequate support from his management. Such support is absolutely essential in developing a good foreman.

We know that managers are divided on the question of importing foremen. Some will say that it is better to bring in a stranger as the men will have more respect for him there if he had been promoted from their own ranks. This holds good sometimes, not always. If a foreman is promoted from the shops and he is the right man, the men will respect him more than they will a stranger. Further, if men see that the policy of the firm is to promote men from their own shops, they are provided with an incentive to good work in the hope that they too will stand a chance of promotion. Further, one of the company's own men knows the firm. That is, he understands the policy, the method of working, and can often get something done by purely unofficial means, means which would not be afforded to the stranger. If foremen are imported, the men are often resentful and become discouraged, seeing no prospect of promotion before them. Occasionally, of course, it is necessary to bring in an outsider for some specialized task; for instance, when there is really no man in the works who has the necessary trade experience.

Where difficulty is experienced in promoting a man from among his colleagues on account of his not being able to maintain his prestige, this difficulty can often be overcome by transferring him to the foremanship of another department. Though in a factory where the finished product entails a large number of operations, it is always better to keep a foreman in his own department, where he is familiar with the technical details of manufacture, and where he knows the methods of the shop. In general, it may be said that if a man is not capable of commanding the respect of his former colleagues, then that man is not suitable for foremanship.

Powers Should Be Defined.

When a foreman is appointed it is absolutely necessary that he have his scope indicated to him. If he does not know when and where his authority begins and ends discipline will inevitably suffer. As he will be responsible for the discipline and production of his shop, he should be allowed all means, within reason, to achieve those ends. "Ways and Means."

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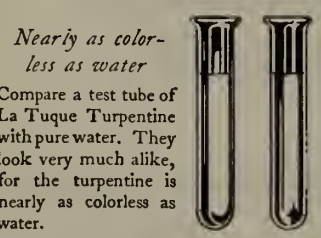
Nearly as colorless as water

Compare a test tube of La Tuque Turpentine with pure water. They look very much alike, for the turpentine is nearly as colorless as water.



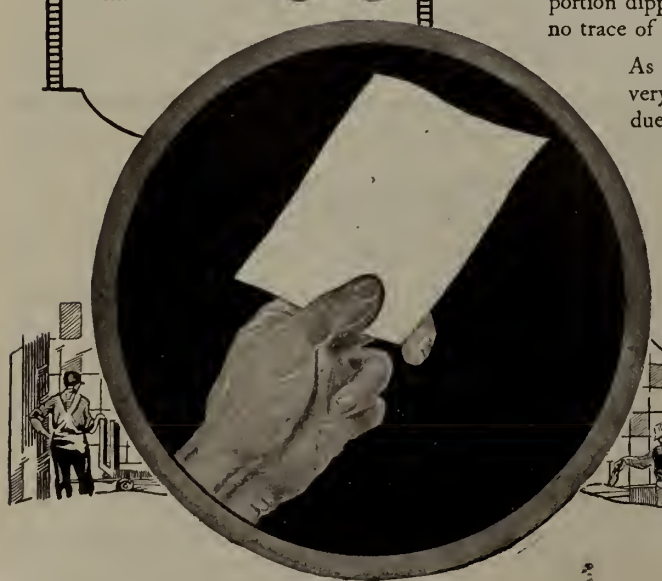
Dip a piece of pure white paper into our new Canadian Wood Turpentine

THIS is an easy, practical test of this new turpentine, made from Canadian Wood, by a patented process.

After dipping the paper to about one-half its length, place in a warm spot to dry. In a few minutes when the turpentine will have evaporated completely, compare the portion dipped with the remainder of the sheet. It will be clean and unstained, with no trace of grease of any kind.

As a thinner for wood fillers and enamels, and oil and japan colors, it is very satisfactory. It is also giving good results in some types of oil-stains, due to its smooth, even evaporation and great penetrating power.

And because it is an all-Canadian product, made from wood cut in the forests of Quebec, it naturally possesses a price advantage. May we tell you about it? Liberal samples are gladly sent upon request.



BROWN CORPORATION

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Making and Working Different Stains

A Few Simple Formulas for Securing Various Shades—How They Should be Applied—An Attractive Finish on Mahogany

By John N. Moore

Stains are used for two purposes, either for changing the color and apparent character of the woods, or for emphasizing the prevailing color. In the first case, such as making a birch to appear like mahogany, or in the latter case in making a real mahogany over so that it becomes a darker shade. In one instance this idea is to cleverly enrich the common stock so that it has the appearance of being a more expensive wood, and in the latter case stain brings about a uniform coloring so that various and large pieces may match in shade so that they may be used in the same piece of furniture.

The cabinet maker has a great assistant in the simple standard stains supplied by paint and varnish manufacturers, and as the difference between good and poor work is only a matter of very slight expense, both as regards time and labor, it behooves the finisher to use the best.

Much of the wood used in modern cabinet making is veneered, and in many cases the veneer is first stained or dyed before being laid on the common wood. Some of this dyeing is done in steam heated vats which contain chemical solutions and special facilities are also provided for the drying of veneer as it is stained, and great care is necessary in order that the wood does not split in this latter process.

Staining Cheap Work

A considerable proportion of the cheaper furniture is made to resemble mahogany by simply giving it a coat consisting of a mixture of venetian red and glue size. They give the surface a coat of this and then let it become perfectly dry. This, however, is merely a foundation for the true color, which in some cases is a mixture of a cheap varnish and some inexpensive staining material, for instance, bismarck brown, or in a case of this inexpensive furniture, a mahogany water stain is mixed with a thin glue and applied to the direct wood, and after it has been allowed to dry, is sandpapered lightly and given a couple of coats of varnish. Oftentimes the work is let go with only one.

If you are manufacturing these cheaper grades of furniture and wish to imitate cherry you can use a little burnt sienna, first staining the bare wood with raw sienna mixed with glue size, after which apply a coat of burnt sienna stain. By using a brush and some of the stain which is in the bottom of the pot and which has been allowed to become heavier than that generally used, you can quickly create an effect like mottled cherry. You should rub out some of the first coat of burnt sienna stain so that it will look like a stain and not like a paint. This will make the brush markings which we have referred to, stand out more distinctly and look more natural. A skilled and careful workman can make some very handsome pieces in this way; it all depends upon how clever he is.

Using Umber and Siennas

Burnt umber may also be used to give a rather good walnut stain or you can use vandyke brown and burnt umber, or the darker walnut. You can mix these earth pigments with water and vinegar alone. You see the vinegar in this combination acts as a binder, but water alone will not give a stain that would hold out. Some of the pigments, however, would remain in the pores of the wood and some of it, of course, would show on the surface, yet the effect would be unsatisfactory and not stand up under usage. The glue size, made very weak, provides a good strong binder for water colors. Stale beer used to be used for this purpose, but was never entirely satisfactory.

When you are reproducing a mahogany effect, burnt and raw sienna furnish a good ground color, and over this a livelier mahogany color may be put with success. Mix a little bismark brown with your varnish first coat and finish with a clear coat of varnish after this. Saunders wood and dragon's blood give a good color for making mahogany stain. You can steep one ounce of red Saunders wood in one pint of alcohol, carefully strain it, to this add a little more shellac gum and after using this as a foundation give a coat or two of varnish.

Stains Darken Not Cover

There is one thing which the finisher should always remember, and that is that the object of staining is primarily to color the wood and not to hide its grain or surface as does paint. If you have your stain too thick you get a sort of painty effect, therefore, it is always well to have your stain thin and brush or rub it out well. Of course, there are occasions where you may want to hide an unattractive figure of the natural wood, and in this case the stain should be heavier.

Some pigments are transparent and some are opaque, but the latter are more desirable to use in wood staining. Umbers are perhaps the best earth pigments, both in the raw and burnt, and burnt and raw sienna, vandyke brown, etc. All anilines are transparent, they having no body, but have unusual staining and penetrating powers. If the pieces of cabinet work in hand have a lot of mouldings, etc., you want to be sure that the stain gets in all the little corners and to have the whole ornate part match the rest of the work. After giving this carved portion a coat of stain let it stand for a while and then use a clean rag in wiping off. In this way you can remove more or less of the stain according to the effect you desire. As a rule any stain left upon the surface will harm the appearance of the finished work. You also get a more uniform appearance when wiping off the stain. When you first stain this you may later wipe in any direction, but always finish up by rubbing with the grain of the wood.

Mahogany is seldom finished in its natural state, it not being as fine a color as when enriched with the

use of filler stain, varnish, etc. You see some varieties of mahogany come very light in shade and there are, as you know, several varieties of this wood. All show a difference in color and even in one certain kind of mahogany, you will find the color varying, and the old idea of applying linseed oil and then wiping it off does not correct this matter. Alkanet root which has been steeped in raw linseed oil often times accomplishes good results. This oil imparts fine color and is sometimes known as red oil. A good receipt is as follows:

Take two ounces of the root and use with a paint of raw linseed oil in which to steep it. Use this as a stain and then finish up in any way you desire. If you wish to get a darker shade use a water stain made from one ounce of bichromate of potash to 2½ pints of water, and you may lessen the amount of water in proportion as you wish the shade darkened. First, however, you might try two applications of the weaker dye and the shade may be varied to almost any desired one, by using the potash solution in various degrees of strength, and then later applying the red oil. In this way you may darken a mahogany almost to the color of rosewood or chippendale.

While these are simple little formulas they are given in no way as intending to discourage the use of the standard stains which come from our reputable manufacturers. We simply give a few points which may help the cabinet maker and finisher in the proper staining of wood.

Is Finishing Department Always to Blame?

Trouble Encountered in Finishing May Not be Fault of Department—Defects in Veneer May Spoil Finish—Stock Not Properly Dried—Send Along Your Experience

By Harold Sutton

The finishing department is sometimes blamed for troubles which are due entirely to faults in the stock to be finished or careless handling in other departments. In an article on selecting veneers, which appears on page 89 of this of this issue, Mr. Johnstone says that the finish to be applied should be considered when selecting or purchasing veneers for a certain job or article.

If the finish calls for several coats of varnish the veneers chosen must be sound and free from ruptured fibres. Unless this is the case, the expansion and contraction of the wood, due to atmosphereic changes, will eventually cause fine hair-line lines to appear in the varnish wherever the fibres are weak. Sometimes when the varnish has been standing for a considerable period and is hard and set, that is has lost a large proportion of its elasticity, these minute lines appear when the surface is being rubbed and polished. When this occurs the finisher is often in a quandary for he little suspects that the wood itself is at the bottom of his trouble.

Temporary Improvement Made

If the varnish has not set hard, these marks may rub out temporarily, but if the varnish is hard they will likely develop into unsightly marks. Even if they have been rubbed out before the varnish has hardened they will likely appear at a later date. Atmospheric changes will cause slight movements in the surface veneers. This movement will be greatest where the wood fibres are weakest. In other words the weak places will move the most. Thus, through time, after the surface hardens, they will appear again. It will be seen by this that the extra coat or two of varnish, so often given, cannot be depended upon to effect a permanent cure. The fault is inherent in the wood itself.

The minute lines caused by weaknesses in the veneer itself must not be confused with the checks caused by shrinking, due to the drying out of the stock. In the latter case the veneer as well as the finish checks and opens. This trouble may be experienced after the goods enter the finishing room and even when in process of finishing. When checking occurs it may be laid to careless work in the veneer department or to careless handling between the finishing and veneering department. If the work was perfectly dry when it left the glue room it was permitted to take up moisture while being worked up. In the warm finishing room this moisture is eliminated from the surface, with the result—checks or cracks.

How to Treat Checks

Defects in the finished surface caused by checks in the wood may be greatly improved, if not remedied, by a simple treatment. Rub the varnished surface thoroughly with oil and pumice stone. Clean off all oil and allow work to stand for, say, twenty-four hours. This gives the oil in the cracks a chance to work out. Clean off again. Next apply a coat of thin white shellac, cut about one pound to the gallon. This coat should be spread on quickly with little brushing, to avoid all danger of causing streaks. The shellac tends to neutralize the oil and also to seal the openings and pores of the wood. It will also enable the succeeding coats of varnish to stand out.

The shellac should be given plenty of drying time, say twenty-four hours, then sanded lightly before applying the varnish. Care should be taken not to sand through the shellac to the coats below, for if that should happen the finish will show up patchy when varnished. After giving one or more coats of varnish the work may be proceeded with as usual.

Opportunity for Co-operation.

Finishing troubles that are caused by defective stock or through careless handling of work in cabinet, gluing and machinery departments, are real live, ever present issues with all finishers. It would be both interesting and instructive if a number of readers of this article were to describe some trouble they have experienced where the fault lay outside the finishing department, giving the causes for the faulty finish and how it was overcome. Will you co-operate?

Good lighting will speed your shipments through the following causes:—

(a) greater speed in trucking,
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(e) improved relations with the public.

Are you buying current or illumination ?

Dipping Tank as Aid to Production

Offers Many Peculiar Problems—Testing Stains for Strength—Securing Uniform Results—Safety Measures to be Taken—Does Not Injure Veneers

By H. R. Rolphe

Dipping will color small parts better, quicker and cheaper than any other process. Nor, is its use confined entirely to small parts; larger work which must be finished cheaply is handled in this way.

Unlike the spraying of stain, which produces the same effect until all the stain is used up, dipping will result in lack of uniformity unless care is exercised. The stain must be kept of uniform strength, so that the last piece dipped will be the same color as the first. The coloring matter used in stains varies in its affinity for the wood, so that one coloring matter in the mixture may become depleted before the others, gradually changing the stain, so that the first and last pieces dipped are of quite different appearance. While this is not so important on some things as on others, there are many articles for which the dipping process is employed where cognizance of this peculiarity must be taken. Hardwoods absorb less vehicle and consequently will exhaust the color in stains quicker than soft woods..

Keeping Liquid Uniform.

Dipping stain can be kept of uniform strength by keeping a standard sample of the original stain used in the dipping tank and also having on hand strong solutions of the various ingredients used in the stain. By drawing off a pint sample of the stain in the dipping tank and holding it to the light, comparing it to a sample of the original stain, or staining two pieces of wood any falling off in color can be noticed. Another test is to drop some of the stain on a clean blotter and notice it spread. The different colors will form circles the stronger colors spreading out further than the weaker ones.

These rings in comparison with rings made by a sample of the original stain will tell you which color or colors need renewing. To bring the stain back to its original color, the pint sample drawn off from the tank should be brought up to the same color as the sample of the original stain with the stock solutions of the different components of the stain.

Calculating Amount to Add.

Multiplying the amount of each ingredient necessary to bring the pint to the original color by eight will give the amount required for a gallon and multiplying by the number of gallons in the tank will give the amount of each material to be added. Inasmuch as the tanks are usually square, the number of gallons in the tank can be determined in cubic inches.

When the stain runs down and no longer covers the work to be dipped, the stain already in the tank should be brought up to its original strength before the new stain is added. In this way it is not necessary to make up a new lot of stain and fill the tank to the required depth.

Small pieces to be stained by dipping are handled in wire baskets. The wire basket is immersed in the tank and worked up and down. The contents are then dumped into the upper end of the dipping board to dry. Cheap goods, after being dipped are allowed to drain; the stain that drains off running back into the vat. Better work should be wiped to avoid runs; that is where a surplus amount of stain accumulates.

Dipping Stains Stronger.

Dipping stains should usually be made a trifle stronger than those applied with a brush because dipping does not "work the stain in," the way brushing does. When the articles are to be wiped the dipping stain should be stronger than when they are not to be wiped or the immersion longer so that the final effect will be the desired shade. It is more essential to wipe hard wood than soft wood because hardwood does not absorb the stain so readily, sometimes leaving air cells or patches when the immersion is done quickly.

Dipping stain may be used hot or cold. When it is to be used hot it is usually kept warm with a steam coil or steam jacket. A steam jet, for water stains only, works better in a large vat than a small vat because the condensation adds too much to the amount of water.

Care should be taken to keep the stain at an even temperature so that the penetration will be uniform. The stock to be dipped should also be of uniform temperature. Stain used hot penetrates deeper giving a darker color and dries quicker than cold stain.

Applied to Veneer.

For this reason on veneer work and work having glued joints, the stain should be used hot. Inasmuch as it is simply a matter of "in again, out again," no trouble should be experienced on veneered and glued work if proper care is taken.

An oi lstain containing naphtha should not be used near an open flame. An open flame should not be on any floor below an oil stain dipping vat because the vapor will run along the floor and follow an elevator shaft or stair opening. Good circulation of air should be provided and the vapor carried out of doors as quickly as possible. When a vat of oil stain is not in use, draw off the stain into air tight cans, otherwise the solvents will evaporate and cause a change in color.—"Finishing Facts."

Moisture Resistant Finishes for Woods

A report recently issued by the National Advisory Committee for Aeronautics, describes briefly a series of experiments made at the Forest Products Laboratory, Madison, Wisconsin, to determine the comparative moisture resistance of linseed oil, impregnation treatments, condensation varnishes, oil varnishes, enamels, cellulose varnishes, rubber, electroplated and sprayed metal coatings, and metal leaf coatings when applied to wood.

All coatings except the rubber and electroplated metal coatings, which were not developed sufficiently to make them practical, admitted moisture in varying degrees. The most effective and at the same time most practical coating was found to be that of aluminum leaf.

A copy of this report may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

Sugi or Driftwood Effect

A feature of the exhibit of the B. C. Lumber Commissioner, at the C. N. E., that attracted considerable attention and received much favorable comment, was a large library table and upholstered chair made of B. C. fir and finished in a dark driftwood effect.

This finish, which was originally copied from the Japanese, is known as the Sugi finish. It is secured by charring the surface of the wood with a blow torch, then removing the charred wood with a wire or other stiff brush. The softer portion of the grain chars to a greater depth than the hard part, thus when brushed the grain stands out in relief. This is known as the drift wood effect.

In this particular instance a dark brown coloring material, such as umber, was rubbed into the wood after the charred part had been removed. This gave it a rich, dark brown appearance that proved to be very attractive.

This finish may be varied slightly by varying the length of time the torch is applied, thus controlling the depth to which the wood will be charred. If the length of application is such that the softer parts are just blackened, a very pleasing effect will be secured. The soft part of the grain will show up black in contrast to the natural color of the hard grain.

Best results are secured with a wood like B. C. fir or other woods which have a fairly coarse grain and in which there is considerable difference between the hard and soft portions of the grain.

Whitewash is a good fireproof covering as well as an aid for conserving the lighting bill of a mill.

Is Use of Walking-Sticks on Decline?

Shifting use of wood, because of fashion or custom, is illustrated by the result of a recent survey of the wood-using industries of New York State. In 1912, there were several cane, whip and umbrella handle manufacturers in the state—this year's survey shows not a single manufacturer of walking sticks or whips and but one of umbrella handles. And yet New York and Massachusetts until very recently supplied about 40% of the total product of these articles with most of the remainder coming from Pennsylvania.

It has been questioned whether canes have gone out of fashion as a result of the war and whether the automobile has entirely driven out the whip.

The manufacture of such apparently small articles as whips, canes and umbrella sticks annually has required the equivalent of five million board feet of lumber, although much of the material has never been put into lumber form, and the rarer imported kinds are purchased by the piece or pound.

Among the native woods used for this purpose, beech has supplied 57% of the total consumption and maple and birch 33%. All three woods are used for whip stock and umbrella sticks, although handles are frequently made of ebony. Many imported woods and roots are used for the more expensive canes and umbrella sticks.

What do you think of a contrivance by the side of your saw bench or your planer which will always keep the timber the same height as the bed of the machine?

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Standard Paint & Varnish Co., Limited

Windsor, Ontario

THE PRICE OUTLOOK

In Paint and Wood-Finishing Materials

MARIETTA WOOD FINISH SPECIALISTS

Linseed oil is not as high as it was. Some people think this should mean an immediate drop in prices of paints and wood finishing materials. It is only necessary to look at the facts to see that there is no ground for such a conclusion.

How Linseed Oil Affects Paint Cost

Paint is two-thirds pigment and one-third vehicle. This one-third is made up partly of linseed oil and partly of the necessary dryers. So that less than one-third, even of the highest grade paint, is linseed oil.

The other two-thirds consist of pigments and coloring materials. These were never known to be so high.

Lead never was so high and there is talk of another advance. There is not enough available to supply the demand, at any price.

Dry colors are scarce and advancing.

Turpentine is 300% higher than during the war.

Stains and Fillers

When it comes to stains and fillers, such materials as benzol, toluol, alcohol, dyes, etc., are abnormally high with no reason to expect a downward movement.

As to wood filler, it takes a twenty-five cent drop in linseed oil to justify a quarter of a cent drop in filler with other things normal, which they are not.

Containers are higher than ever and harder to get. Packing cases ditto, with prices advancing.

Labor—well, you know about that.

Freight Advance Gets Us Going and Coming

Then there's transportation. The rate increase recently allowed by the government gets manufacturers going and coming. They must pay it once on their raw materials and again to get their finished products to the consumer. To say nothing of the increased cost of traveling men to visit the trade.

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The Marietta Paint and Color Co.

Marietta, Ohio

Southern Factory, High Point, N.C.

When the blacksmith shod his own horse—

A disc grinding operation—heavy work!

> *"Habits cease to become more efficient when no practical motive compels improvement."*
> *Chap. III, p. 108—Psychology and the Day's Work.*

"I don't give a rap how big the job is," said Kylin, "Count me out on outside work for awhile. I'm going to feed a little concentrated Foster efficiency to our own factory."

Out in Elkhart, Indiana, Kylin, an efficiency engineer, is head of the Foster Machine Company's Engineering Service—a service department that has gained a big reputation "by increasing output and lowering the cost of production in many factories by recommending the proper combination of tools."

The Motive

Perhaps it was the reputation gained by this service department—perhaps it was the splendid name of their Universal Turret Lathe Machines for efficient performance—at any rate orders were coming in so fast that the Foster factory production was running about two jumps behind.

A few days later Kylin started on the sleuth through his own factory, looking for places to inject a few Foster service ideas and so speed up production.

When he came to the grinding department he nailed George Henderschot, who runs the big Disc Grinder.

"What's an average day's production, George?" he asked. George told him. "Humph," grunted Kylin thoughtfully. "Are those the best discs made?" "I dunno, Mr. Kylin," said George, "I guess they're all right." "Let's find out," said Kylin. "I'll send for sample discs of every blooming brand made. Try 'em out and give me a report."

The Improvement

"As a result of the tests which caused us to adopt Manning Speed-grits Metalite Discs," wrote Mr Kylin lately, "we have doubled production on our Disc Grinders, and cut our grinding costs about one-third."

Incidentally George Henderschot is pretty well pleased with the increased production resulting from those Speed-grits tests. Why shouldn't he be? George is on piece-work.

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Don't say Sandpaper—say Speed-grits

The above photograph shows the Nichols Equipment installed in the works of the Votey Organ Company, Garwood, N.J. These dryers may be used to turn out automobile bodies, furniture, pianos, talking machines, etc., in as many days as it formerly took weeks, and the finish is better, for it is dried scientifically, from the inside out.

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3—It will decrease the investment in goods necessarily in process.

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We will analyze your particular conditions and then make you a proposition on an equipment that we know, from our extended experience, will save you time and money, as well as improve your product.

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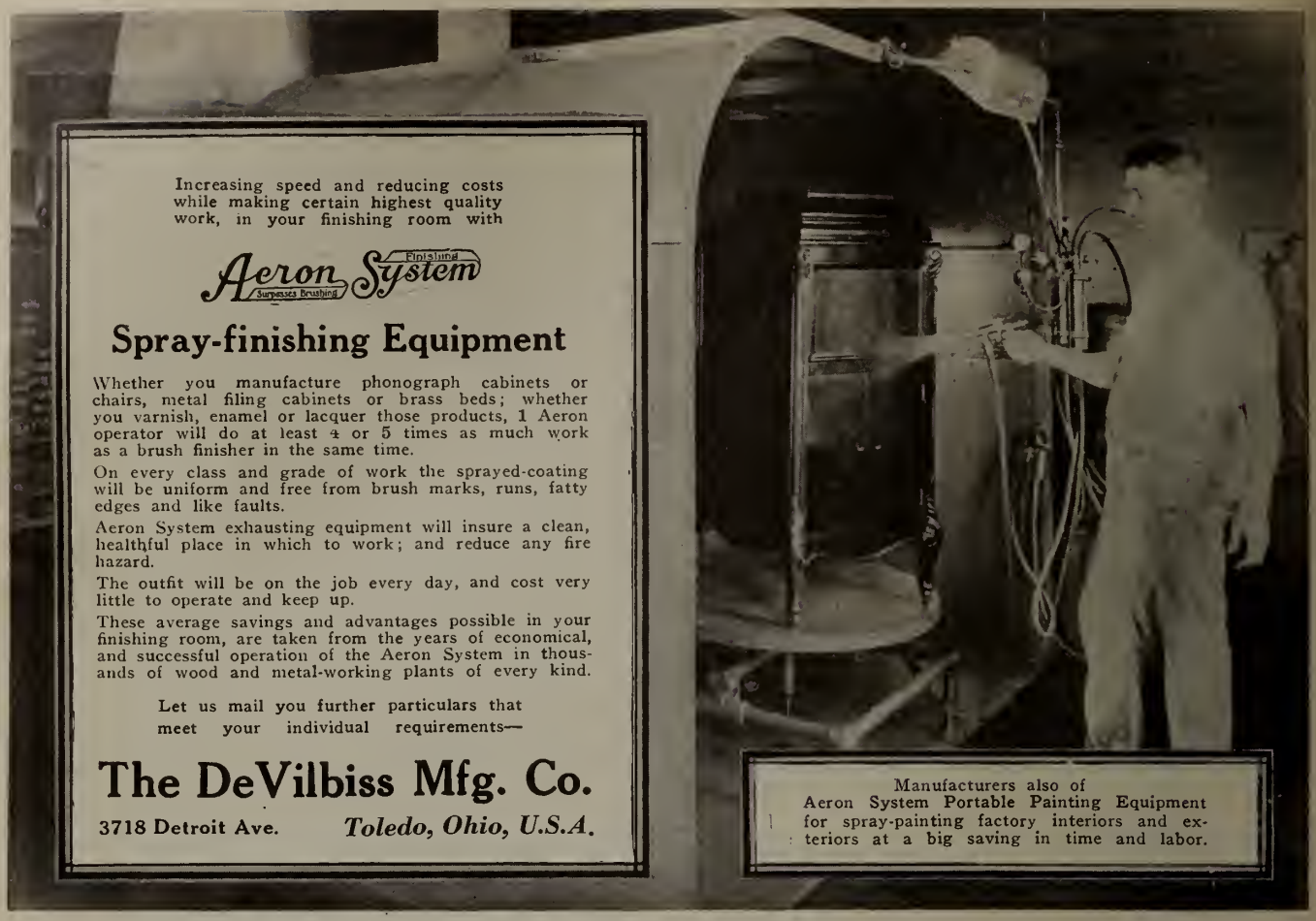

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Veneers and Panels

Most Important Thing in Veneering

Quality of Product Depends on Veneers Used —Selecting Stock Requires Careful Attention—Width an Important Factor

By S. J. Johnstone

"Buying and selecting veneers," answered an experienced veneer man when asked his opinion as to the most important thing about veneering, "You cannot make a silk purse from a sow's ear, neither can you turn out a high-class veneer product unless a suitable grade and quality of veneer is provided."

It stands to reason that as the face stock is the part that is seen, the value of the panel or completed article is judged from the quality, appearance and finish of a few outside pieces. As long as the face veneer does not loosen or check or the piece warp, it makes little, if any, difference what kind or grade of material is used for the core. The value is judged entirely by the outside appearance and the satisfaction given. That being the case, and there is no disputing it, it is hard to understand where any advantage accrues from using the poorer and consequently cheaper grades of veneer. The finished product may cost a few cents, or, even a few dollars, less but it will not command as high a figure on the open market. The loss in value seldom compensates for the slight difference in cost.

Price Not All Important.

The important thing is to have the most suitable or, in other words, the right veneer for the work in hand. There are many nicely-figured veneers offered, which owing to some slight defect, are not altogether suitable for face work. Unless the person in charge of the buying is both careful and conscientious, he may be tempted to take a chance on such a defect passing unnoticed in the finished article and stock up on the cheaper line. The same result may occur if the buyer is not thoroughly conversant with and able to judge the value of the samples placed before him. If the price and figure seem good he is often satisfied with the lot, as in his eyes cost and appearance are the most important factors.

It is usually extremely difficult for any but the most experienced to judge the effect and extent of a defect or blemish. It depends largely on the nature of the fault, the kind of stock and the work for which it is required. The finish also plays a very important part. If it is to be used on an article that is to be heavily coated with varnish, the veneer must be perfectly sound and free from ruptured fibres. Unless this is so, the expansion and contraction resulting from atmospheric changes will cause fine, hair-line checks to appear in the varnish wherever the fibres are weak. Sometimes when the varnish has been allowed to stand for a long period, to set and harden, long enough to have lost its elasticity, these minute marks will appear during the rubbing operation. When this occurs, the finishing department is often in a quandary, little thinking that the face stock is at the bottom of the trouble.

It is a good plan to carefully examine all veneers, both samples and the shipments received, for fine checks or ruptured fibres. The better plan is to call in the veneer-room foreman and even the foreman finisher and consult with them. They have handled thousands of feet of various kinds and different grades of veneer, and from the experience gained, can often tell at a glance whether a certain lot will work satisfactorily or cause endless trouble, complaints and friction. It is surprising what years of practical experience will teach.

Again, a powerful hand-glass or magnifying glass is a useful assistant to have around. Weakened and ruptured fibres that are not visible to the unaided eye, are plainly seen through a glass. With a little practice one can readily detect ruptured stock and pick out the rough places that indicate weakened fibres. It stands to reason that if there is any movement or strain, the weakest spots will give way first. If there are not any such weak places, any movement will be taken care of by the whole face, and checks or fractures should not appear.

Size of Stock Influences Cost.

The size of the flitches or sheets to buy is often a debatable point that requires careful consideration. The narrower and smaller pieces are usually the cheapest. Is a direct and visible saving of a few hundred dollars on a 50,000 foot purchase of narrow veneers better than the indirect and often undetected decrease in manufacturing costs that would result were wider stock to be purchased. Certainly the former is more spectacular and might catch the eyes of those higher up. For this reason the order is often given for the lower-priced stock.

It is more than doubtful if this is true economy. The buyer should know the exact use to which the material he is buying is to be put, the cost of the drop in production due to the extra cutting, jointing and taping, necessitated by the use of narrow stock. Another point is when narrow stock is worked up, an excessive amount of small and waste pieces usually result. The better way is, if possible, to secure stock that will work on the wider faces without jointing them. All unnecessary jointing and taping will then be eliminated and manufacturing costs reduced that much. If the wider stock is secured it will likely result that when the medium width pieces are being got out, sufficient edgings and cuttings will remain to veneer the smaller faces and strips. Thus a saving in time and material will be effected that will, probably, more than offset any initial saving which might result from the purchase of narrow and cheaper stock.

A good grade of material of width that will work to the best advantage, bearing in mind the quality and value of the finished product and the effect of the raw material secured on production costs, is a good rule by which to purchase veneers. If the stock in question is of doubtful value, the veneer foreman and foreman finisher may have some valuable suggestions and advice to offer. Their experience has made them competent judges, so do not hesitate to consult them.

The Care and Grinding of Veneer Knives

Veneer Knives Most Important Part of Cutting Equipment—Should be Given Careful Attention—Choice and Care of Emery Wheels—Suggestions for Grinding

By J. H. Mather

After giving the matter of care and grinding of veneer knives very careful study, I am inclined to question whether the manufacturers of grinding equipment have devoted as much time to the development of grinding the edge of veneer knives as has been given other classes of grinding. Possibly it is because the importance of the veneer knife and the veneer business has not been realized or appreciated. I believe it is as important an operation as grinding a cam or a shaft, which can be ground to the thousandth part of an inch.

Conditions vary so, in different sections and in cutting different stock, that it is impossible to give any set rules for the care of veneer knives. As soon as a knife is put in operation, it begins to wear, and this sooner or later results in a dull edge, and the knife has to be sharpened—the cutting edge put in proper condition for its work. This can be done by honing, but it is only a question of time before the knife has to be ground. Under these conditions, I think you will agree with me that the most important items in the care of veneer knives are grinding and honing. The men doing this work should know the construction of a knife, and, as the grinding is done with a manufactured wheel, should know the principles governing the action of it, and should realize the important part the veneer knife plays in the operation of the veneer plant.

Construction of Edge

The cutting edge of the veneer knife is of a high grade of high carbon steel, welded to a backing of a lower grade of steel. Knives vary in thickness from ¼ in. to ¾ in. The high carbon steel is ¼ to ⅜ in. thick; the bevel is from 1½ in. to 2 in. making the cutting edge of the knife very thin, which it must be to do the required work. After the knife is hardened and drawn to the proper temper for its work, the high carbon steel is very much harder than the backing, which, being so low in carbon, will not take much, if any, temper. In grinding, stock has to be removed from two grades of steel; in addition to this the point of contact is broad, and the grinding done on thin stock on the high carbon side of the knife. The edge being so thin it is very easily injured.

The grinding wheel is the only known tool that is, and should be, self sharpening. The principles governing the action of the wheel in grinding are these:

The wheel is made up of many particles or grains of abrasive material, each of which has a sharp cutting point, or angle, which, when presented to the work, removes more or less of the metal. These sharp cutting points become dulled with use, as the cutting point loses its sharpness; the strain or drag upon the particles of abrasive material become so great that the bond holding it lets go, the grain of abrasive material being torn from the surface of the wheel. Of course, this results in decrease to a certain extent in the size of the wheel, but in the place of the dulled and now worthless grain another with sharp-cutting point is brought to the surface; so, in the properly bonded grinding wheel, used under proper conditions, this resharpening goes on without any, or with but little outside attention.

In a wheel of such nature, or used under such conditions as to prevent each grain being torn from the wheel when it becomes dulled, the continued dragging or friction between the particles making up the wheel and the metal being ground generates heat and this may become so great as to result in drawing the temper of the knife. On the other hand, it is possible to have the grains of abrasive composing the wheel so weakly bonded or to use the wheel under such conditions, that they will be torn from the wheel before they have actually become dulled. Either of these conditions results in unsatisfactory work and is extravagant. Between the two lies the happy medium wherein each cuts and continues cutting until it becomes dulled to the point where it is no longer useful, and it is then torn from the wheel.

Temper Must Be Preserved

If a place in the knife or the whole knife is heated hot enough to draw the temper, that knife afterwards is no earthly use for cutting veneer, although it might possibly be retempered by the manufacturer. If the knife is blued or checked in grinding the steel is ruined, and before the knife is any good again the steel has to be removed below the injured part.

While grinding, a knife would have to be heated to about 950 degrees to show red. At this heat it begins to show a very dark red. In discussing this point with an expert on tempered steel, he claims that a knife would have to be heated hot enough to show color to be injured. If water is used in the operation a knife heated to about 950 degrees or possibly a thousand. would be likely to check, being due to the heating, and the water cooling it causing it to contract so suddenly. If grinding with a coarse wheel and a little pressure it takes only an instant to heat the thin edge to a blue, which means about 575 to 600 degrees of heat; with a coarse wheel, if water is used, it would not show blue but would show a crack. If ground dry would show very blue and make a soft temper, or a soft spot in the knife.

Attention to Grinding

Water is, or should be, used in the grinding process, not as a means of quenching heat but, rather to prevent its creation and radiation. It is a necessary means of keeping the work at an equitable temperature, to obviate heating as well as distortion. The supply should be plentiful and steady, better if applied at the grinding point, and with sufficient force to keep the wheel face clean. It also washes away the particles which wear off of the wheel. This helps to prevent glazing. Clear water is better than water that has been used over and over as the dirt in the water that has been used has a tendency to fill up the face of the wheel causing it to glaze.

Some recommend a grinding compound for this class of work. The only thing I can see in favor of a compound is that the oil or grease in it might adhere

(Continued on page 109)

OAK MAHOGANY CIRCASSIAN MAPLE

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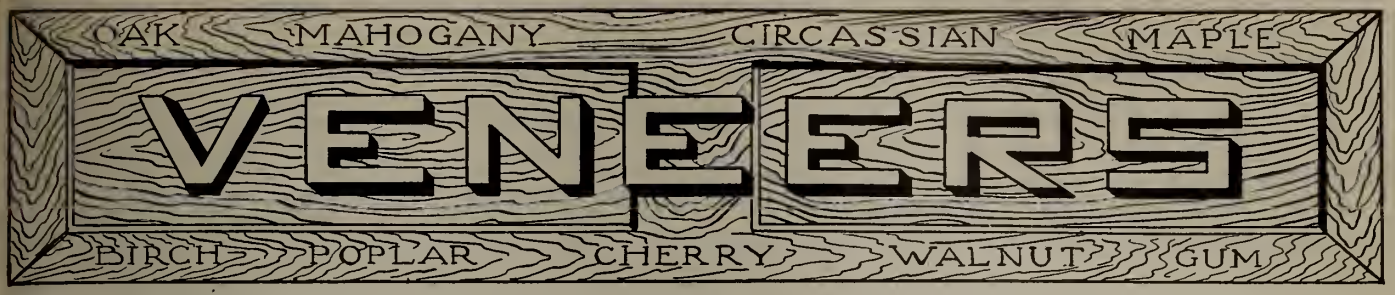

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Care and Grinding of Veneer Knives

(Continued from page 109)

to the edge of the knife and have somewhat of a soothing effect. Often the men doing the grinding feel that if water is used there is no danger of heating, in fact, I have heard them say so. This is a mistake, and often a costly one.

My observation is at the present time very few disk-shaped wheels are used for grinding veneer knives. I am glad of this as the disk-shaped wheel grinds the knife with a concave bevel, slight at the start but, as the wheel decreases in diameter, the concave becomes greater, thus weakening the knife just back of the cutting edge, where the strength is needed. Where a disk wheel is used, as the diameter of the wheel decreases, the speed of the wheel should be increased to maintain a uniform rim speed. A cup wheel, in my opinion, is the proper wheel for grinding veneer knives. If the grinding is done on the full face of the wheel it will give a straight bevel as the wheel wears down.

In the selection of wheels, put it squarely up to the manufacturer of wheels just what kind of grinding you intend to do and the conditions under which it will be done, and insist on a wheel being built for the job, and not take a wheel and try to do the job with it. If a wheel is not suited to your work it should be returned. In conversation recently with one of the members of the Chicago Wheel & Manufacturing Co. he made this remark: "It is poor business for a grinder to continue to use a wheel that is not doing the work satisfactorily, and we would much rather replace it with a wheel that would." I know other manufacturers of wheels feel the same way.

A grinding wheel must be kept running true. A wheel running out of true delivers a blow at each revolution, and as there would be several hundred such blows delivered per minute, this would cause undue heating and drawing of the temper in the knife. If a wheel tends to heat and glaze unduly, that wheel is called too hard and that tendency may be overcome by reducing the number of R.P.M. of the wheel. On the other hand, if the wheel seems too soft, that is, if it tends to free itself too readily and will not stand up from one end of the knife to the other without appreciable reduction in size that may be overcome by increasing the R.P.M. of the grinding wheel, always keeping within the limits of safety, which ordinarily would not be over 50 or 60 per cent. higher than the normal working speed. If water is used, then not more than 40 per cent higher. The reason for this is, at a slower speed the particles of the abrasive material tend to be torn from the wheel by the work more readily than at a higher speed. On the other hand, at the higher speed they are less readily torn from the wheel, and the dulled particles or grains are not gotten rid of as easily as is desired.

Honing and Sharpening

A free and cool cutting wheel, fed to the work at the proper pressure, will not leave a wire edge but will leave a further edge. A wire edge causes more honing. To remove the false edge quickly, draw a piece of end wood across the edge of the knife, which removes particles of steel clinging to the edge. Then hone to a perfectly true smooth edge. Should there be a rough place in the edge of the knife, although not noticeable to the naked eye, particles or fibres of the wood are liable to get in or catch on this rough place, causing it to break out. These spots or places can be detected by drawing the thumb nail across the knife The edge must be absolutely smooth to give perfect cutting. Too fine a grip or grain will not grind; it simply polishes. Grit 24—medium soft and makes a cool, fast-cutting wheel.

Proper honing is as necessary as proper grinding. In honing, the hone should rest on the whole length of the bevel and the full length of the hone on the face side of the knife, thus keeping the edge true with the bevel. If the knife is honed a number of times between grindings, this cannot be followed, as you are obliged to hone on the extreme edge and, consequently, will have a rounded edge. I know some good operators will, in honing a freshly ground knife, round the edge slightly. I cannot understand why this is done unless the operator thinks it the quickest way to get rid of the wire edge. I beleive it more economical to grind often and keep the cutting edge straight, than it is to hone or whet the edge as much as would be necessary with less frequent grinding, as one is very liable to whet low places in the edge.

Retaining Correct Angle

Th manufacturers of veneer cutting machines have carefully determined the best length of bevel to maintain on knives for use on their machines, and the operators of such machines should maintain this bevel as carfully as possible, so they will know exactly what lead to give the knife for the class of work they intend to cut, and still maintain the correct position of the bevel of the knife to the different curves of the log as the log is reduced in size.

In order to understand why the change of the bevel of the knife will change the angle of the cutting edge, take a pencil and paper and draw a circle, and at the proper cutting position draw the bevel edge of a knife showing 1⅞ in. bevel. At the same time, draw a line showing a 1½ in. bevel on this same knife and see the relative position of the 1½ in. bevel and the 1⅞ in. bevel to the log. You will readily see that the 1½ in. bevel knife will have to be tilted in with the edge toward the log in order to have the round of the log clear the bevel of the knife, so that the cutting edge will take hold.

Although it will consume some extra time, it is good policy to saw off pieces from an old knife and bolt one at each end of the knife, on the knife carriage. It prevents grinding the ends of the knives where the wheels run off and start in from being ground lower than the rest of the knife.

The importance of the work which the veneer knife has to do warrants the best grinding equipment and this, to get the best results, must be kept in perfect repair. If the bearings become worn, allowing play, it is liable to produce end motion to the wheel spindle, which will make high and low places in the edge of the knife. This condition will also occur if the ways of the carriage are worn and do not travel through without lost motion, which means poor grindings, often costly grinding and loss of knife stock.

Knives Most Important Item

Some suitable place should be prepared for the knives after they are put in condition, when not in use. They can be bolted on boards, which will protect the edge, and then placed on racks. It is so easy to nick the edge of a knife, although it is only a 1/32 in. or 1/64 in., it is just that much loss of cutting stock, besides the time putting the knife in shape again.

If the pressure bar is set too hard against the log it has a tendency to lift the log, and if there is any

play in the bearings it raises the spindles and log, just as much as there is play in the bearings. If short logs have been cut on a lathe and then long ones are to be cut, it is well to see that the pressure bar has not been worn out of true; if it has, it should be ground straight, otherwise it may result in slack cutting where worn, and tight cutting in unworn places.

Very recently, while calling on one of the large veneer companies, the manager and I were out in the plant. While talking to the man who has charge of the cutting, as we were looking at the knives, he remarked: "This whole plant depends on the knives and they must have the best of attention, and under no consideration would I allow the grinding and honing to be hurried." Often the men doing this work do not have as much time as they should for it, having so many matters to look after.

I have been calling on veneer manufacturers for some years and naturally studied the conditions in different plants as to the care and attention given their knives. I find the men who give the best attention and care to their knives are the ones who keep their knife account the lowest for the volume and grade of veneer cut.

In the matter of equipment, the veneer knife is, as compared to the other equipment and supplies, the most important as the volume and quality of your output depends entirely on the knife, so the item of care of the knife is a very important item in your manufacturing cost.

Poor Knives Sometimes Get Out

The manufacturers of veneer knives are human, and, unfortunately, will make mistakes. Consequently, some knives that are not up to par will get out, which is regretted by manufacturers more than by the parties receiving the knife. Should you receive a knife that is not suitable for your work, do with it as I have advised your doing with an unsatisfactory wheel—return it, and it will gladly be made right.

If you receive a letter from the firm manufacturing your knives asking how a certain knife shipped on a certain day is working out, and if you can see that it is better than other knives furnished by them, it means that they are trying to give you a better knife, either by using a better steel or in treating it differently, and are asking for your opinion as much for your benefit as for their own. Some time ago, in one of the trade papers there was an article on veneer knives which rather implied that the veneer knife manufacturers were not trying to improve the quality of veneer knives. Not wishing to criticize the article, or the writer, I will say that the manufacturers of this class of knife are honestly trying to give a better knife. If you receive such a letter, it is much for your benefit as theirs to give them a candid opinion.

Development of Interior Paneling

Demand for Paneled Interiors Increasing—Tracing Evolution of Paneled Work —Wood Panels Have Appeal Not Found in Other Materials

By J. C. Taylor

There have been sold and distributed this year more composition wall boards for interior ceiling and paneling than in a ten-year period preceding this year. Also there has been a lively centering of interest upon the subject of wood paneling and wood wall lining, not only for residences, but also and particularly show windows, stores and business buildings.

These are but two of several factors which lend special interest right now to the subject of wall paneling, where it started, and why, and where it may lead to. There are in the present situation some good opportunities to develop a public interest in and taste for woodwork for interior walls and finish, and some understanding of how the present situation has come about may point the way to proper future development.

The idea of wood lining or wood paneling of walls to-day may be traced back to various periods of civilization and development in the older countries of Europe. Incidentally, too, we find them associated with what we term as periods in furniture, which are so popular in this country to-day. This is worth keeping in mind because there is an element of harmony between the period paneling of walls and the period furniture designs which we have adapted from those times. We can, of course, trace the wood lining of walls back almost as far as the history of building goes, but for the present-day purposes it is hardly necessary to go beyond those pioneer days of architectural development in the old countries of Europe.

History of Paneling

Illustrative of how the wood-lined or paneled wall came about in those countries, there appeared in the lumber press recently a story of paneling development in England which, in substance, was as follows:

In the early days the builders had a plentiful supply of stone, and soon developed the making of brick from clay, so those pioneer buildings were in the main stone or brick, with tile or stone slab roofs. In building with stone or brick the natural order of things was to finish or smooth over the inside surface with a mortar, and it was out of this that there was developed the plastered wall. These plastered walls required something to support them, a form of furing and lath, because the plaster material would not bond firmly to the inner surface of either brick or stone. This called for extra work and the use of wood, and it was not long until the people came to understand that it would be almost as cheap in money and effort to finish all, or at least quite a part, of the interior walls with wood paneling. In the pioneer days this wood paneling was done in solid wood, usually rather heavy and massive, because they had not learned the art of veneering and making large, thin panels. Panels were thick and heavy and required frame-work support. This, in turn, led to carving and various forms of decorative effects, to relieve the monotony of straight lines in constructing the framework and the panels.

Attention was centered mainly upon side walls rather than the ceiling. It turned particularly to stairways and their enclosures, which called for framework, anyway, and in which there was naturally sought to develop character and beauty.

Many different ideas of art and architecutre were developed in different parts of the old world in inter-

(Continued on page 112)

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THE Evansville Veneer Co.
MANUFACTURERS OF
VENEERS.
EVANSVILLE, IND.

Development of Interior Paneling

(Continued from page 110)

ior woodwork, just as there were developed many different patterns and styles in furniture. Generally, however, there was a harmonizing of the wood lining or paneling in the building and the furniture design and decoration. Therefore, when we take for a pattern in our modern furniture designs some ideas from a specific period in furiture of the older countries, we may well go back to that same period in architecture in the same country and seek for ideas which can be developed in harmony with the offerings of the day in furniture.

When we turn to our own country we find that the pioneer builders here worked mainly in wood. Here and there were some brick buildings, and brickyards were among the early development, because they were well known in the older countries. Timber was so plentiful, however, that the majority of the pioneer builders turned first to logs, and then to lumber, for building operations. For the interior lining there has always prevailed in this country the use of both plaster and the wood lining or ceiling, with a gradual development of the decorative or paneling idea. When there were very few saw mills and lumber had to be produced by hand there was an inclination to use plaster more extensively than later, when saw mills had developed and made sawed lumber more plentiful.

Shows Gradual Evolution

With the saw mill and the planer there came an era of wood ceiling, of building the houses with weatherboarding on the outside and a ceiling of matched lumber similar to that used for flooring on the inside. Sometimes only the side walls were so ceiled, the overhead joists being planed and beaded and left exposed below, with dressed and matched flooring above.

This was a very common type of building until the development of our gypsum industries and the extensive introduction of what is known as hard wall plaster. Then we had an era of plastered walls which gained in prominence until the war period. Then there developed a scarcity of lath, help and everything else, and out of it grew an opportunity for competition wallboard, which had for some years been struggling for recognition in the structural world. The wallboard being made in standard units has again brought forward the paneling idea and an interesting situation which furnishes opportunities for the educational exploitation of wood for lining and paneling interior walls.

There is a wide field and a variety of ideas are possible in this development. There is the purely residential field, the churches, schools and public edifices, the office or business buildings, and the stores with their show windows and interior decorations. These make, all told, an extensive and widely-varied field of opportunities for developing the use of veneer and for introducing a new era in interior wall finishes.

Pleasing Effect of Wood Finish

Finished woodwork has an appeal and a pleasing effect not furnished by any other material, and those who use it for interior decoration seldom have occasion to regret it, especially if with its use is combined a proper sense of the artistic and there is the right order of harmony between the woodwork and the walls themselves, and the furniture which is contained therein. A study of the trend in furniture should bring some interesting light on what to promote in the way of ideas for the interior paneling of the home.

In the show windows and stores, artistic ideas are already being rapidly developed. The main need of the day seems to be that of centering attention upon standardizing panel units for interior wall linings of homes, and special decorative panel effects for the more elaborate architectural undertakings.—"Veneers," Indianapolis.

Large Door Factory for B.C.

The Canadian Western Door Co., Limited, Mission City, B. C., has been recently organized with a capital of $50,000, to manufacture sash and doors. The company will establish a large sash and door factory in Mission City, with a capacity of about 1,000 doors per day. The factory building will be 70 x 400'. Two dry kilns will be constructed with a drying capacity of 36,000' a day. The plant when completed is expected to cost in the neighborhood of $135,000, and employment will be given to about 75 hands, the monthly pay-roll amounting to $10,000. The site consists of 5½ acres and adjoins the C. P. R. on one side and the Fraser River on the other, thus giving both rail and water transportation.

The present officers of this company are C. C. Pierce, president; R. L. Gallinger, vice-president and manager, and R. B. W. Pirie, secretary-treasurer. Mr. Gallinger is thoroughly conversant with the sash and door business, having had about twenty years' experience at the business. Mr. Pierce is vice-president and manager of the Home Savings & Loan Association of Seattle, while Mr. Pirie is a chartered accountant of wide experience. The company has been assured, by several leading export companies of Vancouver, of sufficient business to take care of its entire output.

Of Course—This Doesn't Refer to You

How few manufacturers realize the greatly increased cost of manufacturing boxes in small lots—particularly in these times of high labor costs. Competition, carelessness and lack of accurate knowledge of costs are perhaps responsible for the present practice. Very few manufacturers are making any money on small lot business. Yet they continue to fill orders of that character. True they demand a higher price per unit for a small order than for a larger, but that increase in price represents but a fraction of the increased cost.

Most manufacturers who have studied their costs have discovered that they are losing money on small lot business, and being wise have either refused to sell at a loss or have declined to accept small lot orders.

No manufacturer is willing to admit that he likes small lot orders, unless he gets a good price. He carefully explains that he is forced to accept that business, because of peculiar conditions surrounding certain trade, or the unusual competition which requires that he continue to do that kind of business. In other words, he is at the old and honorable game of "kidding himself." It is a game played in every section of the country and is the most expensive game a man can play. Next to "passing the buck," "kidding himself," if not the king, is at least the knave of indoor sports. —The Wood Box.

Protect Your Eyes

Your eyes will provide you with your education, most of your livelihood and most of your pleasures. Wear goggles when the work you are doing calls for them.—Ontario Safety League.

TORONTO VENEER CO. LIMITED

Importers and Dealers
1100-1104 Queen St. W., Toronto
Canada

Choose your requirements from our ample stocks of

Figured and Plain Veneers

Let us have your

PANEL REQUIREMENTS

Our extensive facilities enable us to give you exactly what you want, when you want it. If you are not able to personally select your requirements, you may write, phone or wire your order assured of the fullest satisfaction, Let us hear from you.

Walnut and Quartered White Oak Veneers and Lumber

Prompt Delivery

LONG-KNIGHT LUMBER COMPANY

INDIANAPOLIS - - - IND.

Distribution of Canadian Hardwoods

(Continued from page 80)

are left to weather the winter blasts of the sub-Arctic regions. It is a curious fact that the heaviest and densest woods are found in the mildest climates, and it is also evident tthat as far as the broad leaved trees are concerned in Canada, those producing the softest wood are able to withstand the coldest climate.

It is not my intention to imply that hardwoods are extremely rare in Canada, but the fact that their distribution by Nature has been so limited, undoubtedly indicates that the supply is far from being inexhaustible. It is a fact, however, that in the case of many species the original supply has been commercially exhausted. In the days of early settlement, such hardwoods as white oak, hickory, black walnut and cherry, growing as a rule on land well suited for agriculture, were cleared off by the settlers to make room for field crops. Whenever marketable, they were used locally, in many cases finding their way into the humble snake fences and log buildings of the pioneers. Quite frequently the logs were burned in huge bonfires merely to rid the land of a useless incumberance. The lumbermen have completed the commercial extinction of many of these trees and at the present time the small remaining supply is confined to isolated patches of trees or single specimens in farmers' woodlots. White ash, white and rock elm, hard maple, basswood, and the less valuable oaks have been exported in considerable quantities to the United Kingdom in the form of square timber but this trade has fallen off rapidly in later years.

Hardwoods Receiving Greater Attention

The methods of logging in Canada have been developed chiefly for the utilization of the coniferous woods such as pine, spruce, hemlock and cedar, and in Eastern Canada of the transportation of logs from the wood to the mill has been accomplished by river driving. This method does not lend itself to the utilization of hardwoods, in connection with which the loss due to sinkage is almost prohibitive. On this account as well as on account of the small demand and the greater expense in connection with sawing hardwoods, the Canadian lumbermen in the past have paid little attention to the hardwoods except in those cases where the supply happened to be located near the mills. Owing to the great increases in the price of hardwoods as well as other lumber, many of our lumbermen are now paying more attention to such woods as birch, beech and maple. In many cases they are building extensive logging railways for the purpose of transporting hardwood logs to their mills from limits long since cut over for pine and other conifers and temporarily abandoned. Within the next few years, we will undoubtedly see great developments in the production of hardwoods, such as birch, maple, beech, elm and basswood, which are the most important of those which remain.

A few statistics on hardwood lumber production might not be out of place at this point. In 1917, the latest year for which complete figures are available, Canadian sawmills reported the production of 147,165,000 board feet of what are classed as hardwoods in our reports. (The term includes all trees other than the conifers whether their wood is actually hard or not.) This production in included wood of the following species and groups of species:

Birch, 60,000,000′; maple, 21,000,000′; elm, 19,000,000′; beech, 16,000,000′; basswood, 15,000,000′; poplar, 10,000,000′ ash, 7,000′000 oak (including all species) 2,000,000′; other species (including cherry, chestnut, butternut, walnut, etc.), 400,000′.

These figures of course include only sawn lumber and do not include material taken in the form of bolts, billets, blocks, logs for export as such, square timber, nor cordwood used for fuel or for wood distillation.

Imports Greater Than Exports

Unfortunately, our customs, trade and navigation returns do not show the exports and imports of wood products by kinds of woods. With regards to oak, however, a comparison is possible. Canada produced in 1917 only 1,894,000 feet of oak lumber, and during the same year imported from the United States 34,484,000 feet. In the cases of hickory, cherry, walnut, chestnut and to a less extent of ash, the importations exceed the production of sawn lumber. In addition to sawn lumber, Canadian manufacturers imported in 1917 partly-manufactured products, such as rough-sawn felloes of hickory, handle, heading, and stave bolts, hickory billots, hickory and oak spokes, rough sawn or split hub blocks, last blocks, wagon blocks and gun stock blocks and other hardwood, in an unfinished state other than sawn lumber, to the total value of more than a million dollars.

If the supply of hardwoods in the central states is now showing signs of falling short of the demand, the American manufacturers should not rely too much on Canada's forests to make up the deficiency, except, to a limited extent, in the case of yellow birch, beech, maple and basswood. In the event of a shortage, the manufacturers using hardwoods as a raw material on both sides of the border are faced with the problem of insuring for themselves a supply of such material for the future. This naturally brings up the question of scientific forestry and the growing of forests for the future.

We are asked the question, "How long does it take to grow a tree?" The answer cannot be given in so many words, and if made too definite, is rather apt to lead to misunderstanding. The rate of growth of trees varies with each species, with the climate, the soil, the exposure and the character of the mixture of trees in the forest. Figures can be quoted for growth rates in certain definite places under certain conditions but averages and generalizations are of doubtful value. As a general rule, trees grow more rapidly in mild climates, and the rate of growth of the hardwoods in Tennessee is no doubt more rapid than in Ontario or Quebec. Generally speaking, the hardwoods of Canada are found on better soils than the conifers and in many cases on soils which are more valuable to the country for agricultural purposes than for the growing of trees. It can hardly be expected therefore that plantations made at the present time on waste lands will result in trees of the same size and quality as those now being cut on potentially agricultural land. Certainly, the rate of growth will not be so rapid, and figures based on measurements of trees now being marketed will not apply to the new plantations made on less favorable sites. It would be quite safe to say that plantations from seeds or young seedlings set our on non-agricultural lands in Canada will not produce yellow birch, beech, or hard maple of ten inches diameter in less than a hundred years. In the case of paper

(Continued on page 117)

TRADE MARK
NICKEY BROTHERS INC
LUMBER VENEERS
NB
NONE BETTER
MEMPHIS
TENN.
U.S.
A.
—Quality—
Beautiful, good old fashioned
quality is reflected in N.B.—
Oak Veneer
NICKEY BROTHERS, INC
MEMPHIS TENN.

Sterling Characteristics Mark the Quality of N. B. Veneers

The character of the Quaker is symbolical. It typifies honesty. It stands for reliability. Because of his staunch adherence to his principles, we regard the Quaker as a man to be depended upon in any crisis.

Not unlike the Quaker is N. B. Quality Oak Veneer. Its many fine characteristics have so fully established themselves in the minds of judicious veneer buyers that instinctively N. B. Quality becomes a standard by which they judge veneer values.

Concentrate Your Purchases and Save Money

Through Buying

Sliced Figured Red Gum and Rotary Cut Gum Veneer
Sawed and Sliced Ash, Poplar and Gum Grand Piano Rims
Sawed and Sliced Quartered Oak

In Cars with Band Sawed Hardwood Lumber

Carload buyers get closer prices, save freight on local shipments and eliminate damaged goods.

NICKEY BROTHERS INC.

MEMPHIS, TENNESSEE

Distribution of Canadian Hardwoods

(Continued from page 114)

birch, this estimate might be reduced to 80 years, and in the case of aspen poplar to 70 years.

Now, these figures may sound discouraging, but it should be born in mind that we have in Canada many thousands of acres of timber berths from which the conifers have been removed, leaving the hardwoods are seed trees. This has resulted in a heavy seeding of hardwoods, and the young forest now establishing itself is composed of a majority of trees of these species. Depending on the extent to which the limits were cleared, and the time which has elapsed since the clearing, the young growth of hard woods has reached a certain development. In many cases, where forest fires have not destroyed the reproduction, this second growth has already reached commercial size, and new areas will grow into this condition each year if properly cared for. Therefore it is not altogether a question of starting over from the beginning to replace hardwoods, but of applying scientific principles to the care of the young forests already established and above all, of protecting them from fire and careless utilization.

With the object of gathering information which would be of value in solving the problem of the future supply of wood for our industries, the Dominion Forestry Branch in 1911 began a systematic investigation of the wood-using industries of the country and gathered data on the kinds of wood used by different manufacturers, the amount consumed in an average year, the sizes and grades demanded for different purposes, the prices paid for this raw material, and the sources of supply. These studies covered the provinces of Ontario and Quebec, three Maritime provinces of New Brunswick, Nova Scotia and Prince Edward Island, and the Three Prairie provinces of Manitoba, Saskatchewan and Alberta. It was intended to repeat the studies of each of these regions and to include British Columbia, returning to each region once every five years. The war interfered with the carrying out of this program, but it is planned to resume the investigation by a study of conditions in Ontario this year. The results of the investigation up to 1915 when it was temporarily abandoned, were very satisfactory. An idea was gained of the needs of the Canadian manufacturers in this respect, and a great deal of valuable information was published in reports covering each region treated.

Substitute Native For Imported Hardwoods

The question of substitution of native woods for those imported from other countries was dealt with, particularly in the case of hardwoods, where the importations are especially heavy. While I do not pretend to be enough of an expert in wood manufacture to advise selection of raw material, I am convinced, from the results of this investigation to date, that a great part of this importation could be avoided by the use of home grown timber. Materials of a certain quality from a certain source are demanded by certain industries. In many cases, this demand is based, to a certain extent, on custom or usages and not altogether on the qualities of the material as related to the use to which it is to be put. In many cases, a cheaper wood from local sources would serve the purpose of a manufacturer equally as well as the imported material. As distant pastures are forever green, so material brought from a long distance often acquires a reputation out of proportion to its actual or intrinsic value. In the early days, when lumber was cheaper and more abundant than at present, manufacturers were able to pick, for each part of their final product, the wood best suited for that particular purpose. The finished article, like the "Deacon's One Hoss Shay," has no weakest point and lasted in its entirety untill it finally all fell apart at once. The increased cost of lumber has forced modern manufacturers to abandon this policy to a certain extent where the public has found that cheap replacement is more economical than maximum quality at a high initial cost. Changing fashions are to be noticed in manufacturers of wood as well as in clothing and the Deacon's famous vehicle, though no doubt the acme of perfection as One Hoss Shays went in those days, would now be considered a little odd to say the least, even if it had held together down to the present time. However, it can often be clearly shown than the substitution of a cheaper home grown timber makes little or no difference in the value of the product.

Conservation of Material

The question of utilization of waste was also dealt with in this investigation. In come cases, it was found that a manufacturer was burning, under his boilers as waste, small pieces of wood of the same size and quality as another manufacturer was using in the same town as a raw material for his product. Instances of this sort were of course rare, but we were able in many other instances to put manufacturers into touch with one another to their mutual benefit. It usually happens that the waste from one factory is of many different sizes and shapes, and in such a case, it is almost impossible to find a good use for such material; but any manufacturer who has waste material of uniform size and quality, no matter how small, should make an attempt to locate a purchaser of such material before destroying it. The Forestry Branch frequently receives inquiries from manufacturers with waste to sell and others looking for small sized materials and it is prepared to do all in its power to assist in this form of economy.

The Forest Products Laboratories established at Montreal in connection with McGill University has a staff of experts whose services are available to the public for the purpose of solving technical problems in connection with the anatomy, chemistry, mechanical properties, preservation and utilization of forest products generally. Information obtained by research or collected in the library is at the disposal of the public at any time. Our head office staff is also ready and willing at any time, to answer other enquiries from lumbermen and wood-users concerning our forest products.

Interesting Truck Exhibit

In the automobile and truck section the Swedish Crucible Steel Co. of Canada, Limited, Windsor, Ont., were showing the well-known Olson frame extensions for Ford trucks. These frame extensions are made in two types. One consists of an extended frame with heavy springs and extended drive shaft and housing, which increases the length of the wheel base and frame of the truck and enables longer bodies to be carried. The other units consists of extended frame with heavy springs and is used lengthening the frame without increasing the length of the wheel base. Ford trucks, fitted with these extensions and long bodies are particularly adapted to bulky loads, such as furniture and other forms of woodwork.

Information and Inquiries

You are cordially invited to make use of this department

Oil in Dry Kiln Coil

Lake Megantic, P. Q., Aug. 31/20.

Editor, "Canadian Woodworker".

We operate a hot blast dry kiln, using the exhaust steam from our engine. Lately we have not been able to maintain the temperature we formerly secured. Would oil from the exhaust steam, lodging in the coil, cut down the temperature? How can this oil be removed? Would an oil separator prevent a re-occurrence of the trouble? Any information you can give will be appreciated.

Yours truly

W. R. Fish & Son.

It is rather difficult to diagnose your trouble. An accumulation or coating of cylinder oil on the inside of your heating coils would certainly tend to retard the radiation of heat. On the other hand something may have gone wrong with a valve or a stoppage may have occurred somewhere. It would be well to test the coil and make sure that the usual volume of strain is blowing through. If the trouble is due to oil passing a strong solution of caustic soda through the coil would help some. This solution could be left in the coil for a few hours, depending on strength, then flushed out with clean water. It may take several applications to remove all the oil.

An oil separator would certainly keep most of the oil from the coil as a good removable plate separator will take about 98 per cent. of the oil out of the steam. With that proportion removed it would take a long while for a sufficient accumulation to occur to cause trouble. Would suggest checking coil for volume of steam passing through before doing anything else.

To Prevent End Checking

An inquiry was published in the August "'Canadian Woodworker" with reference to a coating to prevent end checking. In addition to the materials suggested for coating the ends of the stock we have learned that a mixture of whitewash and glue makes a coating that will last a year or more and will tend to prevent excessive drying at the ends. This mixture is made by adding a quart of good glue and three pounds of salt to a barrel of whitewash. Another method for overcoming this trouble is to place the piling sticks at the very end of the boards, a slight overhang is even better. The weight of the pile acts as a clamp and keeps the stock from checking. If the sticks are allowed to protrude they will shade the ends from the sun and will also carry off the rain, thus reducing end staining. It is a simple method and one that should be adopted in all piling.

Trouble from Walnut Checking

A furniture manufacturer writes in asking if we can suggest a solution for the trouble he is experiencing through the checking of walnut. The checks usually appear after the articles are finished and in the warehouse. He asks if walnut should be strained or is that wood dried to better advantage without straining. He also wants to know how to test for moisture content. Will some of the readers of this journal co-operate and send in their views on this trouble and outline similar experiences with the remedy applied.

The Better Way to Hang a Door

The efficiency of an extra butt is no longer a much-mooted question. Throughout the country there is a general trend on the part of architects and builders to hang a door on three butts. In fact, to serve this growing demand manufacturers are now packing butts three to a box, constituting a set.

To say that doors are one of the hardest working parts of any building, especially public buildings such as schools, hospitals, theatres, railroad stations, is to repeat a fact everyone knows. After all, it is the butts that make or mar the door. On them the stress and strain, the wear and tear, are bound to centre. Even the best butts are tested beyond capacity at times. The weight or load of the door is excessive. Green lumber which often has to be used on the door results in warping.

Careful analysis of the subject shows that there are many logical and practical reasons why the use of three butts to a door is true economy in the long run. It has been demonstrated that the third or extra butt will hold the butt edge of the door in alignment and, to a great extent, will prevent the door from warping. Also, it prevents the door from striking or interfering with the door stop, if used, or the edge of the rabbet, if the door jamb is rabbeted when the door has a tendency to bow or warp toward the door stop or the centre of the door jamb.

While it may take more time to put on the extra butt and while the cost is slightly increased, the saving of the carpenter's time and expense later on to correct door faults more than offsets the initial investment.

If a door is hung on two butts only, each butt carries one-half of the load or weight of the door. When a door is hung on three butts, each butt carries only about one-third of the weight, thereby decreasing the strain and wear. More screws are driven into the door jamb and the door, thus relieving the strain on screws, the wood in the door jamb and in the door, which is an important factor.

When three butts are used the top butt can be set nearer the top of the door, thereby lessening the leverage of the door pulling away from the jamb. The lower butt can be set lower, thereby preventing the door hugging the door jamb near the bottom of the door. The top edge of the door remains in line with the head jamb, and the bottom edge of the door is parallel with edges of threshold.

The binding and sagging of doors are expensive troubles to correct. Do it right at first.—"Building Age."

Acquires New Line of Equipment

The J. A. Fay & Egan Co., Cincinnati, Ohio, manufacturers of woodworking equipment, have acquired patents, drawings, trade mark, rights, etc., for the Fox Universal Wood Trimmers and Miterers, formerly manufactured by the Fox Machine Co., Jackson, Mich. All orders for new machines or for repairs for machines now in use should be sent to the J. A. Fay & Egan Co.

May We Make This Suggestion?

To those buyers whose requirements of hardwood lumber, rotary veneers and panels it has been our privilege to serve and to those others who we hope to serve in the future, we would like to frankly and in friendliness advise that bad as the car situation is to-day, it is bound to be infinitely worse in a month or two. Therefore, to insure delivery and avoid the 30 or 40 per cent. increase in freight rates, due about September first, we earnestly counsel buying now.

May we suggest also that our friends should not reckon too strongly on much lower prices? It is true that the present tendency is downward, but while the southern forests are now pretty well dried out, the almost total impossibility of getting cars is keeping millions of feet of logs in the woods, where vast quantities are rapidly deteriorating. A goodly portion of this accumulation probably never will reach the saw mills. Thus, while one adverse condition is out of the way, another immediately takes its place, and though southern manufacturers have succeeded in making one spurt in production, the average mill stock in the south is still dangerously low. The consequence of such condition has been brought home with force to buyers in the past eighteen months.

This is but a friendly suggestion offered only because we think it absolutely true. Therefore, if you possibly can, buy now. As to price, our only assurance is that now as always, our policy is to give full value for every dollar invested with us.

70,000,000 Feet
ANNUAL
CUT

Anderson-Tully Co.

Memphis - - Tennessee

ALL
SOUTHERN
HARDWOODS

The Lumber Market

Domestic Woods

The market for local woods is distinctly quiet, very little stock moving. This condition is also reflected in quotations, which show recessions on practically all lines. The large increase in freight rates recently granted is bound to have an effect on the movement of lumber. Higher freights will tend to restrict the moving of lumber and should result in practically eliminating Southern pine from the Canadian market. This will tend to strengthen local softwoods. The new rates will also have a tendency to curtail the quantity of B. C. wood which is being shipped to Eastern Canada. The B. C. products will continue to supply the prairie demands while the softwoods in the east will not be called on to face the same competition.

White pine is about the strongest item on the softwood list with red pine coming next. Spruce and hemlock are very quiet, especially the former. The prices of the different lines reflects the demand so that quotations on hemlock and spruce have fallen off considerably.

Among the hardwoods, birch is holding up the best, being in fair demand, with prices standing up well. The other hardwoods are quieter and weaker. While conditions should improve in the near future, one reason for the present lull is the attitude of the lumber buyers and users who are holding aloof and buying for immediate requirements only. Maple is very slack and may show further declines in price. Instead of removing the 10 per cent. duty on this wood, the U. S. authorities are collecting the duty at points of entry which have been allowing maple to pass in free. This has a tendency to restrict the market for this wood. Other hardwoods are more or less slack. It is reported that in some sections of Ontario there are considerable quantities of air dry lumber but that in other localities the stocks are low. A decided improvement, both from the viewpoint of the buyer and the seller, should take place in the near future.

Imported Woods

According to the latest reports conditions are quiet in most of the hardwood producing centres. This is attributed partly to general business conditions and partly due to the fact that the larger wood users are not buying. The tendency seems to be to work from hand to mouth with most of the buyers covering for immediate requirements only. Values have eased on most lines, in fact it is difficult to find an established price for any one item as quotations differ, even from the same centres. As yet there does not appear to be any large accumulation of stock in the hands of the manufacturers. In some of the producing districts many of the smaller mills have closed down leaving the larger operators to accumulate stock. The opinion has been expressed that hardwood prices will not drop much further but the tendency will be for stabilization at present levels with the possibility of an upward tendency after the New Year sets in. It is not anticipated that values will reach the high levels set during 1920 but that there will be substantial increases over present prices.

The Chicago market continues dull. Very little buying is being done. Purchasers are demanding big concessions but lumbermen are not inclined to sacrifice stocks. Purchases by railroad companies bright spot in market.

In Evansville conditions are a little brighter. There was a falling-off in volume of business during August but trade is picking up slightly. It is not anticipated that there will be further price reductions. Some are inclined to think that the day of cheap lumber is over and that each year will see values increase slightly. Logs seem to be plentiful but prices asked are unusually high. Increased freights will effect lumber values.

Quietness rules in the Memphis market, with somewhat easier quotations. It is estimated that the total decline from high levels has reached 25 per cent. A wide range of prices is being asked. Quarter sawn white oak being quoted from $200 to $250 per M. Buyers in this district are holding back waiting developments. All buying is being done on a small scale to cover immediate needs. The manufacturers are quite optimistic about the future but believe that the lumber market will come back strong.

Furniture Woods in Far East

Whether Adam or any of the Adam family were expert cabinetmakers or not, the original Adam homestead in the Garden of Eden has always been the centre of a great and active furniture industry. Armenia, Turkey and the republic of Georgia, on tthe Caspian Sea, are noted for the high grade walnut veneer and wood products produced there, and the people of those countries seem to possess an instinctive knack for converting hardwood into attractive pieces of furniture. The Near East Relief, which is engaged in its program of relief to the refugees and orphans of that part of the world, finds carpentry one of the most important phases of its industrial reconstruction work. Believing that helping the people to regain their economic independence is almost as important as keeping off starvation, the relief workers have classes in shoemaking, tailoring, automobile repairing, needlework, etc., as well as carpentry among the orphans, so that each one may know a trade which will enable him to earn his own living.

Before the war there were in the neighborhood of 18,000 small cabinet-making or carpentry workshops in the Caucasus, employing about 127,900 people. There are over 10,000,000 acres in this region covered by forests, so that the lumber shortage bugaboo does not frighten the workers in wood over there. In Russian Armenia alone there are 850,000 acres of boxwood, walnut and other hardwoods. Bamboo, cork trees, chestnut, beech and oak are grown in great quantities as well. To show the part which the lumber and furniture business plays in Near East life, statistics say that $100,000,000 of wood articles were manufactured in the Georgian republic alone in 1913.

The seemingly limitless supply of wood has made the people more or less careless concerning their reserves, and there is little done in the way of an afforestation program. Wood is used as fuel largely, the peasants converting it into charcoal for that purpose. In the days of the old Russian regime, it was required that trees be built along the sides of canals and irrigation ditches in order to keep the earth in place, but today that system has been put aside.

HARDWOOD LUMBER

General Offices
GREENWOOD, MISSISSIPPI,
U.S.A.

Any lumber which does not stand the acid test of the men who work it, is expensive. We welcome the judgment of your workmen.

Every board is branded as above, and this brand is your GUARANTEE and our mutual PROTECTION.

Manufacturers Exclusively

BAND MILLS:

GREENWOOD, MISS. MOORHEAD, MISS.

Our Kraetzer-Cured Gum is guaranteed to be practically *flat, straight* and *bright.*

Making Overhead Shaft Oiling Safe

One of the most important jobs in a machine-shop is the oiling of overhead shafts, such as line bearings, countershaft bearings, loose pulleys, etc. At its best, it is a very dangerous job. It is usually done with a long-spouted oil-can and the help of a cumbersome ladder.

The illustration shows a better and saner method of oiling. Attached to the oiler's back is an air-tight box filled with oil, a hand-pump on the side supplying sufficient pressure to enable the oil to flow up through the rubber tube into the copper nozzle and from there into the machinery being oiled. The ladder is self-explanatory, and may be adjusted to any height by a simple raising or lowering of the pin seen under the man's feet.

How overhead shafting may be made safe

This device will save time and labor, aside from the consideration of its invaluable "safety first" principles.

Solution of Present Conditions

By M. Wulpi

The present situation in commerce is causing all to ask, "where will it all end and what's to be done?" One has one idea and another another, depending on the viewpoint. When all is said and done it comes down to "production." A lack of anything creates increased value, if there is a demand for it. Then if said demands exceeds the supply, the value is enhanced. Production today is so far below the demand that high prices is the inevitable result.

It, therefore, seems logical that increased production is the logical solution. Someone has well set up the following principles to secure it:

1. Greatest reward to all partners in industry will only come from maximum production, because production is wealth.

2. Maximum production can only be attained by co-operation of all concerned.

3. Co-operation is based on confidence. Without mutual confidence in industry there can be no co-operation.

4. Confidence is brought about by the practice of justice and fair dealings and by a realization by each of the justice and fair dealings of the other.

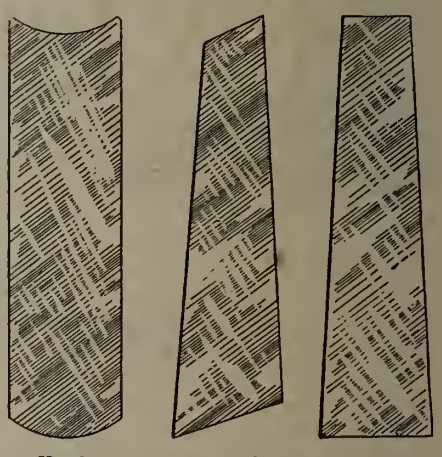
To boil it down: A realization of justice and fair dealing beget confidence, confidence promotes co-operation, co-operation brings maximum production and maximum production is greatest wealth of all.

These points are well to ponder over and then act.

Home-made Scraper Blades for Cabinet-makers

It will pay any cabinetmaker who has to do finishing to go to the trouble of making himself three or four narrow scraper blades similar to those here illustrated.

Three or four such scrapers can be made from one standard 6-inch scraper steel, and will be found useful in numberless instances where the ordinary wide steel is too wide or too large, or else improperly shaped to do the work. Often shallow depressions in panel work or corners can either not be reached at all with an ordinary scraper, or can be worked only with great difficulty. Rounded stock also is ill fitted to be worked with a square blade, and then again shallow rounded depressions need to be worked out where a gouge will not do because it cannot be easily controlled.



Handy scrapers made from saw blades or old scrapers

With the set of narrow blades shown, all these different jobs can be satisfactorily performed, Two advantages of these scrapers are that they offer an unusually good hand-hold. Owing to this and to the shortness of the cutting edge, four or five times more pressure can be exerted than with an ordinary wide blade. In difficult and awkward places this will be found to be of the utmost importance.

By the use of the rounded scraper the rim of a sink or other enamel or iron body can be perfectly scribed into a very good drain-board or table-top.

A cheerful foreman and a number of capable wood machinists make a very efficient and capable staff.

Hardwoods

Labor conditions and tight finances are making the lumber supply shorter than anticipated for the Fall trade. These conditions, together with a shortage of cars and an inevitable increase in freight rates of 25 to 30% should induce our customers to place their orders with us now, covering their Fall needs, and the stock will be shipped promptly—you will have it at your factory when you want it, and at lower prices than it can be purchased later.

Special Offers

1 car 4/4 Fas. Walnut (35 to 45% 10" & wider)
3 cars 4/4 No. 1 Common Walnut
1 car 5/4 No. 2 Common Walnut
2 cars 8/4 No. 1 Common Walnut
1 car 10/4 Log Run Beech
1 car 4/4 No. 1 Common Birch
1 car 1-1/8" No. 1 Com. White Oak
1 car 5/4 Fas. White Oak
2 cars 5/4 Fas. Red Oak
1 car 5/4 No. 1 Common White Oak
3 cars 5/4 No. 1 Common Red Oak
1 car 6/4 Fas. White Oak
2 cars 6/4 Fas. Red Oak
2 cars 6/4 No. 1 Common White Oak
3 cars 6/4 No. 1 Common Red Oak

Leland G. Banning
CINCINNATI, OHIO

Eastern Representative - -
A. E. Klippert
11 Laxton Ave. Toronto, Ont.

PANELS

HAY & CO., Ltd., Woodstock, Ont.

News of the Trade

Dey Bros., Ottawa, Ont., boat builders, recently suffered a loss through fire.

It is reported that the Wagstaff shipbuilding yard at Port Greville, N. S., has closed down.

The A. & S. Furniture Co., Montreal, have been registered as manufacturers of furniture.

The Household Appliances, Limited, Montreal, were recently incorporated with a capital of $100,000.

The plant of the Progress Spring Bed Mfg. Co., Limited, Montreal, P. Q., was damaged by fire, recently.

The planing mill of Daniel Strong, Timmins, Ont., was completely destroyed by fire. Five buildings, in all, were wiped out.

The Kindle Bed Co., Limited, Stratford, Ont., are building a one-storey addition 88 ft. x 125 ft. Cost $30,000.

The London Petrolea Barrel Co., East London, Ont., are contemplating the erection of an office building at an estimated cost of $8,000.

The Tilbury Auto Body Co., Tilbury, Ont., are contemplating the erection of an auto body factory which is estimated to cost $40,000.

F. P. Quinn, of Kingston, Ont., has leased suitable premises from H. D. Buck at Norwood, Ont., and intends fitting it up as a furniture factory.

Hatfield & Lockwood, Canning, N. S., recently completed a 3-masted 400-ton schooner. It is anticipated that another vessel will be built at the same yard.

Regal Phonograph Co., Limited, Toronto, Ont., have been authorized by supplementary letters patent to increase their capital from $40,000 to the sum of $100,000.

The Broughton Hardwood Products, Limited, Caledonia, N. S., are installing a wodworking plant to manufacture hardwood products. A. W. Broughton is the manager.

The Eastern Handle & Dowel Co., Limited, Farm Point, P. Q., have installed two dowel machines, one sanding machine, one threading machine and one chucking and tapping machine.

The Grand Trunk Railway has commenced work on a dry kiln in connection with their car shops at London, Ont. The kiln is to be 80 x 40' and will cost in the neighborhood of $7,000.

The Acme Sash & Door Co., Limited, Winnipeg, Man., have received the contract for the mill and woodwork for the large store which Ramsay's Limited are erecting at Dauphin, Man.

The planing mill, carriage factory and blacksmith shop of W. G. Greenwood, Sault Ste. Marie, Ont., was completely wrecked by a gas explosion. The loss exceeds $7,000 with no insurance.

The Fisher Body Co., of Walkerville, Ont., have commenced work on their new body plant. This new factory is to be four storeys 92 ft. x 192 ft. and will cost in the neighborhood of $175,000.

The sawmill, planing mill, shingle mill and lath plant of Brooks, Bidlake & Whittall Co., Powell River, B.C., was damaged to the extent of $115,000 by fire. The loss is fully covered by insurance.

The Thessalon plant of Firstbrook Bros., Limited, Toronto, Ont., was recently put in operation and is busily engaged in producing shooks and boxes. About a car load of manufactured shooks is turned out each day.

The name of the Oakville Basket & Veneer Co., Limited, of Oakville, has been changed to the Oakville Wirebound Box & Basket Co., Limited, and the capital stock of the company increased from $100,000 to $500,000.

J. Coughlan & Sons, Limited, of Vancouver, B. C., shipbuilders, expect to launch Hull No. 18 in the near future. This vessel is to be operated by the Canada Western Steamships, Limited, a subsidiary of the Coughlan Co.

The Department of Public Works, Ottawa, is calling for tenders for fittings for the post office at Annapolis Royal, N. S. Bid should be in by Oct. 5th. Plans and specifications at Ottawa, St. John, Halifax and Annapolis Royal.

Bruce Woodworkers, Limited, Chesley, Ont., have been incorporated to manufacture and deal in all kinds of wood products. Capital $40,000. M. A. Halliday and George Durst are two of the incorporators, both of Chesley, Ont.

J. Donat Langeelier, Limited, Montreal, P. Q., have been incorporated to manufacture and deal in pianos, graphophones and other musical instruments. Capital $300,000. J. D. Langelier and J. E. Audet, both of Montreal, P. Q.

The G. T. R. plan on erecting a large car shop at Palmerston, Ont. A site has been secured and workmen are at work preparing it for the new buildings. It is anticipated that this work will be proceeded with at once and rushed to completion.

The Chicago Furniture Company, Chicago, Ill., are having plans prepared for what is claimed will be the largest office furniture factory in the world. The building will be three storey, giving a floor space of 400,000 square feet. The cost will total $600,000.

R. Howie, Limited, Toronto, Ont., have been granted a provincial charter to manufacture and deal in trucks, aeroplanes, boats, and other wooden vehicles. Capital $50,000. R. Howie and A. S. Oakley are two of the incorporators, both of Toronto, Ont.

The Milverton Furniture Co.. Limited, Milverton, Ont., were recently incorporated to manufacture and deal in furniture of all kinds, capital $200,000. The provisional directors are John Boshart, Enos Nafziger, Norman Honderich, Alvin Clemens and John Grosch, all of Milverton.

Don-O-Lac Company of Canada, Limited, Hamilton, Ont., have been granted a federal charter to manufacture and deal in varnishes, shellacs, fillers and all kinds of stains. Capital $50,000. A. B. Turner and W. Hazell, barristers, both of Hamilton, Ont., are two of the incorporators.

The Department of Education of P. E. Island has decided to establish a technical school in the Reena McLean Memorial Hospital Building at Charlottetown, P. E. I. The necessary equipment will be required. R. H. Campbell is the Superintendent of Education.

The Piercey Supply Co., Limited, Halifax, N. S., have about completed a new woodworking plant which they expect will be in operation in the course of a few weeks. They also contemplate erecting an up-to-date dry kiln 25 ft. x 100 ft. and a two-storey lumber warehouse 55 ft. x 100 ft.

The Stratford Mfg. Co., Limited, Stratford, Ont., are doing quite an export business. Recently a large shipment, made up chiefly of park seats, was made to New Zealand. A large number of orders have been received from South Africa and the prospects for this end of their business look exceedingly good.

The plant of Rankin & Co., Toronto, Ont., manufacturers of wood products and excelsior, was recently damaged by fire. Johnson & Son, patternmakers, who occupied the top floor of this building, suffered loss to the extent of $7,000 with $3,000 insurance. The total loss amounts to $15,000. The blaze started in the dry kiln.

The employees of the Hayes Wheel Co., Chatham, Ont., recently held their annual picnic at the Government Park. A programme of sports and games was pulled off, followed by refreshments. The employees present had a very enjoyable time. The members of the staff, who were recently laid off, wre included in the list of those invited.

The Rice Lake Canoe Co., who for many years have operated at Gore's Landing, Ont., have obtained a site and will erect a new factory in Cobourg, Ont. The new plant will be located near the new furniture factory of the Langslow-Fowler Co. Favorable shipping advantages, both by boat and rail, make the new location an advantageous one.

The planing mill and dry kiln of the Pearce Co., Limited, Marmora, Ont., were recently destroyed by fire. The loss is estimated at $25,000, and is partly covered by insurance. The future plans of this company have not been definitely decided on. In the meantime a nearby building will probably be equipped with woodworking machinery to take care of their work.

The Davie Shipbuilding & Repair Co., Limited, have completed the installation of the power plant and machinery in five wooden steamships. This completes the order placed with the Davie Shipbuilding Co., by the French Government. These wooden ships were built at the Lauzon shipyards and were then towed across the river to the Louise docks, where the installations were completed.

The Canadian Government merchant marine is rapidly extending its overseas service. There are 38 ships in commission with 28 more to be added to the fleet, and offices are being opened in Australia and New Zealand, and it is expected

Here is your future Superintendent.

Here is the Machine that helps you find Him.

Measure him by his time records on the International Job Time Recorder

International Job Time Recorder

No better way to test your men's value than to look over their time records as made on an International Job Time Recorder. Quick, accurate work and lots of it marks the hustling producer. Such a man will set a good pace as a foreman—he is the man you want. International Job Time Recorders print in clear, unchangeable figures the exact starting time and finishing time of any job or process.

They show you how much productive labor you are buying and how much non-productive time. They help you determine your costs. They pick out the winners on your working force.

Let us send you our latest folders.

International Business Machines Co.

LIMITED

F. E. MUTTON, Vice-President and General Manager

Head Office and Factory: 300-350 Campbell Avenue, Toronto

HALIFAX, 44 Granville St. ST. JOHN, 18 Germain St. QUEBEC, 506 Merger Bldg. MONTREAL, 1 and 3 Notre Dame St. OTTAWA, 190 Queen St. TORONTO, 409½ Yonge St. HAMILTON, 228 King St. E. LONDON, 489 Richmond St. WALKERVILLE, 44 Lincoln Rd. WINNIPEG, 227 McDermott Ave. SASKATOON, 254 3rd Ave. S. VANCOUVER, 110 Water St.

Also manufacturers of Dayton Scales and Hollerith Electric Tabulators

that the service will be extended to China and India. The rapid extension of this government-owned service should be a big force in the industrial life of Canada.

China is a buyer in increasing quantities for barrel shooks. The trade has expanded very rapidly owing to the big demand which has sprung up in recent years for Chinese vegetable oils. U. S. and Japan have hitherto divided this barrel shook trade between them. Dairen, centre of the bean oil industry, took the major portion, the remainder being imported by Hankow, Tientsin, Canton and Shanghai.

A recent Oshawa despatch states that a large American automobile company is negotiating for a site with the idea of erecting a large factory there. The new plant will be a big addition to the Oshawa industries and will give employment to a large number of men. A complete line of automobiles and trucks is to be manufactured. It is expected that a definite announcement will be made in the very near future.

The H. E. Furniture Co., Limited, Milverton, Ont., have about completed the new addition which they are adding to their factory. This building when finished will be used chiefly for storage and shipping purposes. The present plant will be reorganized so as to increase production, but it is not likely any new equipment will be added with the possible exception of a couple of saws for the shipping department, in the new building.

For the first seven months of 1920 Ontario's fire loss shows a substantial increase over the same period for 1919, according to a statement issued by Fire Marshal E. P. Heaton. Fire loss for the first seven months of 1919 was $5,842,536, while for the period of 1920 it had risen to $6,843,788, an increase of $1,001,252. On the other hand the fire loss for July, 1920, was only $676,297, while for July, 1919, it was $1,028,833.

The McLagan Phonograph Corporation, Limited, Stratford, Ont., has been formed with the same personnel as the McLagan Furniture Co., Limited, to take over the manufacture and selling of the McLagan line of phonographs. This new move requires a reorganization of the present plant, and while it is not anticipated that any new addition to the existing factory will be made, yet a certain amount of new equipment will be required.

A huge floating dry dock is being assembled in Toronto by the John E. Russell Shipbuilding Co. This drydock was built in Montreal and the sections are being towed to Toronto, where they are being assembled. Previously vessels requiring repairs weer forced to lay up either in Collingwood or at Kingston, but now the largest vessels can be handled in the new Toronto dock. The cost will run in the neighborhood of $75,000 or $80,000.

The Spiesz Furniture Company, Limited, Hanover, Ont., were granted a federal charter to acquire the business known as The Spiesz Furniture Co., Limited, (under provincial charter) and to manufacture furniture and all kinds of wood products, conducting in connection with the business, a sash and door factory. Capital $200,000. Two of the incorporators are J. J. Spiesz, manufacturer, and J. H. Adams, bank manager, both of Hanover, Ont.

The Quebec section of the Canadian Manufacturers' Association at a recent meeting decided to extend an initation to the Ontario branch of the Canadian Manufacturers' Association to visit the Province of Quebec during next month in order to extend the Entente cordiale between the two provinces. The party will be entertained at Sherbrooke, Three Rivers, Quebec and Montreal, and plans are under way for a tour covering many of the leading centres of the province.

The Vulcan Motor & Engineering Co., a well-known English automobile firm, is contemplating establishing a manufacturing branch in Canada, according to an announcement made by Walter S. Walker, general manager of the company. Mr. Walker is making a tour of the Dominion so as to gain an idea of general conditions with particular regard to Canada's ability to supply steel and other raw material required in automobile construction. The labor situation will also be given careful attention. He brought with him one of the newer model Vulcan cars.

The Burr Mfg. Co., Orillia, Ont., are working up a nice toy business. This industry, which was commenced a short while ago on a small scale, is developing fast and gives promises of growing to considerable proportions. The idea behind this new industry is dependable toys for children, that is, toys that will stand up under rough usage. The line consists of rocking horses, see-saws, kindergarten tables and other similar toys, and in addition staple articles like the wooden drums for electric washing machines, and various forms of woodenware are produced. The orders already booked will keep the plant going until next spring. Mr. Burr states that the present quarters are much too small and that he is contemplating moving his plant to another own.

Provincial factory inspection was discussed by the Canadian Federation of Labor at its meeting held in Hamilton recently. It was stated that in Ontario there are about 8,000 factory buildings that should be inspected and that only 11 inspectors were employed by the Provincial Department at this work. It was further stated that were these inspectors to work every day in the year, they would only be able to cover 3,422 plants, leaving 4,578 buildings uninspected. It was decided to request the Provincial Government to increase their staff of inspectors at an early date.

The Provincial Supply & Machine Co., Limited, St. Thomas, Ont., are placing a phonograph motor on the market, which is known as the Elgin motor. This motor, it is claimed, compares very favorably with the best on the market and is meeting with a strong demand. The company are equipped for quantity production and are negotiating several large orders. Mr. Anderson, the manager, is not a novice at the game, for he has been interested in the phonograph business since he placed the Sonograph on the market in 1902. At present the efforts of the company are confined to producing motors that at a later date tone arms, reproducers and other parts will be manufactured and some day a complete phonograph may be placed on the market.

The Westminster Shook Mills, Limited, has taken over the modern box plant of the Lumber Products, Limited, New Westminster, B. C. It is expected that the new firm will have this plant in operation in the near future. The Lumber Products' box factory has a capacity of 10,000,000 ft. of box shooks per year, and it is anticipated that the increased demand for box material from China, Straits Settlement and South America will take care of this output. Mr. R. L. Cliff, who is president of the new company, is a well-known New Westminster business man, and is president of the B. C. Manufacturing Co., Limited, The Pacific Mill Co., Limited, and Food Products, Limited. Mr. J. H. McDonald, who is associated with Mr. Cliff in the new enterprise, is the manager of the B. C. Manufacturing Co.

It is reported that the Canadian shipbuilders are asking for a subsidy on every ton of shipping built in Canada as a means of saving this valuable industry. Many of the Canadian shipyards have been operated at a loss and since the announcement by the Canadian Government that there will be no further extension to its shipbuilding programme, it has been felt that if this industry is to continue as a factor in the industrial life of Canada, it must be developed along lines that will insure stability and permanence. This industry got its start from the encouragement given by the Canadian Government during the war, and it is felt that it is in the best interests of every citizen of Canada that it be given every assistance. There are about seventeen yards affected, three in Nova Scotia, four in Quebec, six in Ontario and four in British Columbia. The total investment runs in the neighborhood of $50,000,000.

A $6,000,000 match factory is to be erected in the Province of Quebec by a company formed by the amalgamation of four large British match-producing concerns, together with an associated Canadian company. The management of the Dominion branch of this industry is to be in the hands of a directorate of twelve,—six Canadians and six British. Sir Lomer Gouin, ex-premier of Quebec, and George Chapoon, president of the Laurentide Paper Co., are to be two of the Canadian representatives. The president of the company will be Sir Alexander Maguire and the British directorate will consist of Sir Alexander Maguire as chairman; Col. Bouverie, D.S.O., representing the Vickers, Limited; J. Lever Tillotson, head of the leading cardboard box manufacturers in England; J. C. M. Jacobs, late manager of the Bank of Liverpool; Charles Gane, one of the leading timber men of London, Eng., and D. P. Maguire. It was stated that the equipment for this large plant lies in England awaiting shipment.

Personals

W. J. Mitchell, of Gelph, Ont., has been appointed manual training teacher of the Chatham Collegiate.

S. H. Lindsay, of Collingwood, Ont., has resigned the treasureship of the Collingwood Shipbuilding Co., and intends removing to Toronto. He still retains the position of secretary and will have his headquarters in the latter city.

J. E. Alain, managing director of the Victoriaville Furniture Co., Limited, Victoriaville, P. Q., passed through On-

Burning the Nation's Wealth!

Every hour of the day and night THE TORCH OF CARELESSNESS brings destruction to somebody's property in Ontario.

The Work of Fire Prevention should appeal to every Merchant and Manufacturer who wishes to preserve the continuity and non-interference of his business.

Special effort should be made during FIRE PREVENTION WEEK—OCTOBER 9 to remove all Fire Hazards and take every possible precaution to Prevent Fire

CLEAN UP

accumulations of waste material, rubbish, boxes, shavings, sawdust and conditions that create disorder.

The high cost of fires accelerates the high cost of living.
Fire Prevention is inexpensive.

Ontario Fire Prevention League, Inc.

in affiliation with

The Ontario Fire Marshall's Office - TORONTO

tario recently on a business trip to the Pacific Coast. Mr. Alain will visit most of the larger western cities before returning.

H. Schreiter of the DeLuxe Upholstering Co., Limited, Kitchener, Ont., was recently married to Mabel R. Moore, daughter of Mrs. Moore and the late Principal T. T. Moore of Acton, Ont. After the wedding Mr. and Mrs. Schreiter left by boat for a trip down the St. Lawrence to Quebec and other eastern points.

Clarence Hoard, president of the Bainbridge Lumber Co., of Birnie, B.C., was recently elected president of the Victoria Shipowners Limited. This latter company is a co-operative concern, which, with the assistance of the federal government, is building four lumber-carrying schooners at Victoria, B.C. The new company have made good progress in the construction of these vessels, three keels having been laid down at the Cholberg shipyards, and it is expected that the first of these will be completed by the end of the year. These vessels are to be operated in the lumber-carrying trade.

Obituary

John D. Collie, Brockville, Ont., superintendent of the Office Furniture & Supplies, Limited, recently passed away after a short illness.

Peter B. Burton, Toronto, Ont., recently passed away at Dundas, Ont. For many years he was a traveller with John Bertram & Sons of Dundas, and later acted as a representative for the A. R. Williams Machinery Co. of Toronto. For the past few years he has been manager of the Galt warehouse of the Canadian Machinery Corporation. He leaves a widow, one son and one daughter.

Books and Periodicals

"Furniture for Small Houses" is the title of a new book of furniture designs recently published by B. T. Batsford, Limited, of London, England. In this work the author, Percy A. Wells, has endeavored to apply artistic design to medium-priced furniture, and presents a large assortment of attractive, yet simple designs that could be made up with a minimum of labor and expense, and which would tend to beautify the smaller and usually poorly-furnished home. A large number of illustrations are included showing different interior settings, in addition to a wide range of living room, bedroom, kitchen and miscellaneous pieces of furniture. While the designs are typically English or, perhaps, Continental would be a better term, many of them would find favor in the Canadian market. Others contain ideas and suggestions that could be worked out and included in many of the regular lines in demand today. For the furniture manufacturer desirous of producing medium-grade furniture for the overseas trade, this work contains a wealth of ideas and suggestions. Copies may be had from the publishers, B. T. Batsford, Limited, London, England. The price is 12s 6d.

American Firm Cuts Phonograph Prices

The Vitanola Talking Machine Co., Chicago, Ill., have announced a reduction in the price of their machine, which they guarantee to maintain until Jan. 1, 1921. In announcing this reduction they state that in the face of a stoic belief one the part of the public that prices are bound to come down, many manufacturers are issuing letters stating their firm belief that the condition is only temporary, and that because manufacturing costs have not been reduced the prices of merchandise also will not be for many months to come. Our view of the situation is that in the end manufacturers will find that they are obliged to meet the public at least half way in its present frame of mind, even at considerable sacrifice, and since we do believe this is inevitable we, therefore, have decided to take the initiative in the phonograph industry. Notwithstanding the reduced list prices the margin of profit for the dealer remains as large as before.

Who Owns the Business?

Here is a man, for example, who owns and operates a large farm.. He bought it with his own hard-earned money; on it he works ten to fourteen hours a day.

Giving his whole time and strength to the work, he finds it necessary to employ three farm laborers to assist him in getting the maximum production.. He agrees with them for wages and pays what they are willing to work for.

But according to modern thinking, this system is all wrong.

These three men ought to control the farm, decide how much in money and produce should go to the theoretical owner and keep all the rest themselves. These men are giving their lives for the work. "If you deny them control of what they give their lives for, you deny them justice.". The owner is also giving his life for the farm, but of course that is different, he is capitalist, and exploiter of labor.

Does labor in and by itself give the right to control the profits? If men work on a railroad, does the fact of that labor itself give the workers the right to control the profits? Surely not, unless the labor itself furnishes a title to ownership. Is this true?

* * *

If you own a valuable gold watch and take it to a skilled watchmaker to be repaired, whose watch is it after he has repaired it?. Does it still belong to you, or does it now belong to the man who worked on it, by virtue of his labor?

To whom does the control of the watch belong? Does the man who worked upon it, by that labor gain the right to decide whether he will hand it back when you have paid his bill, or sell it and divide the proceeds with you?

* * *

The laborer surely has a right to a fair, even a generous, return for his labor. He has a right to reasonable hours and good working conditions.. But certainly his labor gives him no right to control the industry since it gives him no title to ownershp.

We are losing sight today of elementary economics.

We live under democracy, and it may be possible to nationalize the railroads by legislation.. We might then nationalize the mines and all other industries, finally nationalizing our farms and giving all the profits to the hired farm laborers.

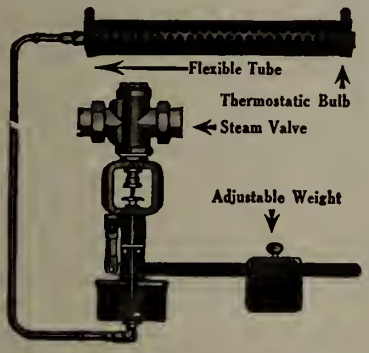
But let us be honest.

Let us not call it "industrial democracy," for "industrial democracy" is concerned with the welfare of all classes.

It is not even true Socialism.. It is really turning over the control and profits of industry to a single class in industry for the sake of that one class alone. We would call it American Bolshevism were it not that those whose doctrine it is have their feelings hurt when called Bolshevists.—Boston Transcript.

Automatic Regulation Is the Solution

Manual control of temperature never was satisfactory and dependable, even when it was cheap. What are you going to do about it, now, when wages are high and men are hard to get?



The Powers Regulator No. 15
Here is a regulator that will control your dry kiln, or your varnish room, or other similar process, saving fuel and improving product.

Automatic Heat Control is economical and always accurate. It insures better results at lower costs in the dry kiln, glue kettle, dry room, in fact, wherever temperature—liquid or air—must be maintained at a certain point.

Ask us about any process where you think automatic heat control would be an advantage. We will give you an honest answer to any problem of heat control you may have.

Send for Bulletin 138

The
Canadian Powers Regulator Co.
Limited
Specialists in Automatic Heat Control
82 Chestnut Street - Toronto, Ont.
(1281)

Here's a Top Notch Lot of Hardwoods All at One Point

140M′	4/4″	No. 2 Com. & Btr. Hard Maple
87M	4/4	No. 3 Common Hard Maple
7M	5/4	No. 2 Com. & Btr. Hard Maple
36M	6/4	No. 2 Com. & Btr. Hard Maple
10M	12/4	No. 1 Com. & Btr. Hard Maple
30M	4/4	No. 2 Com. & Btr. Birch
20M	4/4	No. 3 Common Birch
6M	4/4	No. 3 Com. & Btr. Beech
17M	8/4	No. 2 Com. & Btr. Rock Elm
10M	8/4	No. 2 Com. & Btr. Soft Elm
3½M	12/4	No. 1 Com. & Btr. Soft Elm
20M	4/4	No. 2 Com. & Btr. Soft & Rock Elm
17M	4/4	No. 3 Com. Soft & Rock Elm
29M	5/4	No. 2 Com. & Btr. Basswood
7M	4/4	No. 3 Common Basswood

We're Proud of Them

Canadian General Lumber Company, Limited
712 Bank of Hamilton Bldg.
TORONTO
MONTREAL OFFICE: 203 McGill Bldg.

Selling
Graves, Bigwood & Co.'s
Lumber, Lath and Box Shooks

Wanted

Heavy Combined Sash and Door Sticker; Double End Tenoner; Double Color Box Printer; Nailers, Cleating and Plain; Cowan Box Matcher. State exact condition and lowest price will accept. Box 91 Canadian Woodworker, Toronto. 9

FOR SALE

One 15 in. head matcher, McGregor & Gourlay make; one 12 in. four sided moulder, Goldie-McCullough make; also pulleys and shaftings. Apply Gold Medal Furniture Co., Toronto, Ont. 8-9

FOR SALE

Planer and matcher. One S. A. Woods No. 33 Planer and Matcher in very good order, $1200. Also one 4" Sticker, American Woodworking Machinery Co., new, $450.00. O. Chalifour, Inc., Quebec, P. Q. 8-11

For Sale

Excelsior Machine and Press. Can be seen running. Good reasons.

REID BROS.,
8-11 Bothwell, Ont.

FOR SALE

STACK

65 feet x 20 inches diameter. In good condition. Right price. J P. Abel, Fortin,. Ltd., 379 Desjardins Ave., Maisonneuve, Montreal. 9

FOR SALE

CRATING SPRUCE

About 500 M. ft. of 5/8" Crating Spruce. Also Log Run Spruce. 500 M. ft. of 1", 2" & 3" Cull Spruce. Also one million Laths. J. P. Abel, Fortin, Ltd., 379 Desjardins Ave., Maisonneuve, Montreal. 9

FOR SALE

New and Second Hand

26" Heavy Single Surfacer.
24" Yates Surfacer.
20" Pony Planer.
24" Jointer, round cylinder.
15" x 8" D. S. Planer and Matcher.
Box Board Matcher, Mereen-Johnston.
Double End Tenoner.
Single Tenoner.
Chain Saw Mortiser.
8" Four Side Moulder.
6" Three Side Moulder.
Jig Saw.
Power Feed Rip Saw, Yates.
Triple Drum Sanders, 30" and 42".
Nailer, 12 x 30", Morgan, Open Back.

Write or phone for particulars: Toronto Reperesentative, S. F. Barrons, 26 Charles St. E. Phone North 3121.

COWAN & COMPANY OF GALT, LIMITED.
9 Galt, Ontario.

FOR SALE

We have immediately available the following used machines, equal to new, because at the most they have only been running three months:—

1—"GOODSPEED" Variety Lathe, complete with regular equipment, without countershaft. Price $385.00.

1—"LEWIS T. KLINE" Variety Lathe, complete with regular equipment and countershaft. Price $465.00.

1—"DAUBER-BELL" Adjustable Dowel Machine, 2 in. capacity, complete with regular equipment, including 4 sets Heads and Rolls. Price $750.00.

The above prices are F.O.B. Cars, Montreal, where they can be inspected.

Williams & Wilson, Limited,
84 Inspector Street,
7-9 Montreal, Que.

For Sale

1 Iron Frame Gaining Machine, cutting up to 3" wide.
1 Witherby Rugg & Richardson Tenoning Machine, single heads and single cope, cut 3" wide, one cut.
1 Fay & Egan, 3 spindle, vertical car boring machine.
1 Fay & Egan, No. 3 automatic railway cut-off Saw, with 24" x 8' 6" roller top table.
1 Fay & Egan, Vertical Car tenoning machine, making single, double or triple tenons on both sides of sills without reversing.
1 John Bertram & Sons, Vertical Solid Chisel Mortising Machine, with drilling attachment, 2" cap.
1 Cant, Gourlay & Co. blind style Mortising and Boring Machine.
1 Bertram & Sons, 7", four-sided Moulder.
3 50-h.p. Electric Motors, 25 cycle, 3 phase, 550 volt, 720 to 750 R.P.M.
3 75-h.p. Electric Motors, 25 cycle, 3 phase, 550 volt, 720 to 750 R.P.M.

Apply L. S. TARSHIS & SONS,
7-10 400 Front Street East,
Phone Main 5338. Toronto, Ont.

Woodworking Plant to Rent

Manufacturers in good town north ot Toronto, making products of wood and iron, are discontinuing the wood lines and are prepared to turn over their wood-working shop, with all machinery and equipment, rent free, with option of purchase at a low figure, to any reputable concern who will keep the same in operation and furnish what little power is required in the iron working shops; anyone with sufficient work to employ twenty to thirty men can make sufficient shavings and refuse to supply the fuel for the 200-h.p. steam plant, but a large quantity of coal is on hand if required; building is separate unit, modern concrete mill construction, 50 feet by 100 feet, two stories, complete with belting, shaving exhaust system, dry kiln, elevator, two railway sidings, shafting; large yard, etc. Box 95, Canadian Wood-

Drum Sanders For Sale

49" Berlin, Spiral, run one week.
48" Berlin, Straight, good as new.
43" Berlin, Spiral, excellent shape.
48" Fay & Egan, excellent shape.
Also
Mershon 44" Band Rip, excellent.
Berlin No. 108-15" Moulder, good as new.
Berlin No. 90 High Speed Matcher.
American No. 2 "BOSS" Timber Sizer.
70" Sheldon Fan.

All the above are very fine tools.

Write Box 82, Canadian Woodworker, Toronto. t.f.

I Offer the following

Used Machines

For Immediate Shipment

Subject to prior sale

Shaper and Dove Tailing Machine, Combination Single Spindle.
Matcher, New Mereen Johnson Double Box Board.
Lathe, No. 3 Waymoth Turning.
Saw, Superior Jigg.
Rubbing Machine, Moore Machine Co. Standard.
Band Resaw, Mershon 44".
Lathe, No. 10 Ober Turning.
Sizer, American 30" x 12" 4 Side Timber.
Sandpapering Machine, Moore Machine Co. Double Belt.
Moulder, Hall & Brown 12" 4 Side.
Sticker, H. B. Smith 6" 4 Side.
Dowell Rod Machine, E. B. Hayes.
Gluer and Driver, E. B. Hayes Dowell.
Door Clamp, E. B. Hayes Standard Power.
Sandpapering Machine, Berlin 36" 3 Drum.
Sandpapering Machine, Berlin 48" 3 Drum.
Sticker, Hermance Machine Co. 10" 4 Side.
Planer, Buss Machine Works 30" Cabinet.
Scraper, Baxter D. Whitney 42".
Planer, S. A. Woods Pony.
Matcher, American No. 129 Fast Feed Hardwood Flooring.
Rip Saw, Greenlee Bros. 2 Power Feed.
Band Saw, 30" with iron table.
Jointer, Falls Machine Co. Under Cut 24" Power Feed.
Buzz Planer 24" Buss Machine Works.
Buzz Planer, 12" Frank Machine Co.
Belt Sander, Curtiss No. 20.
Band Saw, 36" Weatherby Rugg & Richardson.
Band Saw, Wysong & Miles.
Boring Machine, L. M. Andrews 20 Spindle.
Lathe, Back Knife Clement 36".
Lock Corner Machine, Morgan Machine Company.
Drills, Tool Room Buffalo Forge Co.
Carving Machine Moore 4 Spindle.
Also several other machines. Write for my list.

C. J. ANDERSON,
9 15 W. Swan St., Buffalo, N. Y.

FOR SALE

Two 'Jackson-Cochrane 36" Three-drum Roll Feed Sanders. Re-built. Apply P. B. Yates Machine Co., Limited, Hamilton, Ont. 9

BOX OUTFIT

For Sale, one set St. Paul Dovetail Box Machinery in excellent condition. Box 96, Canadian Woodworker, Toronto, Ont. 9-10

Robbing the Junk Pile

By V. H. Wilkes

Few persons realize the amount of material scrapped on the average construction job that could be salvaged if a little thought and study were exercised, which in these days of high prices and scarcity of material is worthy of consideration.

The writer, who has charge of the construction plant and storage yard for one of the largest engineering corporations in the East, was endeavoring to clean up the congested condition of its yard and discovered under some tarpaulins a number of kegs of nails which had been shipped into the yard upon completion of work and return of equipment, which were the accumulation of a number of jobs.

Upon investigation it was found that practically all were badly rusted and not fit for use in this condition. During the further investigation of the equipment an old 10 cu. ft. concrete mixer with gasoline engine was noticed which was in such condition that it would not mix concrete or pay to repair. After issuing orders to rettire this mixer to the scrap heap it was decided that the outfit might possibly be put to some use as a rattler or tumbler for the purpose of cleaning the rusted nails. Without cutting out any of the mixing blades or changing the drum in any manner about three kegs of nails, a quantity of iron borings and rough dry sand were put through the mixer with a result that approximately 3,500 pounds of nails were salvaged and have since been used on construction work. The machine was operated exactly as a mixer except when discharging a sieve was placed under the discharge chute which separated the nails from the iron borings and sand.

This plan proved so successful in cleaning the rusted nails that a considerable quantity of cast iron inserts, universal form clamps, bolts and numerous items have been cleaned and rescued from the junk pile.

If it is necessary after cleaning any material by the above method to store until such time as it can be used it is a good plan to put it through the machine the second time, using instead of iron fillings and a sand a quantity of sawdust saturated with a cheap form of oil which will oil up the articles cheaper and better than when applied by hand.

Disposal of Used Explosives Containers

High explosives are generally shipped in stout wooden boxes of convenient size, which are much sought after by miners and others for miscellaneous uses after they are emptied. The management of most mines has no fixed boxes and will allow any one to carry them away. Many dynamite boxes are nailed up in the mine buildings or underground to serve as shelves and cupboards. Some are used as receptacles for odds and ends, and others are used in taking samples.

Although used explosives containers are soon generally put to beneficial service, there is nevertheless an element of danger in their use, according to an authority. Dynamite boxes are particularly dangerous. Very often nitro glycerin exudes from the dynamite sticks and is absorbed by the wood of the box. Such boxes are dangerous because they are very explosive. Although a box that has not absorbed nitro glycerin is safe, yet there is always the danger that a person will get a box that is partly saturated.

On account of this danger, all mining companies should use extreme care in giving away used explosives containers. Some one individual who is acquainted with explosives and their peculiarities should act as inspector for every container given away. This job may best be handled by the man in charge of the powder magazines. A box that shows any stain of nitro glycerine should be destroyed by fire. The other boxes that are free from nitro glycerine or dynamite can be used.

The boxes that have been condemned, together with the paper linings of all boxes, should be burned in a place sufficiently removed from all buildings, preferably in a deep hole or behind an earth barricade. The boxes can be ignited by using an electric igniter or a fuse of appropriate length to spit fire into oily waste or excelsior.

Care should also be exercised in the disposal of black blasting powder kegs in which loose powder has been shipped. It is very difficult to get the last few grains and the dust of black powder out of the keg, and serious accidents have occurred by these kegs coming into the possession of children and others unacquainted with black blasting powder. All used black blasting powder kegs should be thoroughly washed with water before giving them away or putting them to use.

General Housing Plans

The 1916 census revealed the fact that the population of New Zealand was crowded into 32,000 dwellings. Since that time comparatively few new homes have been built and the population of the country has increased materially. The Board of Estimate in 1918 stated that there was a demand for at least 20,000 additional dwellings of four and five rooms each. The New Zealand Government has interested itself in the erection of homes for workers, and already the Government has 155 homes under construction, and provision has been made for the erection of 700 more. Besides this the different municipalities are attempting to aid in the matter of more and better homes for the wage earner, with the result that the New Zealand Government, the municipal authorities of the Dominion, and private enterprises are expected to supply 5,000 homes within the next year or 18 months. There will be no trouble in finding occupants for these homes at good rentals.

PETRIE'S
LIST
of NEW and USED
WOOD TOOLS
FOR IMMEDIATE DELIVERY

Wood Lathes
No. 4 Waymouth, variety.

Wood Planers
26" Double surfacer.
24" Pony planer.
24" Crescent, single surfacer.
12" Buzz planer.

Band Saws
30" Goldie & McCullough, bracket.
30" Ideal, pedestal.
60" Fay & Egan, band re-saw.

Saw Tables
No. 5 Famous, combination (2).
No. 4 Famous, combination.
No. 125 Preston combination.
McKenzie, combination.
Ballantine, tilting table.
MacGregor Gourlay railway cut-off.
No. 1 Greenlee automatic cross-cut.
No. 642 C. M. C. cut-off.
Galt, iron frame, cut-off.
Goldie & McCullough, power feed rip.
Davis, power feed rip.
No. 648 C.M.C., swing saw.
7' Williams, swing saw.
Canadian, steel frame airmotor cut off.

Mortisers
Cowan, foot power.
No. 1 C. F. & F., foot power.
No. 2 C. F. & F., foot power.
No. 1 Defiance D handle mortiser.
Dominion, foot power.

Moulders
13" Clark-Demill four-side.
12" Woods four-side, inside.
10" Goldie & McCulloch, three side.
10" Houston, four-side.
8" Dundas four-side.
6" Dundas sash sticker.

Boring Machines
Ballantine, vertical.
Gear driven, post borer.
Fay, single spindle, horizontal.

Sanders
48" Berlin, three drum.
No. 176 Cowan, adjustable.
M. 155 Cowan, disc and drum.
Post radial, surface sander.

Sawmill Machinery
No. 1 Sawyer-Massey, portable sawmill.
Boss, automatic, shingle machine.
Vaughan, gasoline driven, drag saw.
Champion, friction, drag saw.

Miscellaneous
No. 5 Elliot, universal motor driven, woodworker.
Saw arbors, for 20"-30" saws.
McGregor-Gourlay 12 spindle dovetailer.
20" American, wood scraper.
Ballantine dowel machine.
Fay, iron frame, double head, tenon machine
C.M.C. 4 head rounding machines (3).
No. 3 Defiance, rim & felloe rounder.
No. 3 Cowan two spindle shaper.
No. 1 Defiance, axle shaper.
No. 1 Defiance, spoke driver.
No. 21 Covel bandsaw filing clamp.
No. 104 Covel band saw roller.
M. 137 Cowan, sash clamp.
M. 21 Cowan, door clamp.
3" x 7" universal wood trimmer.
Cowan veneer press screw.
Humphrey clothespin lathes (5).
Humphrey clothespin slotters (2).
Ask to see our large stock of used supplies—belting, pulleys, machine shop equipment, mill supplies, pipe and fittings., etc. Most of this material is as good as new, and can be bought at greatly reduced prices.

H. W. PETRIE, LTD.
Front St. W., Toronto, Ont.

General Carriage Woodworking and Smith Shop Machinery for Sale

The closing of our carriage plant has necessitated the sale of the following machinery, which we offer for immediate sale and subject to prior sale, all f.o.b. Chatham, as follows:—

12 No. 4 Boring Machines, Flexible Shafts	Stow Co., Binghampton, N. Y.
1 2-wheel Emery Stand	
1 2-wheel Emery Stand, 1¼ in. x 22 in. Arbor, 3½ in. x 3 in. Iron Pulley, 15¼ in. wide, inside Wheels	Builders Iron Foundry, Providence Bay, R. I
1 Tire Bending Machine, Iron Frame, Capacity 4 in., 18 in. x 6 in. Wood Drive Pulley, 18 x 3 Iron Loose Pulley	Williams, White & Co., Moline, Ill.
1 Iron Brace Former for Bench, with Crank Handle	
Lever Bulldozer Hand Iron Frame	
Alligator Shears, 5 in. Jaw, 12 in. x 4 in. Iron Drive Pulleys, 24 in. x 4½ in. Flywheel	Badger State Machine Co., Janesville, Wisc.
Rolling Machine Hand, 3 in. x 28 in. long	
Screen Boring Machine, 4 Spindle, Horizontal on Wood Frame, No. 30 Drills	
Special Wood Frame Chain Sink Machine, for No. 11 Wire with 3/16" 12 roll Wire Straightener	John Adt & Son, New Haven, Conn.
Special Wood Frame Chain Link Machine, for No. 9 Wire for Elevator Chain, Wood Pulley	
Chain Stretcher, Double, with tight and loose Pulleys	
Geared Power Seamer, on Sqr. Pedestal Base, 18 in. depth of Throat, 18 in. x 3 in., flanged Drive Pulley	Pettengell Machine Co., Amherstburg, Mass.
No. C22 Power Wiring Machine 16 in. x 4 in. Friction Drive Pulley	C. M. Yoder, Cleveland
No. 312 Axle Cap Fitting Machine 10 ft.	Bentel & Margedant Co., Hamilton, Ohio
Iron Frame Power Beading Machine, 17½ in. depth of Throat, 12 x 3 T. & L. Pulleys	
Pendulum Foot Power Press, on 3 legs, 6 in. depth of Throat, adjustable stroke	Park Bros., Chatham
Power Folder, Hand, Special 20 in. long	Brown Boggs Co.
Power Folder, Hand, 20 in. long	Brown Boggs Co.
Power Cup Former, Foot, Special	Brown Boggs Co.
Power Bench Punch Press, 10 in. Throat, 12 in. wide, 1 die, 6¾ x 6¾ in., 36 in. x 4 in. Fly Wheel	Park Bros., Chatham
3 Blacksmith Hammers, Cast Iron Frame, Foot Power	A. Standish, Columbus, Ohio
Drum Sander, Iron Frame, 12 in. x 20 in.	
Iron Frame Jointer, with Endless Power Feed, complete	Jackson Cochrane Co., Kitchener
Paint Mixing Machine Complete	J. H. Day Co.
Small Post Drill	MacGregor, Gourlay Co.
Buzz Planer, 12 in. Knives, 18 x 74 Table, Iron Frame and Table	Cowan & Co., Galt
Mortice Machine, Hollow Chisel Bit, No. 20610 Adjustable Table	Greenlee Bros., Chicago
Double Spindle Shaper, 39 in. x 52 in. Cast Iron Top and Frame	J. Ballantine & Co., Preston, Ont
Disc Sander, 35 in. Dia. 50 in. x 50 in. Table, Iron Covered, Wood Frame	
No. 119 Band Saw, 30 in. Rubber Tired, 30 x 33 Iron Bevelling Table	A. R. Williams Mach. Co., Toronto
Sticker, Iron Frame, 4 side	J. A. Fay & Egan Co., Cincinnati, Ohio
Single End Tenoning Saw, Iron Frame, Sliding Table, Spindles for 11 in. Vertical & 2-10 in. Horizontal Saws	MacGregor, Gourlay Co., Galt, Ont.
Wheel Machine for Tightening Nuts and Cutting Bolts, Automatic with Cast Iron Bed. T. & L. Pulleys.	Genesee Iron Works. Flint, Mich.
52 in. Capacity, Wheel Tire Setter, Hydraulic, with Double Plunger Power Pump Complete	West Tire Setter Co., Rochester, N. Y
No. 4 Tire Welding Power Press and Shear	Long & Allstatter Co., Hamilton, Ohio
Special Double Spindle, Vertical Rim, Drilling Machine on Iron Pedestal, Lever Feed	
Wood Rattler Box, 20 in. Dia., 4 ft. long, 2 in. Staves, Iron Lined, 36 x 8 in. Wood Drive Pulley	
Special Wood Frame Spoke Clipping Machine	
30 H.P. Motor, "Burnt Out," Direct Current, 220 Volt	Electric Construction Co.
2 Swing Scale Testing Beams, 5 ft. Jib, 4 Wheel Traveller and Lifting Lever	
Double Crank Straight Side Perforating Press, 32 in. wide inside Columns, with 36 in. 2 roll Automatic Feed Attachment, back and front, 48 in. x 8 in. Flywheel	J. Bertram & Sons Co., Dundas, Ont.
10 Dies for above Press, 7/32"", ¼", 3/8", 5/64", 7/64", 9/64", 3/32", 17/32", ½", 5/32" perforations, 24 in. long	J. Bertram & Sons Co.
Hub Boring Machine, 54 in. Wheel Capacity, Iron Frame	H. A. Moyer, Syracuse, N. Y.
Belt Sander for Iron, 5 in. Iron Frame, 6 in. wide pulleys and screw tighteners	
Band Rip Saw, 42 in. Wheel, Automatic, 24 in. capacity, 42 x 42 Cast Iron Table & Fence, Tight & Loose Pulley and Outboard Bearing	J. A. Fay & Egan Co., Cincinnati, Ohio
Set 3 rollers for Metal Bench, 1¾ in. x 38 in. long	Brown, Boggs Co.
Hand Power Circle Shears	Brown, Boggs Co.
6 Small Hand Power Crimping Beading Grooving & Turning Machines	Brown, Boggs Co.
Blacksmith Bolt Header and 3 sets Dies, ¼ in., 5/16 in., ⅜ in.	
No. 77 Bow Shaper & Cutter with Countershaft Special Machine	Buob & Schew Cincinnati
Saw Stretching Machine, 10 in. throat	Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Special Wheel Painting Machine, 60 in. Dia., Galv. Iron, Revolving with Brake & 15 in. x 3½ in. Tight & Loose Drive Pulleys	
Wood Beam, Horizontal Hammer, No. 2, No. 40, Rubber Cushioned	Bradley & Sons Syracuse, N. Y.
Small Iron Bed Post Drill	
2 Spindle Shaper, Adjustable Spindle, Iron Table and Pedestal	Battle Creek Machine Co., Battle Creek, Mich.
No. 5 Foot Power Mitering Machine	
Belt Driven Geared Cutting-off Shear, 7 in. Throat, 5 in. Shear	A. R. Williams Mach. Co.
4-500 lb. Weights for Testing Scales	
4-250 lb. Weights for Testing Scales	
1-50 in. x 1½ in. Thick Wheel Straightening Plate with 18 in. hole in centre	
Power Punch Press 6 in. Throat, 35 in. x 4½ in. Fly Wheel	London Machine Tool Co., Hamilton, Ont.
1 Tinsmith's Bench Stake, Arrow Head	
6 Stack Barrels for Forges	
1 Foot Punch for 22 gauge Metal for Bench	Brown, Boggs Co.
Hand Power Bench Groover, 18 in. with Handle	Brown, Boggs Co.
Small Sand Drum on Heavy Cast Iron Base No. 11671	MacGregor, Gourlay Co., Galt, Ont.
Power Shear & Punch, upright, Solid Frame, 5 in. Throat, 7½ in. x 16 in. Iron Table, Vertical Adjustment, 48 in. x 5 in. Iron Fly Wheel	
Double End Tenoner, 11 ft. Capacity, 7 in. wide Heads, 9 in. Throat, Cut-off Saw Attachments, 6 ft. Chain Carriage and Self-contained Countershaft	J. A. Fay & Egan Co., Cincinnati, Ohio
Direct Current Generator No. 4-30 Form H., 125 Volts, 240 Amps. Capacity, 45 H.P., Compound Wound	Canadian General Elec. Co.
No. 225 Three Drum Sander	J. A. Fay & Egan Co.
12 in. Buzz Planer, 18 x 74 Table, Single Cut	MacGregor Gourlay Co.
No. 5 Blower, Cast Iron Casing	Buffalo Forge Co.
No. 9 Blower, 45 in. Cast Iron Casing	Buffalo Forge Co.
No. 5 Size Blower, Sheet Iron Casing	A. R. Williams Co.
30 in. Post Band Saw	
Vertical Drum Iron Rattler, with Dumping Gear Attachment	
Multiple Drill, Solid Cast Iron Frame, 8 Spindles, 3/16 in. Drills, 2½ in. Fixed Centres	Park Bros., Chatham, Ont.
Set 30 in. Crimping Rollers for Corrugating	T. J. Moore, Hamilton, Ont.
Sand Blast Pressure System Complete	Pangborn Co., Hagerstown, Md.
Sand Separator, complete	Pangborn Co., Hagerstown, Md.
Band Rip Saw Sharpening Machine, with Emery Wheel Complete	

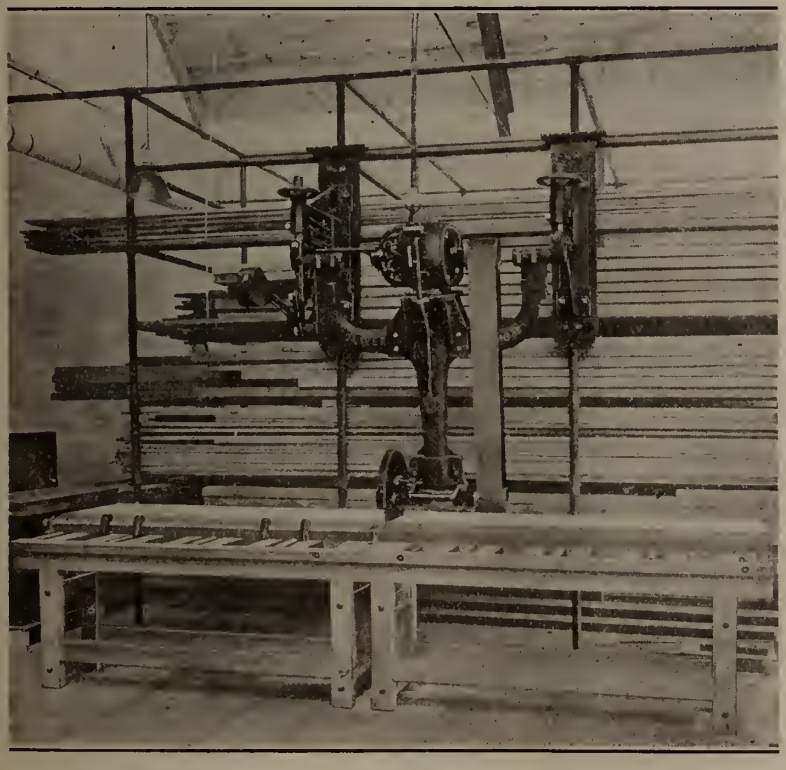
(Continued on opposite page)

Cut-off Swing Saw	
Planer Knife Grinding Machine, Automatic, 40 in. with Pedestal Base & Self-contained Countershaft	Ballantine & Co.
2 Cut-off Saws with Wood frames & Table	
Belt Sanding Machine, Automatic, 8 ft. 6 Table, 20 in. x 6 in. Wheels & 16 x 6 Tight & Loose Pulleys	Fisher Sander Co.
No. 137 Square Box Body Corner Rounder, Horizontal Spindle with Vertical Adjustment on Sliding Head	Cowan & Co., Galt
Iron Planer, 24 in. x 24 in., 9 ft. Bed, 20 x 6 ft. 6 in. Platen, Single Head Power Cross Feed	J. Bertram & Sons, Dundas
Single End Saw Tenoner, 2 Horizontal & Vertical Saw Arbors, Iron Table	Pettingel Machine Co., Amherstburg, Mass.
Iron Frame Disc Sander No. 80, 36 in. Disc, 60 in. x 54 in. Iron Table, Horizontal	Cant Bros., Galt, Ont.
Chain Morticer Vertical ⅛ in. x ½ in., capacity 8 in. Vertical Adjustment.	New Britain Machine Co. New Britain, Conn.
25 H.P. Motor Direct Current 220 Volts 1100 R.P.M. on slide vail base with 10 in. x 12 in. Pulley ...1-19 point Starting	Canadian General Electric
Hydraulic Tufting Machine, Channel Iron, Frame Table 24 in. x 72 in.—No. 1026 and No. 14220	Hydraulic Press Mfg. Co. for Tufting Machine Supply Co., Detroit, Mich.
Metal Band Saw 30 in. rubber tired wheels, 30 x 32 in. Table 14 x 4½ Tight & Loose Pulleys	John Ballantyne Co., Preston
Power Hack Saw, 12 or 14 in. Saws, 6 in. Capacity	D. McKenzie, Guelph, Ont
Power Punch Press No. 200, Inclinable Bed, open back, 5 in. Throat, 34 in. Flywheel	Brown Boggs, Hamilton
Foot Power Punch Press, 3 legs iron hand, 6 in. depth of Throat, Adjustable Strokes	Park Bros., Chatham, Ont.
Power Hammer Vertical No. 3, No. 75 Champion	Beaudry & Co., Boston, Mass.
Rip Saw with Tilting Table for Bevelling 48 x 37 Iron Table and solid Iron Pedestal Base	Cowan & Co., Galt
Vertical Belt Sander, Hood Frame 3 14 in. x 8 in. Pulleys Screws Tightener	
Single Wheel Emery Floor Stand ½ x 3 in. Iron Frame 27 in. high 1¼ in. Arbor 4 x 4½ Drive Pulley	
Hand Power Former or 3 rolls for light Metal 1 in. x 20 in. rolls for Bench	Brown-Boggs Co., Hamilton
36 in. Cabinet Single Surfacer, Double Belt, 4 knives, 10 in. capacity	J. Ballantine & Co
Drum Sander, 30 in. Dia., 24 in. wide, Wood Frame, 11 in. x 6 in. Loose & 12 x 6 Tight Pulley Drive Pulleys	
Drum Sander 18 in. x 24 in. wide, Wood Frame, 9 x 4½, Tight & Loose Pulleys	
4-sided Sticker, 6 in. Horizontal, 4 in. Vertical Knives, 6 ft. Table, Self-contained Countershaft	J. Ballantine & Co., Preston, Ont.
Scrolling Machine on Wood Frame 3¾ in. Cutter	
Dowel Machine ½ in. Screw Head Plugs on Wood Frame 4½ in. x 4½ in. Pulley	
Dowel or Rounding Machine, Iron Frame, Self-contained Countershaft with ⅝ in. Cutter	Cant Bros., Galt, Ont.
Double Spindle Shaper, 42 in. x 42 in. Cast Iron Table & Pedestal, Adjustable	Cant Laidlaw & Co., Galt, Ont.
Drill Press with Foot Feed, Iron Pedestal & Base, 3-step Cone, Drive Pulleys	A. B. Jardine Co., Hespeler
Small Horizontal Boring Machine on Wood Stand, 4 in. x 5 in. Pulley	
Wood Frame, Belt Sander, Horizontal with 2 wood pulleys, 14 in. x 8½ in. & Tight & Loose Drive Pulleys	
Double Cut-off Saw, 6 ft. Capacity, Adjustable Self-contained Countershaft, No. 33304	Egan Co., Cincinnati

For further information communicate with the

GRAY DORT MOTORS LIMITED

CHATHAM, ONTARIO, CANADA



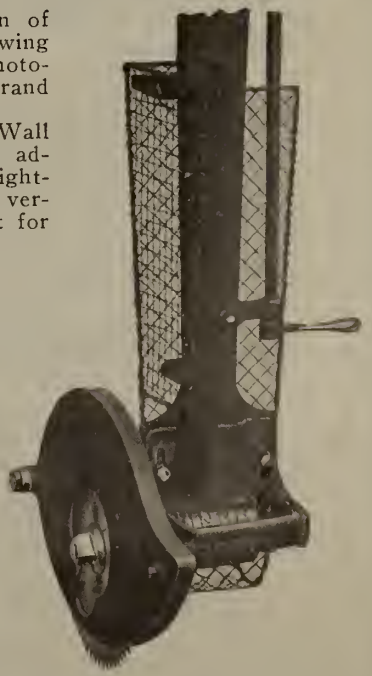
"Oliver" Quality

SWING SAWS
SWING SAW TABLES
SWING SAW GAUGES WITH MULTIPLE STOPS

This installation of an. "Oliver" Swing Saw was photographed in a Grand Rapids shop. Note the Wall Brackets, the adjustment for tightening belt, the vertical adjustment for saw arbor.

A few users of Oliver Swing Saws:
Carborundum Co.
Allis - Chalmers Mfg. Co.
Ford Motor Car Co.
Larkin Co.
Packard Motor Car Co.
Auto Wheel Co.
International Shipbuilding Co.

Have you an Oliver Catalogue ?



The swing saw gauge with several stops is a wonderful time-saving device for use in connection with any swing saw where boards of uniform length are to be cut. Let us send you literature on these or such other wood-working machinery as you may need.

Oliver Machinery Co., Grand Rapids, Mich., U.S.A.

Keep Your Shop Clean

Remove your sawdust, shavings, or other loose material with a Canadian Standard Reversible Mill Exhauster.

A clean shop with machines free from shavings, chips or sawdust makes for greater efficiency.

Let our engineering department help you plan your refuse exhaust system.

Write for Catalogue, 400-13

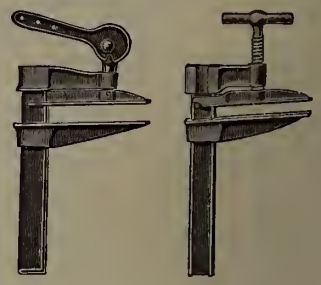
Canadian Blower & Forge Co. Ltd.

KITCHENER, ONT.

Colt's Clamps

for the

Woodworker



Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

For further information write for Catalogue No. 294.

Batavia Clamp Co.

235 Centre St. **BATAVIA, N. Y.**

Hardwood Dowels

Plain, Straight and Spiral Grooved

"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co.

Orillia, Ontario **Limited**

Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

THE SHAPER MAN'S DREAM

THE KNOUREK PATENT

Ball Bearing Shaper Guide Collars

A Decided Improvement Over the Revolving Solid Collars Now in Use

Patent applied for

Ball-bearing Shaper Guide Collars are made with grooves as shown, for flat knives, and without grooves for solid steel cutters.

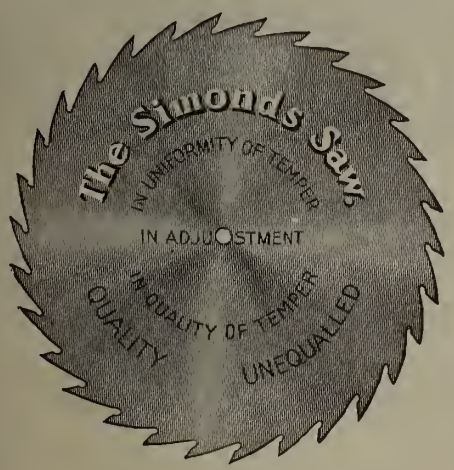
ORDER A SET ON 30 DAYS FREE TRIAL

The friction set up by stock or patterns bearing against solid revolving collars is entirely eliminated when ball-bearing shaper collars are used. Every shaperman knows the effect of this friction on stock being run, and so will appreciate the real value of these new shaper collars.

In the operation of the ball-bearing collar, the outer shell is free from the slotted collar proper and ceases to revolve with the spindles when pattern or stock comes in contact with it. It does not stop entirely but simply rolls along with the feed of the work. In this way there is no friction whatever between the collar and the work, therefore the edge surface can neither be burned nor worn down.

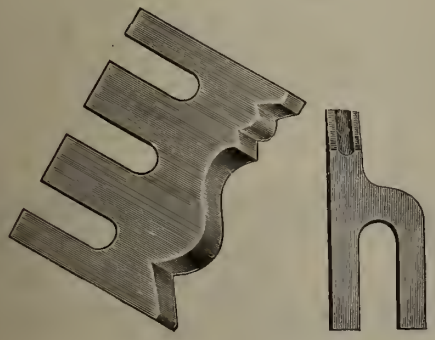
To save your patterns, stop spoilage of stock and in an easy manner, enable your operator to do more work, you should try out these new ball-bearing shaper collars —note the results by actual operation in your own plant.

Dept. A **WOODWORKERS TOOL WORKS** **Chicago, Ill.**



SIMONDS
SAWS and KNIVES

Are made right. Every operation from the making of the steel to the finishing and packing is watched by experienced workmen. The latest appliances known to the metal trades are used to insure the quality of SIMONDS Saws and Knives. After each operation they are inspected by experts for defects in quality and workmanship. The result—as good a saw as human skill and science can make. Prove it to your own satisfaction. Let us quote you on the tools you need.



Simonds Canada Saw Co.

LIMITED

St. John, N.B. MONTREAL, Que. Vancouver, B.C.

No. 3 Self Contained Scroll Saw

Colladay Machine Works

Successors to

Jos. O. Colladay Co., Inc.

Manufacturers of a complete line of woodworking machinery

Since 1867 Philadelphia, Pa.

EMPIRE

ALL STEEL

RETAINING CLAMPS

have long life built right into them. We spend more money for the materials in the first place: —the special thread takes us longer to make and takes you longer to break,—yet "EMPIRES" cost you no more than weakling clamps.

All Sizes.

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Special Woodworking Tools of All Kinds.

Empire Tool Works

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TRADE MARK MONITE WATERPROOF GLUE

Monite Waterproof Glue

represents proved superiority. MONITE satisfies all the requirements in glue, namely:

Strength Uniformity Dependability Heat and Water Resistance
Unchanging Adhesion in All Weathers and Climates.

The product of years of research and experiment, MONITE offers new and greater value—the best waterproof glue obtainable in America. It can be adopted with confidence in every branch of the woodworking industry.

Write for our booklet—let us submit prices and samples.
Our skilled demonstrators are at your service.

Made Under U.S. patent

Representatives and stocks at:—

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Successors to Certus Cold Glue Co.
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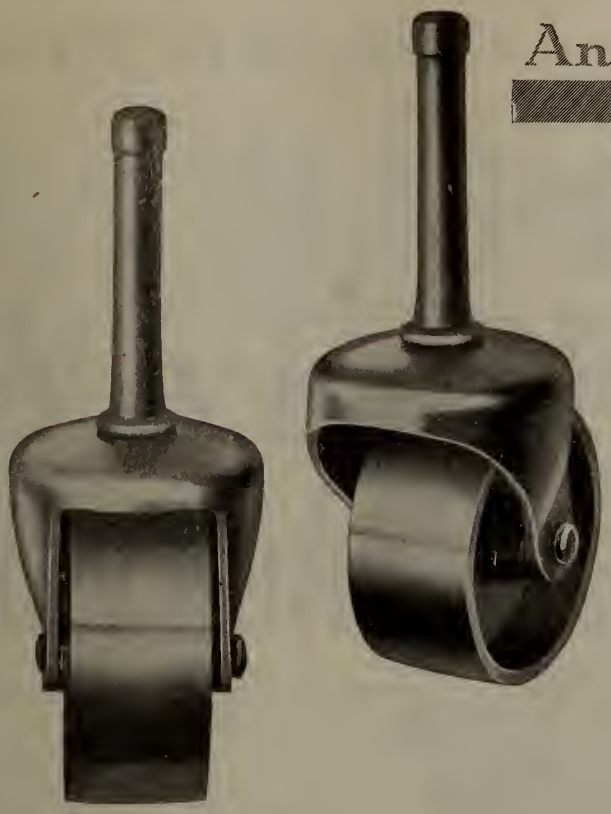
Toronto, Can.

MONITE WATERPROOF GLUE

An Efemco Product



They Look Good and Work Better

Efemco Acme Grip Neck Casters improve appearance and increase mobility. Because of their smooth, free action, strong axles and compact, sturdy construction, they meet the demands of furniture manufacturers and all users of good casters.

Acme Grip Neck Casters are one of the biggest selling items of the Efemco line. They are made in sizes 3, 4, 5, 6, and 7, with Maple, Lignum Vitae, Steel, Iron and Fibre wheels—brass-plated, nickel-plated or non-plated —for furniture of all styles and grades.

Write for catalogue showing new lines of improved Efemco *Casters*

Efemco Products / Efemco Products / Efemco Products / Efemco Products / Efemco Products / Efemco Products

FOSTER, MERRIAM & CO.

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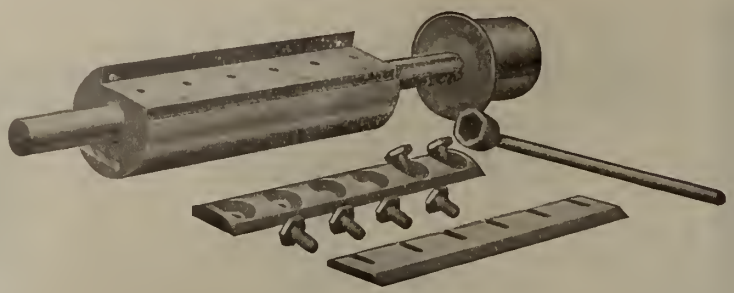
Efemco PRODUCTS

Grip Neck Casters
Ball Bearing Casters
Roller Bearing Casters

Truck Casters
Furniture Trimmings
Automobile Accessories

Piston Rings
Cast Aluminum Ware
Grey Iron Castings

Standardized by 85 years of service



PROTECTION—

Safety First! How often have we heard or seen this phrase, yet daily, yes, and oftener, accidents are occurring. Silver's Round Safety Cylinder will protect the operators of any of our new jointers from needless injury. They are greatly appreciated by the operators of these machines and they help wonderfully to increase production. Write us for descriptive matter regarding our complete line of machinery that will interest you.

The Silver Mfg. Co. Box 370 **Salem, Ohio, U.S.A.**

BEAVER DADO

"BEAVER"

A line of saws for the woodworking and manufacturing industries that embody all that quality of material and good workmanship stand for.

Beaver Saws give long, efficient service and are holding a high position in the estimation of plant owners throughout the Dominion.

JUST TELL US YOUR SAW REQUIREMENTS

Radcliff Saw Manufacturing Company, Limited

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Every Sheet is WARRANTED and STAMPED "OAKEY'S"

GLASS PAPER

EXTRA STRONG FLINT, SAND & GARNET PAPERS

In rolls 50 yards long by 18, 20, 24, 30, 36, 40, 42 & 48 inches wide

Also in Sheets, Discs, Strips and Bands, of various sizes to suit requirements of Purchasers

This Superior CABINET GLASS PAPER is made especially for the use of Pianoforte and Cabinet Manufacturers. Carpenters, Carvers, etc., etc.

Mfrs. of Emery, Black Lead, Glass, Emery, Flint & Garnet Papers & Cloths Emery Wheels, etc

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NAPCO WATERPROOF GLUE

No wastage

Applied cold—and mixed cold

Profitable in its saving

Consistent in all grades of work

Odorless in the glue room

NAPCO is absolutely uniform. It eliminates waste, is easily applied, is impervious to water, and never lets go.

NAPCO joints are as strong as the wood.

H. LEFEBER

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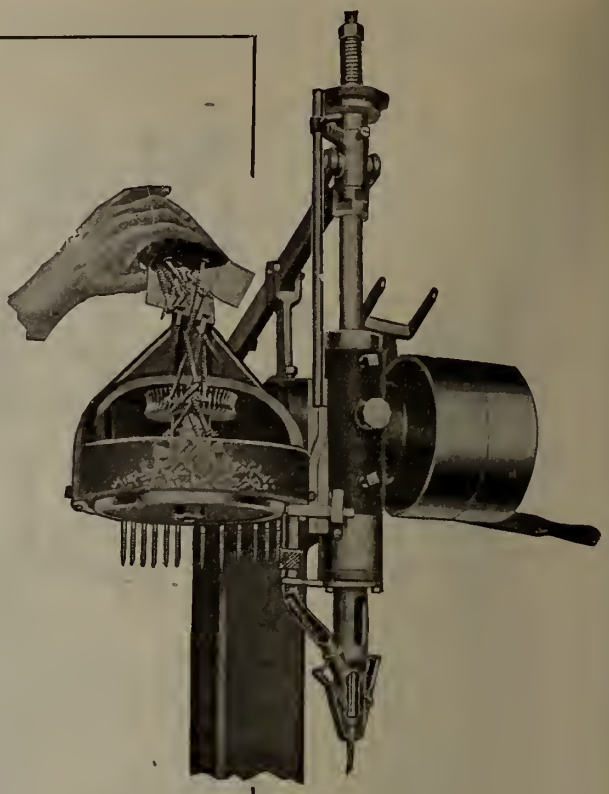
SOLE AGENT FOR CANADA

Deliveries made from either Montreal or Toronto Warehouses.

Dump a Box of Screws in the Magazine

A box of screws is poured into the Magazine Feed of the Reynolds Automatic Screw Driving Machine by any inexperienced man or boy, who can then drive from 8000 to 12,000 screws or bolts in a day.

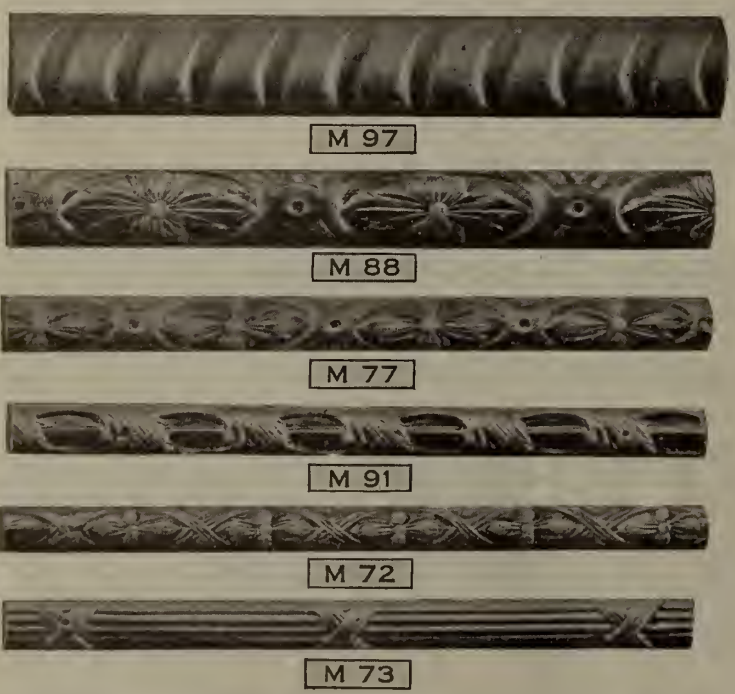
Write us stating the extreme dimensions over all of your work and the gauge and length of screws used and we will send you illustrations and specifications covering the size and type machine to meet your requirements.



The Reynolds Machine Co.

Department C

Massillon, Ohio - U.S.A.



MOULDINGS We are making more Period Mouldings than ever before. Orders should be placed early to assure your supply when needed.

KNOBS The Period Knobs we placed on the market a few months ago are proving very popular. If you have not received samples ask for them now.

ROSETTES A new Period item to accompany the knobs.

Waddell Manufacturing Company

Coldbrook and Taylor, N. W. **Grand Rapids, Mich.**

Some Wise Man said

"No mere spasm of goodness will make a right life, for we rise no higher than our habitual thinking."

—Anon.

This can be paraphrased to read

"No mere spasm of efficient manufacturing will make a first class product, and no business endures, except by habitual right methods."

We use the best skill possible in our manufacturing process, carried out under our exclusive formula. Our

PERKINS 183

TRADE MARK (Reg. U.S. Pat. Office).

is the result and this result is reflected in the factories of our customers and

THE PERKINS HABIT Insures Efficient Glue Room

Process and Product Patents covering Perkins Glue were granted July 2nd and March 19th, 1912, and have been held valid and infringed by the United States Circuit Court of Appeals. Patents have also been granted in Canada, Great Britain, Germany, France, Belgium, Italy and other foreign countries.

Perkins Glue Company

Factory and General Offices:
LANSDALE, Pennsylvania.

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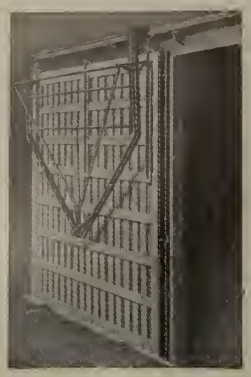
The Door Carrier System



Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

Ask for catalogue.

DRY KILN DOOR CARRIER CO.
1117 Cornell Ave.
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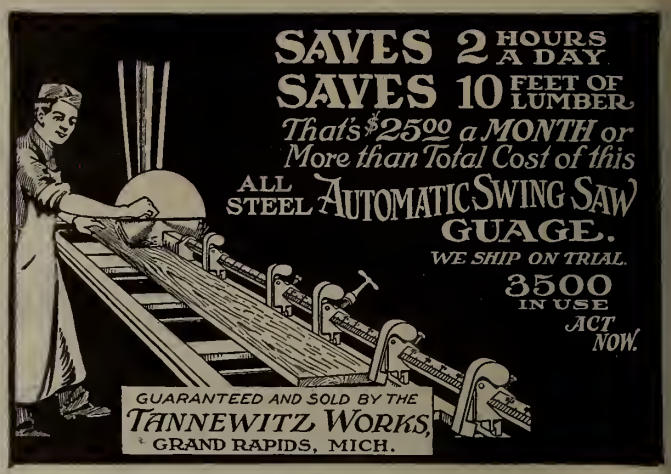
SAVES 2 HOURS A DAY
SAVES 10 FEET OF LUMBER
That's $25.00 a MONTH or More than Total Cost of this
ALL STEEL AUTOMATIC SWING SAW GUAGE.
WE SHIP ON TRIAL.
3500 IN USE
ACT NOW.
GUARANTEED AND SOLD BY THE
TANNEWITZ WORKS,
GRAND RAPIDS, MICH.

TWO SWAGES IN ONE

Whether you use Band or Circular Saws, the "CROWELL" will swage either kind without extra attachments.

When you need a Swage and Shaper for fitting your saws, you want them quick.

A test will convince you that you never used their superior.

We make prompt deliveries of these tools —all sizes.

Write To-day

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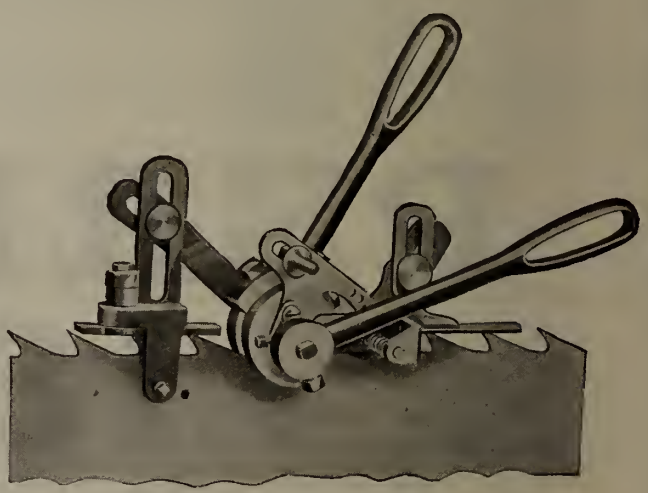
Shurly-Deitrich Co. Ltd., Galt, Ont., and Vancouver, B.C.
A. R. Williams, Toronto, Ont.; St. John, N. B., and Montreal, Que.
P. B. Yates Machine Co., Hamilton.
Simonds Canada Saw Co., Montreal, Que., and St. John. N.B.
Henry Disston & Sons Ltd., Toronto, Canada.

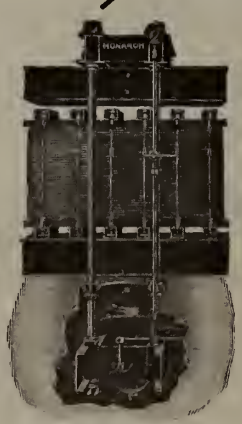


Band Resaw and Circular Swage

D. J. CROWELL

61 Terrace ***Buffalo, N.Y.***

Farquhar Hydraulic Machinery



Monarch Veneer Presses

Farquhar Hydraulic Veneer Presses have double steel head and base, and heavy steel strain rods. Cylinder, which is of steel with detachable saddle, can be repacked without removing the ram. Pump is quick acting, of rigid construction. A pressure of 100-lbs. to the square inch is applied to the veneering surface. Stock is handled by retainer system, unsurpassed both for efficiency and economy.

These presses are built to suit all requirements, liberal proportions with first quality material and workmanship throughout.

We make a specialty of Pumps, Accumulators, Etc. Also all kinds of special Hydraulic Presses and equipment to order. Write us concerning your requirements.

A. B. FARQUHAR CO., Limited, Box 171, York, Pa.

KILNS

that will dry your lumber ***right*** no matter what you make.

Grand Rapids Vapor Kiln
Grand Rapids, Mich.

Western Vapor Kiln Co. Seattle, Wash.

The Machine You need

may be included in the following list of new and used Woodworking Machinery. If so, get in touch with us promptly and we will send you prices and full specifications.

Matchers, Moulders, Sanders, Shapers, Jig Saws, Power Feed Rip Saws, Band Rip Saw, Band Saws, Linderman Glue Jointer, Mortising Machine, Belt Sanders, Disc Sanders, Sash and Door Cramp, Knife Grinders, Turning Lathes, Buzz Planers, Single Surfacers, Double Surfacer, Multiple Spindle Lockman Carver, Hand Screw Veneer Presses, Scrapers, Exhaust Fans, Belting, Pulleys, Hangers, Shafting, Bearings, and Belt Lacing Machines.

If you don't see what you want, write us

General Machinery Company
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Sidman Lumber Curing Kiln

Is THE Satisfactory Kiln

Ask Any User

THE SIDMAN L.C.K. Reg. Trade Mark LONDON CANADA

The SIDMANS of CANADA

Heating and Ventilating Engineers
Lumber Curing Specialists

LONDON : ONTARIO

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ALL STYLES OF KNIVES FOR WOODWORKERS

Are you getting the maximum production from your knife equipment? With the present necessity for greatly increased production, be sure your knives will give you the best possible results.

Disston knives cut fast and clean ,and hold their cutting edge.

Write for the Disston booklet on Machine Knives.

HENRY DISSTON & SONS LIMITED
TORONTO CANADA
Branch: Vancouver, B. C.

"MAPLE LEAF" SAWS

Inserted Tooth Saws
Solid Tooth Saws
Shingle Saws
Lath Saws
Special Grooving Saws
Dado Heads
Band Saws
Cross Cut Saws
Hand Saws
"Crowell" Swages and Shapers

Maple Leaf Saws are made by the largest All-Canadian Saw Manufacturers

Shurly-Dietrich Co.
LIMITED
Galt Vancouver Ottawa

For Six Thousand Years

This is Mr. C. A. Fields—a most competent dry kiln man—who will render personal service to you in connection with your requirements. Mr. Fields is supported by our efficient engineering corps and backed by our substantial resources. His address is P. O. Box 55, Toronto, Ontario.

The world wagged along without Automobiles, Airplanes or

Automatic Humidity Controlled

DRY KILNS

In the old days, folks walked for a while; then they rode beasts; afterwards built carts, wagons, buggies, carriages, railroads, street cars, and **finally** autos and airplanes. They first used green lumber; then they air-dried it; then built hot boxes, afterward dry kilns, moist air dry kilns, and **finally** we have the

National Automatic Humidity Controlled Dry Kiln

The First Kiln in which Humidity is Automatically Controlled in Six Thousand Years

Ask for New Catalogue

THE NATIONAL DRY KILN CO., 1117 East Maryland St., Indianapolis, Indiana.

NATIONAL DRY KILNS

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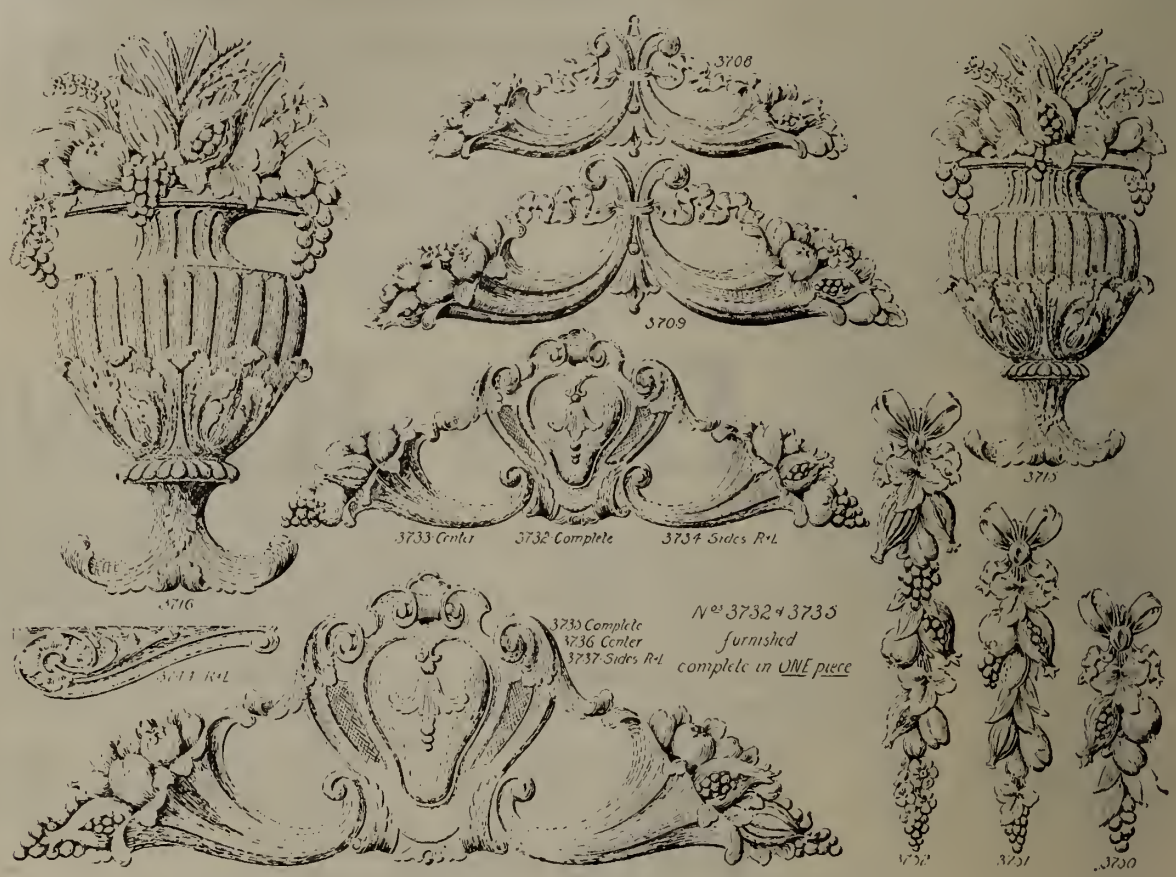

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Furniture	Churches	Altars	Steamships
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Thousands of designs to choose from

WE INVITE YOUR INQUIRIES

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The Largest Plant in America devoted exclusively to the manufacture of special table parts for the table maker

TABLE SLIDES
TABLE RIMS
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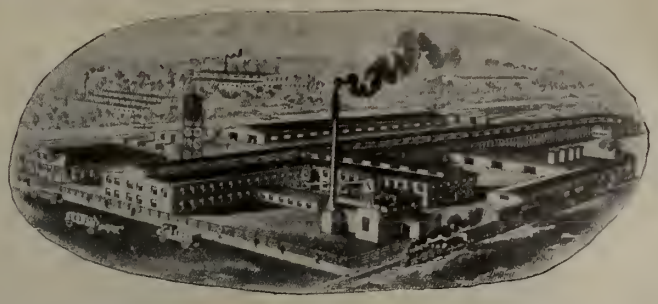
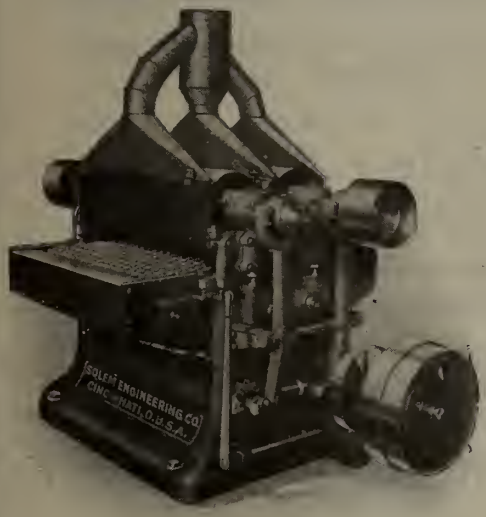


QUEEN ANNE
WILLIAM & MARY
TABLE LEGS

THE JEFFERSON WOODWORKING CO., Inc. **Louisville, Ky.**

Greater Production
with
Less Experienced Help



The No. 370 Drum Sander is so simple and accident proof that any boy or girl can feed and take away with absolute safety.

Write for descriptive bulletin.

Patented May 6, 1919

The patented RUBBER PADS used for the bed of this sander are decidedly an improvement and are used in large quantities on every make of Endless Bed Sander. Ask for sample.

Solem Machine Company
ROCKFORD, ILL., U. S. A.

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Thos. S. Young, General Manager

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Vancouver, Chicago, New York,
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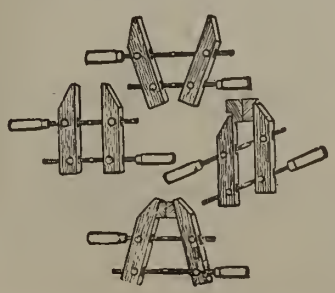
PRESSES

For Veneer and Veneer Drying
Made in Canada

William R. Perrin
Limited
Toronto

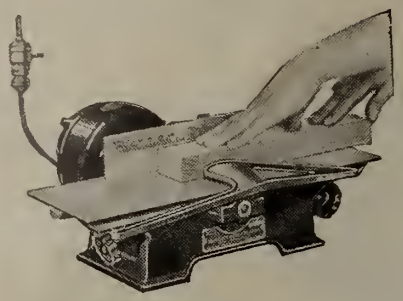
Adjustable Clamp Company
216 N. Jefferson St., Chicago, U.S.A.



Manufacturers of the
"JORGENSEN"
the Original
Adjustable Steel
Spindle Clamp

Adjustable to any position. Well made to give the service. Efficient in every way they are bound to win your approval.

If you cannot buy them from your Jobber write us direct.



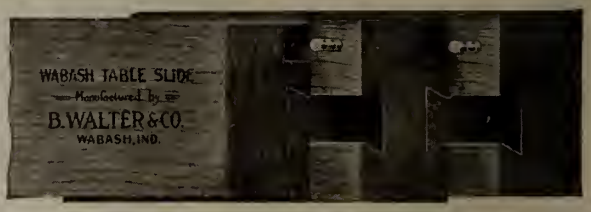
We now have Sixteen Wallace Bench Planers

. . . . doubled our output through the use of these machines . . . . They should be on every Cabinet maker's bench to eliminate hand planing and unnecessary foot work.

Wisconsin Chair Co.,
Phonograph Dept.
9-3-19

J. D. Wallace & Company
1414 Jackson Blvd., Chicago

THE SLIDE IS THE HEART OF YOUR EXTENSION TABLE



If the Slide Does Not Work Properly Your Whole Table is Condemned

Wabash Slides insure Satisfied Customers

SLIDE MAKING is a SPECIALTY BUSINESS

We can Furnish Better Slides for Less Cost

Eliminate Slide Troubles by using WABASH SLIDES

MADE BY

B. Walter & Company
Edsall St., Wabash, Ind.

Cut Miles without Grinding

A Characteristic Experience

Richmond, Indiana.

G. M. Diehl Machine Works,
Wabash, Ind.

Gentlemen:—

You may possibly be interested in an experience which we had recently in our factory with your Diehl Heads and Cutters.

Our Sticker man recently made a run of 10,000 stiles, each piece being 73 inches long, of hardwood, in which we cut a groove ¼ inch wide by 9/16 inch deep, and we made the entire run without taking the Heads or Bits off the machine and without resharpening, which makes a total run of a little more than 11½ miles. The Bits would, no doubt, have run quite an additional number of feet before it would have been absolutely necessary to sharpen them. We consider this a very good performance, especially in view of the fact that these stiles were all run from the rough wood and the Heads being used on a four-sided Sticker

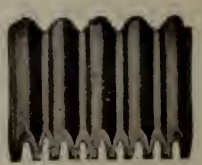
Very truly yours,

RICHMOND FURNITURE MFG. CO.,
Per O. H. BRUBAKER, Manager.

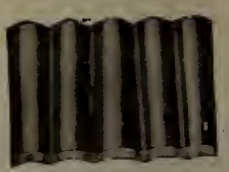
Send for Catalogue

The G. M. Diehl Machine Works
WABASH, INDIANA - U. S. A.
On the Banks of the Wabash

Cary's SUPERIOR QUALITY Corrugated Fasteners



SAW EDGE



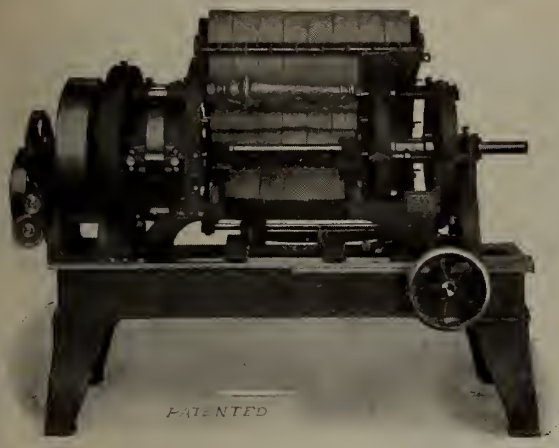
PLAIN EDGE

According to final decision, after long litigation, we have been granted the SOLE RIGHT to manufacture a Saw Tooth Corrugated Fastener with a continuous cutting edge. Our fastener is beveled evenly on both sides, which enables fasteners to be driven in straight, and much easier than any other fastener made. Our Corrugated Fastener is made in various widths and corrugations, also in coils wound right and left. Try our products and you will use no other.

Samples and prices on request.

CARY MFG. CO., Brooklyn, N.Y.

Have You Considered



Using the NASH SANDER for your furniture turnings? It is saving users $2,000 to 3,000 a year. Is there any reason why it cannot do that for you? Why not give it a trial?

J. M. NASH, Milwaukee, Wis.

COST REDUCER

That's what one of the users of the No. 147 Hollow Chisel Mortiser says about it. It will also reduce your Mortising costs and give you clean, square mortises in both hard and soft wood. Takes chisels up to ¾ in. and furnished with either plain or compound table and for either belt or direct motor drive. Write for price and circular as at present we can make prompt delivery.

Address:

Hall & Brown Wood Working Machine Co.
1913 North Broadway St. Louis, Mo.

Holds Heat and Conserves Current like a Fireless Cooker

"INTERNATIONAL" Electric Glue Heaters

Fireless cooker principle conserves and utilizes every bit of heat generated. Holds glue at correct working temperatures without guesswork. Average cost of operation about one cent per day. Keeps glue at correct temperature for greatest tensile strength. Properly glued joints never fail. This heater has a place in every shop and factory. Sizes, one pint to fifty gallons. Heavy spun copper construction. No seams or soldered joints. Three heats. No water bath. Clean, safe, economical. Portable. Fits any lamp socket. Used by prominent concerns everywhere.

Write for folder, "Correct Temperature in the Glue Room."

INTERNATIONAL ELECTRIC COMPANY
MANUFACTURERS
ELECTRICAL HEATING APPLIANCES
INDIANAPOLIS, U.S.A.

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R. E. T. PRINGLE, Limited

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"International Electric Heaters are the best."

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First Quality Material for Fibre and Upholstered Furniture Manufacturers

Good Furniture is Only Made From Good Materials, Well Selected Carefully Handled and Inspected

In selecting your Fibre Cord and stakes for Fibre Furniture you can secure no better material than that which we produce. Our Cord is carefully watched throughout the entire process of manufacture and kept uniform in strength. It is giving perfect satisfaction.

Our Uniflax Seaming Cord for Upholstered furniture is unexcelled. It serves the purpose perfectly and lasts indefinitely. Prices for these materials are commensurate with the quality and are withal very reasonable.

GRAND RAPIDS FIBRE CORD COMPANY

1101-1157 Elizabeth Ave. **Grand Rapids, Michigan**

Boilers in Stock—Do You Need One?

Not often this opportunity presents itself. Quality and workmanship considered you'll never do better. Subject to prior sale—125 and 150 lbs. pressure—We have 72″ x 18′, 72″ x 16′, 66″ x 16′, 66″ x 14′.

Write or wire us to-day for quotations

Engineering & Machine Works of Canada, Limited

St. Catharines, Ont.

Eastern Sales Offices:
Hall Machinery Co., Sherbrooke Que., and Birk's Bldg., Montreal.

and the truth about Dry Kilns

is not established by mere **CLAIMS** in ads, but by the experience of **actual users.** They are the people to ask. **WE** are willing on

THE STANDARD DRY KILN

A list of representative firms in your line—the kind of firms whose opinion you value—will be sent gladly. Address:

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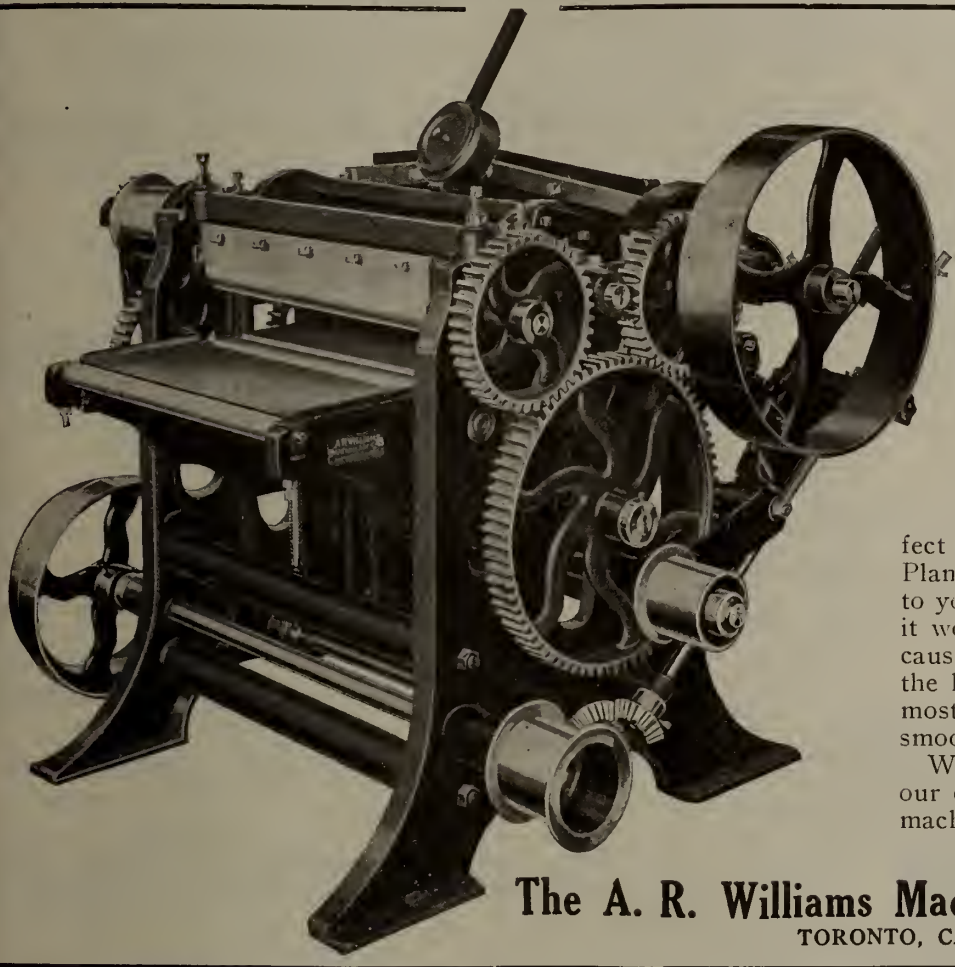

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Canadian Blower & Forge Co., Kitchener, Ont.
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Canada Machinery Corporation, Galt, Ont.
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Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
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Reynolds Machine Co., Massillon, Ohio.
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Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Morgan Machine Co., Rochester, N.Y.
Preston Woodworking Machinery Company, Preston, Ont.
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Yates Machine Co., P. B., Hamilton, Ont.

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Batavia Clamp Company, Batavia, N.Y.
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Cowan & Company, Galt, Ont.
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Garlock-Walker Machinery Co., Toronto, Ont.
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Preston Woodworking Machinery Company, Preston, Ont.

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Canada Machinery Corporation, Galt, Ont.
Cowan & Company. Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
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Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

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Cowan & Company, Galt, Ont.
Diehl Machine Works, G. M., Wabash, Ind.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Shimer Cutter Head Co., Galt, Ont.
Yates Machine Co., P. B. Hamilton, Ont.

CYLINDER HEADS
Cowan & Company, Galt, Ont.

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Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

DOWEL MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Hawker Mfg. Co., W. S., Dayton, Ohio.
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DUST SEPARATORS
Canadian Blower & Forge Co., Kitchener, Ont.

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American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
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Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

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Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
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Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
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Yates Machine Co., P. B., Hamilton, Ont.

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Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
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International Electric Co., Indianapolis, Ind.
Jackson, Cochrane. & Company, Kitchener.
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GRINDERS (Knife)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
GRINDERS (Tool)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane, & Company, Kitchener, Ont.
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Probst Lumber Co., Cincinnati, Ohio.
Sondheimer Co., E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Thomas & Proetz Lumber Co., St. Louis, Mo.
HAND SCREWS
Fay & Egan Co., J. A., Cincinnati, Ohio.
HANDLE & SPOKE MACHINERY
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.
HARDWARE
Laidlaw Bale-Tie Co., Hamilton, Ont.
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American Hardwood Lumber Co., St. Louis, Mo.
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American Walnut Association, Washington, D.C.
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Biglow-Cooper Co., Bay City, Mich.
Boland Lumber Co., Grand Rapids, Mich.
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Brown & Company, Geo. C.
Brown & Hackney, Inc., Memphis, Tenn.
Bury & Company, Robert, Toronto, Ont.
Buskirk Rutledge Lumber Co., Cincinnati, O.
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Conkling Lumber Co., Frank A., Memphis, Tenn.
Cornelius Lumber Co., St. Louis, Mo.
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Merceau-Hawkins Tie Co., Huntington, W.Va.
Mowbray & Robinson, Cincinnati, Ohio.
Murrelle Lumber Company, Memphis, Tenn.
Paepcke Leicht Lumber Co., Chicago, Ill.
Pedwell Hardwood Lumber Co., Toronto, Ont.
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Reese Sheriff Lumber Co., Williamsport, Pa.
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Sondheimer Co., E., Memphis, Tenn.
Spencer, C. A., Montreal, Que.
Spotswood & Son, E. R., Lexington, Ky.
Stark & Co., Jas. E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Sterrett, Will S., Cincinnati
Stimson Hardwood Co., J. V., Memphis, Tenn.
Tallahatchie Lumber Co., Memphis, Tenn.
Thompson, Katz Lumber Co., Memphis, Tenn.
Tustin Hardwood Lumber Co., Memphis, Tenn.
Utley-Holloway Co., Chicago, Ill.
Warren-Ross Lumber Co., Jamestown, N.Y.
Wheeler-Timlin Lumber Co., Wausau, Wis.
Woodruff Powell Lumber Co., South Bend, Ind.
Wayne Lumber Co., New York
Yellow Poplar Lumber Co., Coal Grove, Ohio.
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Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
KNIVES (Planer and others)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Onio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochane & Company. Kitchener. Ont.
Mattison Machine Works, Rockford, Ill.
Petrie. H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Smith, C. W., Grand Rapids, Mich.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
LEATHER (Artificial)
Burch Co., A. F., Grand Rapids, Mich.
Fibro Mfg. Company, Beverly, N. J.
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Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
MIRRORS
Hart Mirror Plate Co., Grand Rapids, Mich.
MITRE SAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
MOTOR TRUCK EXTENSIONS
Swedish Crucible Steel Co., Windsor, Ont.
MOULDERS
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.
MULTIPLE BOXING MACHINES
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Nash, J. M., Milwaukee, Wis.
NAILS
Laidlaw Bale-Tie Co., Hamilton, Ont.
NAILING MACHINES
Morgan Machine Co., Rochester, N.Y.
OIL STONE GRINDERS
Mummert-Dixon Co., Hanover, Pa.
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Roberts, Geo. G., Chicago, Ill.
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PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago. Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
PERIOD MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.
PERIOD TURNINGS
Walter & Sons, J., Kitchener, Ont.
PLANERS
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
PLANING MILL MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
PORTABLE DRILLS
Wisconsin Electric Co., Wisconsin, U.S.A.
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Canada Machinery Corporation, Galt, Ont.
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Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
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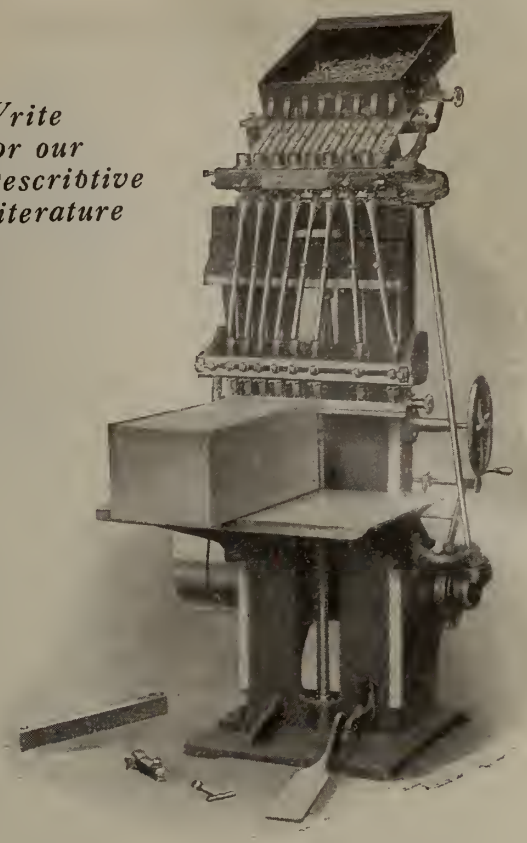
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
RIM AND FELLOE MACHINERY
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A. Cincinnati, Ohio.
RIP SAWING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.
ROSETTES
Waddell Mfg. Co., Grand Rapids, Mich.
RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.
SAFETY DEVICES
Cowan & Company, Galt, Ont.

How do YOU Drive Nails?

Write for our Descriptive Literature

The Morgan Automatic Nailing Machine will prove a good investment for any woodworking plant. It drives nails anywhere and in any kind of wood, accurately, effectively and faster than it is possible to do it by hand. It makes money for Box Factories, Canning Factories, Cabinet Factories, Furniture Factories, etc.



No. 8 Plain Nailing Machine

Morgan Machine Co.

DEPT. A ROCHESTER, N.Y.

Increases Service — Reduces Costs

OLSON FRAME EXTENSION

OLSON FRAME EXTENSION — When you desire to increase the carrying capacity of your Ford Truck, insist on having the Olson Frame Extension.

The perfect balance of the Olson makes the transportation of lumber, furniture etc , a simple matter, even for long distances.

Our nearest branch will be pleased to furnish you with all particulars.

Just a Few Users—

Robert Bury Co. Canada, Limited, Toronto, Ontario.
Batts, Limited, Toronto, Ontario.
Gibbard Furniture Company, Napanee, Ontario.
Langmuir Manufacturing Company, Toronto, Ontario.
Gardiner Lumber Company, Galt, Ontario.
Irvin Lumber Company, Toronto, Ontario.

Swedish Crucible Steel Co. of Canada, Limited, Windsor, Ont.

Branches: 901 Royal Bank Bldg., TORONTO 285 Beaver Hall Hill, MONTREAL.

"Canadian Woodworker" Buyers' Directory—Continued

SANDERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Solem Engineering Co., Sheboygan, Wis.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAND PAPER
Manning Abrasive Company

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Elliot Machinery Co., Belleville, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS
Atkins & Co., E. C., Indianapolis, Ind.
Disston & Sons, Henry, Toronto, Ont.
Elliot Machinery Co., Belleville, Ont.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Silver Mfg. Company, Salem, Ohio.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.

SAW BENCH
Sidney Machine Tool Co., Sidney, O.
Wallace & Co., J. D., Chicago, Ill.

SAW SWAGES
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES
Canada Machinery Corporation, Galt, Ont. ..
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Company, Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont. ..
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY
Reynolds Machine Co., Massillon Ohio.

SCROLL SAWS
Canada Machinery Corporation, Galt, Ont. ..
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane, & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamiltonfi Ont.

SECOND-HAND MACHINERY
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Osborne Sexton Machinery Co., Columbus, O.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS
Anketell & Davies, Toronto, Ont.
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

STAINS
Ault & Wiborg, Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ohio.
Shannon Co., Ed. J., Cincinnati, Ohio.
Standard Paint & Varnish Co., Windsor, Ont.

SINGLE SPINDLE BOXING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE
Whitney & Son, Baxter D., Winchendon, Mass.

STEEL DOOR MATS
Cary Mfg. Company, Brooklyn, N.Y.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Colladay Machine Works, Indianapolis, Ind.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Tannewitz Works, Grand Rapids, Mich.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohoa.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES
Jefferson Woodworking Co., Louisville, Ky.
Walter & Company, B., Wabash, Ind.

TEMPERATURE REGULATORS
Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Compan, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS
International Business Machines Co., Toronto, Ont.

TRIMMERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Preston Woodworking Machinery Company, Pretson, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS
Cowan Truck Company, Toronto, Ont.
National Dry Kiln Co., Indianapolis, Ind.

TURNED WOOD GOODS
Algoma Wood Products Co., Algoma, Wis.

TWINES & WEBBING
Doon Twines, Ltd., Kitchener, Ont.

UPHOLSTERY FABRICS
Burch Co., A. F., Grand Rapids, Mich.

UPHOLSTERY SUPPLIES
Burch Co., A. F., Grand Rapids, Mich.

VARNISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto, Ont.
Flint Varnish & Color Co., Montreal, Que.
Penfound Varnish Co., Toronto, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N.Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS
Astoria Mahogany Co., New York, N.Y.
Batesville Lumber & Veneer Co., Lawrenceburg, Ind.
Birds Eye Veneer Co., Escanaba, Mich.
Bury & Compny, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christmann Veneer & Lumber Co., St. Louis, Mo.
Curtis Co., C. E., Chicago
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Evansville Veneer Co., Evansville, Ind.
Freiberg Lumber Co., Cincinnati, Ohio
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Holden, Henry S., Chicago, Ill.
Geo. Kersley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Litton Veneer Co., Rockford, Ill.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Veneer Co., New Albany, Ind.
Roberts, Geo. G., Chicago, Ill.
Southern Veneer Mfg. Co., Louisville, Ky.
Stimson Veneer & Lumber Co., Memphis, Tenn.
Sturm Co., Adolph, Chicago, Ill.
Talge Mahogany Co., Indianapolis, Ind.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Underwood Veneer Co., Wausau, Wis.
Veneer Manufacturers Co., Chicago, Ill.
Waetjen & Co., George L., Milwaukee, Wis.

VENEER TAPE
Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.

VENEER JOINTERS
Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY
Garlock-Walker Machinery Co., Toronto. Ont.

VENEER PRESSES (Hand and Power)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont
Perrin & Company, Wm. R., Toronto, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Johnson Co., O. E., Chicago, Ill.

WALNUT LUMBER
American Walnut Mfrs. Assn., Chicago.
Des Moines Saw Mill Co., Des Moines, Iowa.
Pickrel Walnut Company, St. Louis.
Purcell Walnut Lumber Co., Frank, Kansas City.

WIRE
Laidlaw Bale-Tie Co., Hamilton, Ont.
Pakanship Company, Brooklyn, N.Y.

WIRE BOX STRAPPING
Cary Mfg. Company, Brooklyn, N.Y.

WOOD FINISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Penfound Varnish Co., Toronto, Ont.

WOODWORKING MACHINERY
General Machinery Co., Toronto, Ont.

WOOD SCREWS
Robertson Mfg. Co., P. L., Milton, Ont.

WOOD TURPENTINE
Brown Corporation, Quebec, Que.

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Garlock-Walker Machinery Co., Toronto, Ont.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WODD LATHES
Colladay Machine Works, Indianapolis, Ind.

44 Yates No. 275
30 and 60-in. Automatic
Knife Grinders,
Brand New, at
One-half Price

Machines arranged for Motor Application as per cut, or regular belt drive, if wanted.

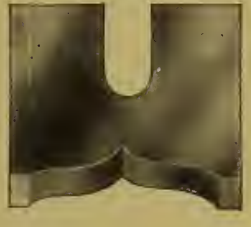
8 New Andrew Mutiple Vertical Borers, 20, 30, 42 and 60-in., any number of heads.

7 New Hermance Molders, 8, 10 and 12-in., stationary and slip-on heads.

Band rip saw, Fay & Egan, 42-in.
Band saws, 32, 36 and 38-in.
Borer, Andrew, 10-ft., 13-spindle, power table.
Borers, Andrew mult. vert., 20, 42 and 60-in., new.
Carver, 5-spindle, Moore.
Door clamp, Fay-Egan, heavy.
Edgers, two, three and four saws.
Glue cookers and retainers. Glue spreaders.
Hogs, two, Mitts & Merrill.
Jointers, 8, 12, 16, 20, 24 and 30-in.
Knife grinders, two 32-in., F. & E.
Lathe, Ober spoke and handle, almost new.
Lathes, Mattison, No. 8 auto; No. 6 block mach.
Lathes, speed, eight, mounted on iron bed.
Lock-corner machine, Morgan No. 8, full set.
Matcher, American Northwest, 24x8-in., 3 sides.
Matcher, end, Sherman, fine condition.
Matcher, 24x6-in., 3 and 4 sides.
Automobile spoke machines, Defiance, complete set.
Band resaw, 50-in., Fay & Egan, tilting rolls, full set of filing room tools.
Molder, Smith 14-in. outside, latest style, practically new.
Molders, 4-side, 9, 10 and 12-in. American.
Molder, Fay & Egan No. 184, 12-in. outside.
Molders, inside, 13-in. American and Woods.
Mortiser and router, Fay & Egan No. 124.
Mortiser, chain saw, New Britain No. 1, 25 chains.
Mortiser, chain saw, New Britain No. 7, new.
Mortisers, F. & E. vertical, hollow-chisel; also plunger type.
Nailers, two, Morgan No. 8, used three months.
Nailing machines, 2 closed back, 4-track, 4d, 15-in. spread.
Pony planers, 16, 20 and 24-in.
Relisher and mortiser, Greenlee.
Rip saws, self-feed, Hoosier, F. & E., Greenlee.
Router for stair stringers, H. B. Smith, flexible arm with adjustable table and forms.
Sand belt, closet seat and similar work.
Sander, H. B. Smith, spindle and disc, practically new.
Sanders, 30 and 42-in. Columbia; 30, 42 and 48-in. Invincible; 30-in. double Invincible.
Saw, 8-ft. double cut-off, roller table.
Saws, combination and variety, single and double arbor, also tilting arbor, stationary and tilting table, 24 and 30-in. circular resaw.
Saw, circular re-slab, 40-in. blade, power feed rolls.
Shapers, Fay single-spindle reversible, also Shimer single with overhead routing attachment.
Surfacer, 30-in. double, cabinet, B. & M., practically new.
Surfacer, Whitney 30-in. double, sectional roll and sectional chipbreaker; American No. 4½, 36-in. sectional and solid; Fay & Egan No. 140, 27 and 30-in. double divided rolls; also 18, 20, 24 and 30-in. single cylinder panel planers.
Tenoners, B. & M. double-end, also several single-end tenoners with and without copes.
Timber sizer, Fay-Egan 48, 17x12-in.
Window frame machines, Smith & Phillips combination.
Wood-worker, universal, Fay & Egan and Bentel & Margedant. One lot of glue room machinery.

The Osborne & Sexton Machinery Co.
Re-manufacturers **COLUMBUS OHIO**

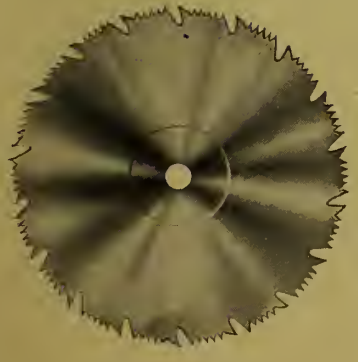
ATKINS
STERLING QUALITY
SAWS and KNIVES



mean continuous, efficient work and 100 per cent. production.

The extraordinary demand for more buildings and homes means that the Lumber output must increase.

Atkins Sterling Quality Saws and Knives will assist you in making the year 1920 the biggest and best in the history of your business.



Write to-day for our Knife Booklet "C W" and Pattern Template Paper

E. C. ATKINS & CO.
Makers of Sterling Saws

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

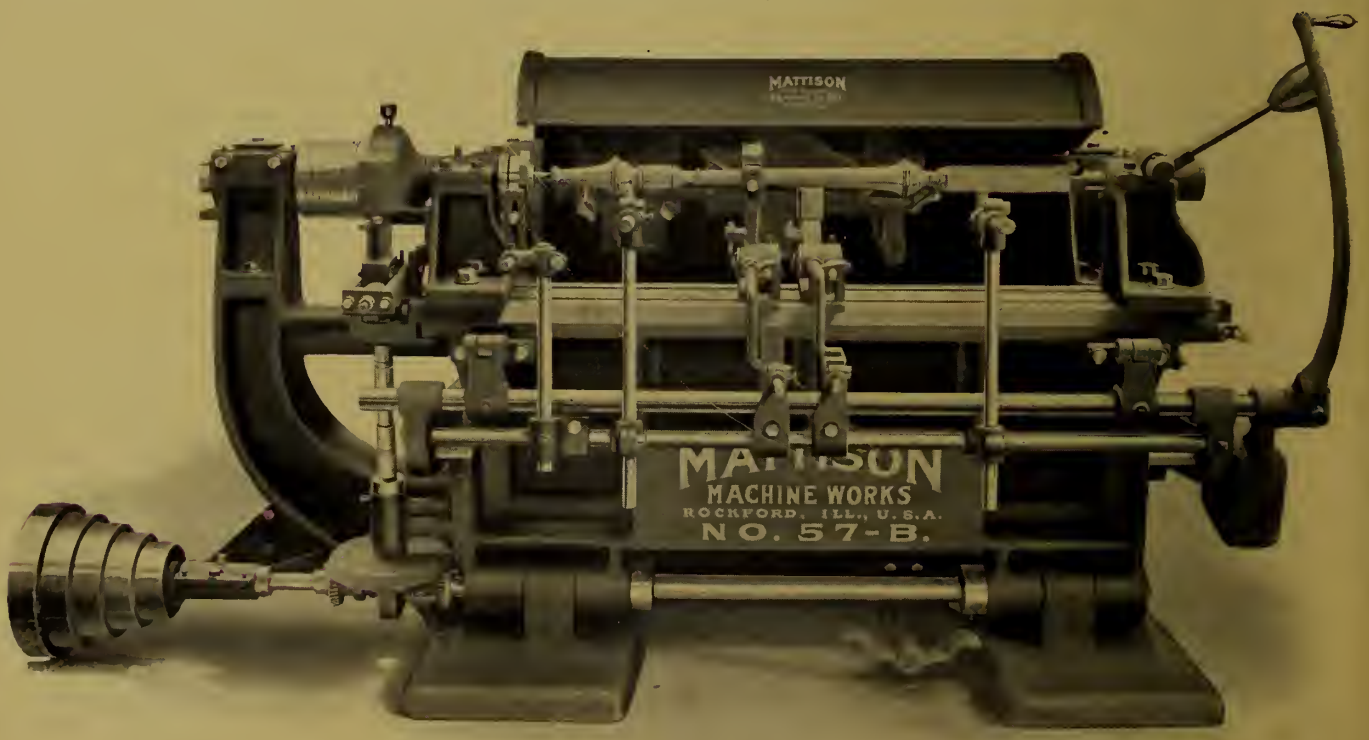
-the Exception Proves the "Mattison"

3000 Mattison Lathes are in operation. Still some manufacturers are getting along without one. Their high costs and the difficulty they experience in securing good work—quickly PROVES that it pays *big* to operate a "Mattison" Lathe.

MATTISON
"Automatic"
The Standard Shaping Lathe

Manufactured Only by

MATTISON MACHINE WORKS
ROCKFORD, ILL.

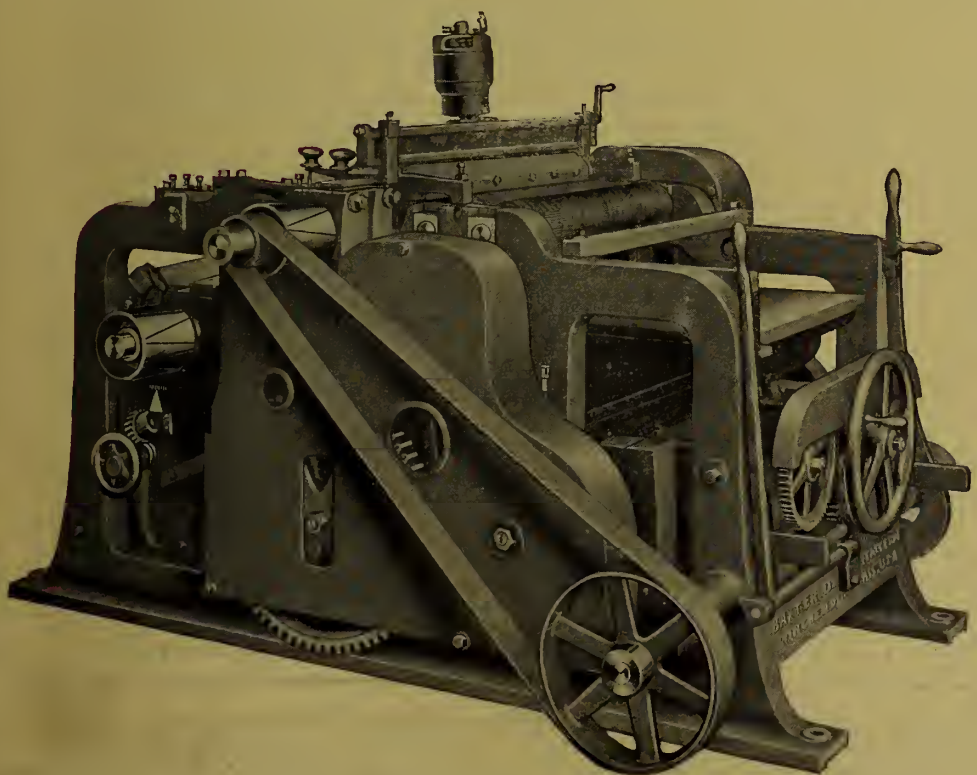


Volume Twenty TORONTO, OCTOBER, 1920 Number Ten

CANADIAN
WOODWORKER
and
Furniture Manufacturer

THE WHITNEY
No. 24 DOUBLE PLANER

is built to do the smooth and accurate planing required in Furniture, Desk. Chair and Cabinet Factories as well as Planing Mills and Box Factories.



These machines can be furnished with two or four-knife Square Cutter heads or four-knife Round Cutter Heads, Flexible or Sectional Chipbreaker and Motor-Driven Grinders and Devices.

Special Features

A Rigid Frame.

Bed raised and lowered on inclines.

Power hoist for bed.

Hardened Tables opposite cutter heads.

Automatic Chipbreaker.

Eight gear-driven feed rolls.

Two sectional infeed rolls.

Positive and powerful feed.

Clamp cutter head boxes.

Cutter heads with long bearings and large diameters.

Cutter heads belted at both ends.

Machine cut gears.

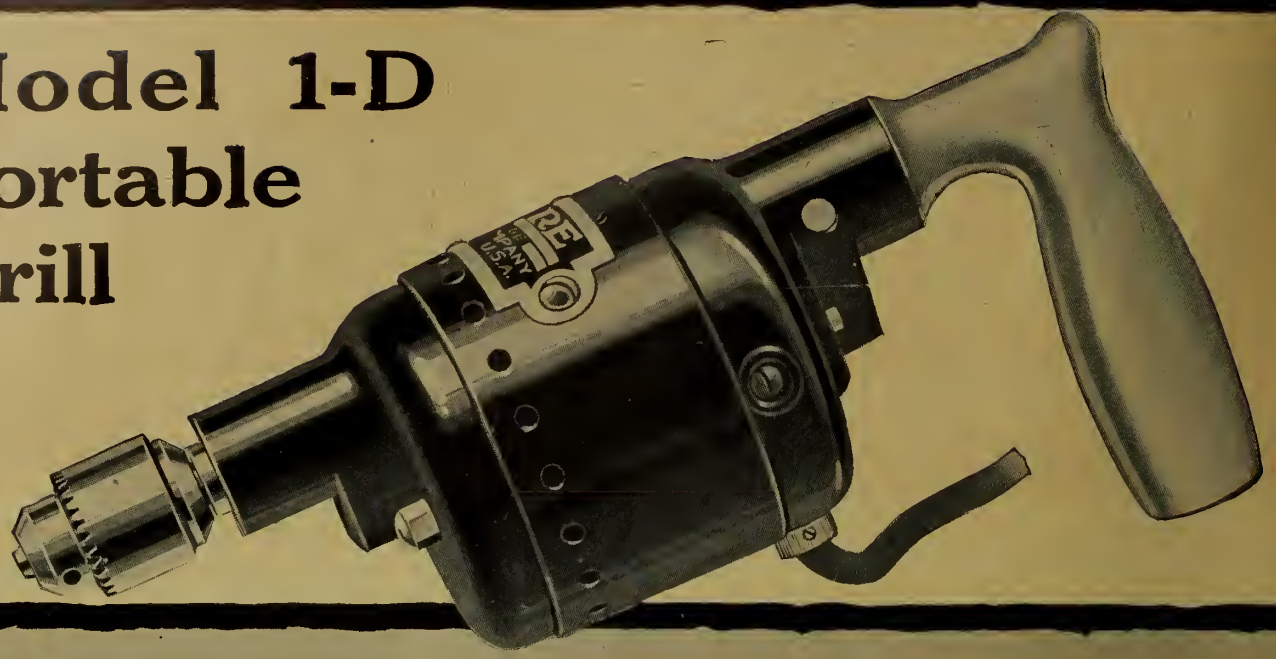
Lower head easily and quickly removed.

Baxter D. Whitney & Son, Inc.

Winchendon, Mass. *Can. Selling Representative—H. W. Petrie, Ltd., Toronto, Ont.*

Alphabetical Index to Advertisers, Page 12

Model 1-D Portable Drill



HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—4¾ pounds.

Capacity—Steel, 0 to $\frac{3}{16}$". Wood and alloys, 0 to $\frac{1}{4}$".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3⅜ inches.

Spindle—Offset from center $\frac{31}{32}$".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

Jacob's Chucks used as a regular equipment.

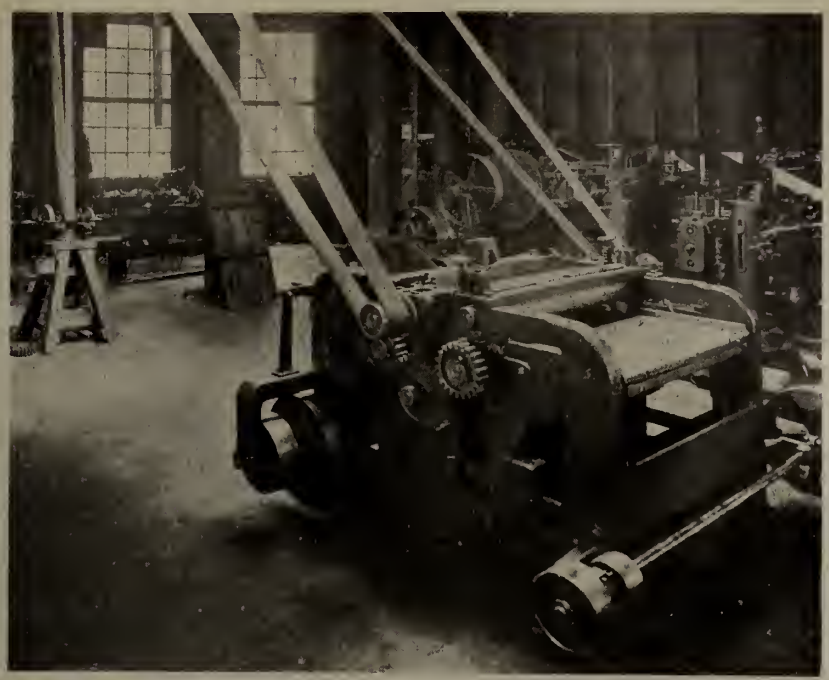
FOR speed in drilling and countersinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

Wisconsin Electric Company

7128 Sixteenth Street, Racine, Wisconsin, U. S. A.

DUMORE GEARED ELECTRIC DRILLS



This photograph shows a section of our machine shop and testing floor. All our used machines are tested out before shipment, assuring satisfaction to our customers.

THE FOLLOWING ARE A FEW OF OUR

NEW MACHINES IN STOCK

ALSO MANY FIRST-CLASS USED TOOLS—

A full list of them is now in the mails addressed to you—
if it doesn't reach you promptly, write us

1 American No. 25 Edging & Ripping Saw

1 American No. 3 Double Cut-off Saw.

1 American No. 30 Universal Saw Bench

2 American No. 9 Universal Knife Grinders for thick and thin knives

1 American No. 26 10 in. Outside Moulder

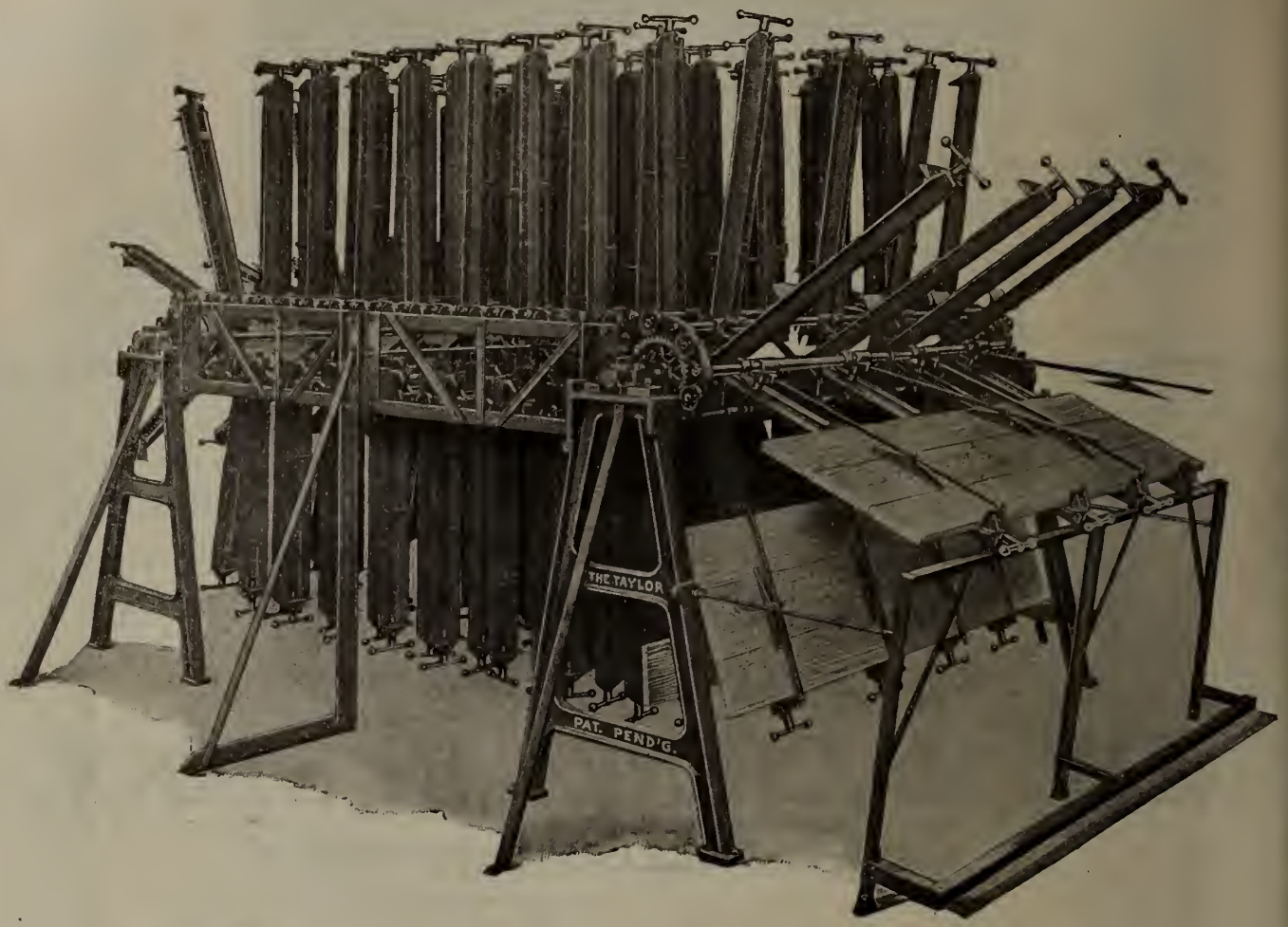
1 American No. 4½ 36 in. Cabinet Surfacer with sectional roll and chipbreaker

When you require woodworking machinery or veneer equipment send us your inquiries.

Garlock-Walker Machinery Company, Limited

32 Front Street West
TORONTO

CLAMP The Taylor TRADE MARK CARRIER



Forty section machine carrying 160 clamps, measuring 8 ft. 2½ in. between shaft centers.

The clamp is one of the most interesting features of the clamp carrier. A remarkable strain can be applied with greatest ease; the work it turns out—both thick and thin stock—is 100 per cent. perfect.

An Engineering concern recently wrote:

"I am recommending Taylor clamps to the Germain Mfg. Co. because I have proven the clamps more efficient through scientific time studies on both and all existing types of gluing-up machines and devices."

As a result of the above recommendations, The Germain Mfg. Co. referred to bought two Taylor carriers. They installed them, and tested them and have since purchased two more. We can tell you numerous instances where customers are using from two to nine Taylor carriers each as a result of similar experiences.

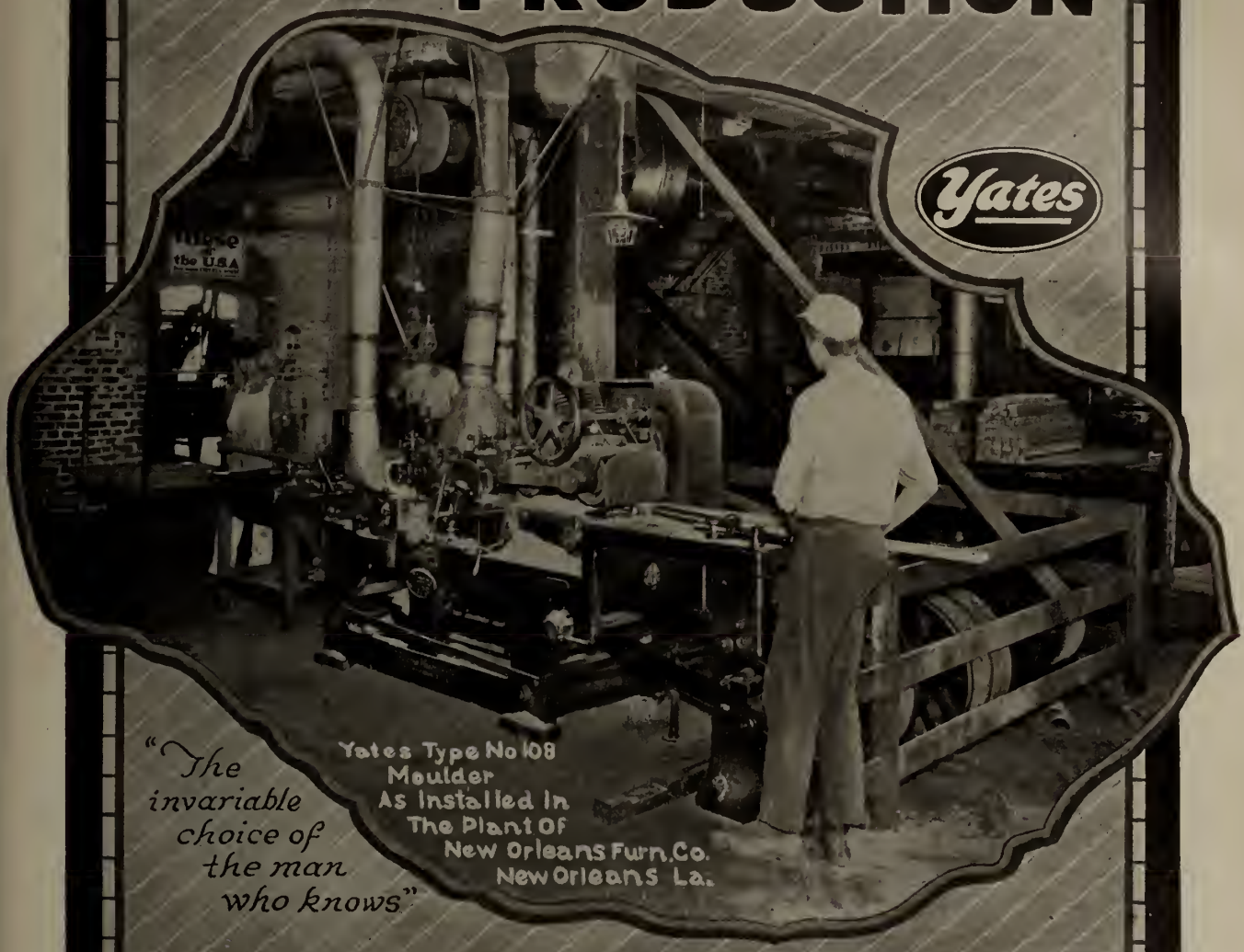
Let us prove the truth of these claims by showing you one of these carriers in operation, or you can try the clamps out on your own work. Ask for C. C. Folder and further information.

A. R. Williams Machinery Co., Toronto, Canada — Representatives

James L. Taylor Manufacturing Co.

POUGHKEEPSIE, N. Y.

LESS MEN, MORE PRODUCTION


Yates
"The invariable choice of the man who knows"
Yates Type No 108 Moulder As Installed In The Plant Of New Orleans Furn. Co. New Orleans La.

The Yates No. 108 Moulder

is built for strength and speed and it sure does get the work out. Is just the machine progressive mill men are looking for. They cannot afford to be without a No. 108. This is the big reason. By actual tests, in many mills, under all conditions, the Yates No. 108 got out more mouldings and better mouldings with less men. Write a letter for detailed information and circulars.

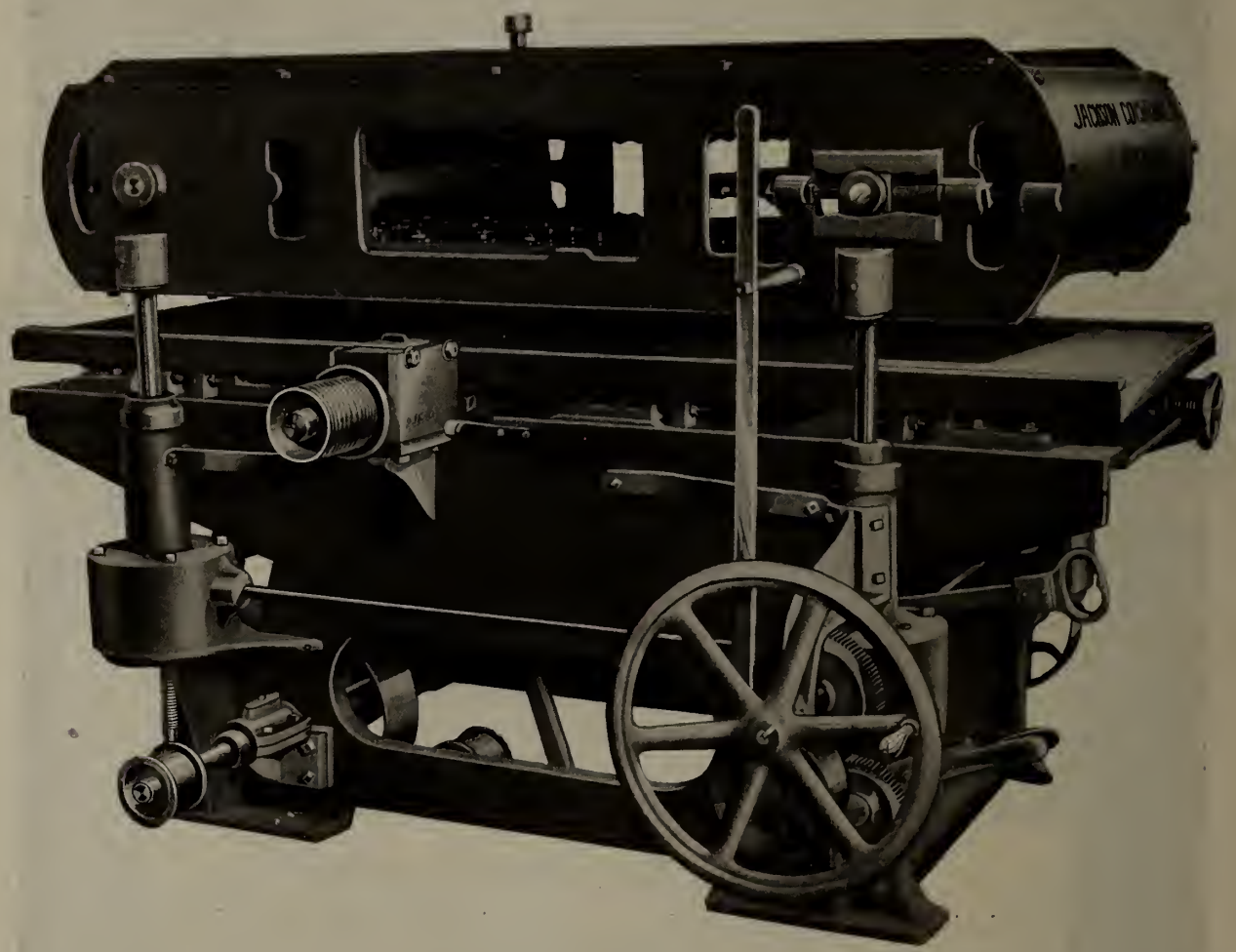
P. B. Yates Machine Co. Ltd.,
HAMILTON, ONT. CANADA.
U. S. Plant - Beloit, Wis.

The Herzog Self-Feed Jointer

means

Increased Production
Small Floors Space
Simplicity of Operation
Safety to Employees

Does Four Times the Work of the Hand Jointer



Our No. 34 Herzog Jointer, illustrated above, is one of the most efficient machines on the market to-day. It is appreciated by the manufacturer and employees alike, because, while it will produce from three to five times as much work as the hand jointer, it does not require skilled operators, but eliminates the danger so common to other makes. It can be operated by two boys. It will handle stock varying in width from 1 inch to the full width of the jointer, will feed fast or slow, takes only one-fourth the floor space of hand jointers, and requires only one-fifth of the sharpening of the knives. It is fitted with power feed raising and lowering attachment, with cylinder double belted and driven from both ends.

If interested in reducing your costs, write us

Jackson, Cochrane & Company

KITCHENER - CANADA

The Shimer Round Safety Cylinder with High Speed Knives

A Round Safety Cylinder that will Appeal to the Buyer and the User for Three Reasons:

The first is our adjusting nut for setting the knives. It is the only cylinder with properly located adjusting nuts for setting the knives, which, with our way, can be set to 1-1000 of an inch.

The second is our way of holding the knife without tapping into the head.

The third is the correct angle of cut for the knives.

Made for Any of the Different Makers' Machines and in Any Length Cylinder.

WRITE FOR PRICES

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

SUCCESSORS TO SAMUEL J. SHIMER & SONS, Inc.

GALT, ONTARIO

The Elliot Bull Dog Planer

The illustration shows our new 16" x 6" Planer.

This Planer will fill a long felt want for a machine that will run from a 1½ or 2 H.P. Motor. It can be run from the Motor on an ELLIOT WOODWORKER, or from any other power by the addition of a counter-shaft.

We have eliminated all cut gears with which all other Planers are equipped, and drive the feed rollers with a worm gear thereby saving power.

This machine will do fine work and will soon pay for installation.

Write for prices and terms.

ELLIOT MACHINERY

Company, Limited

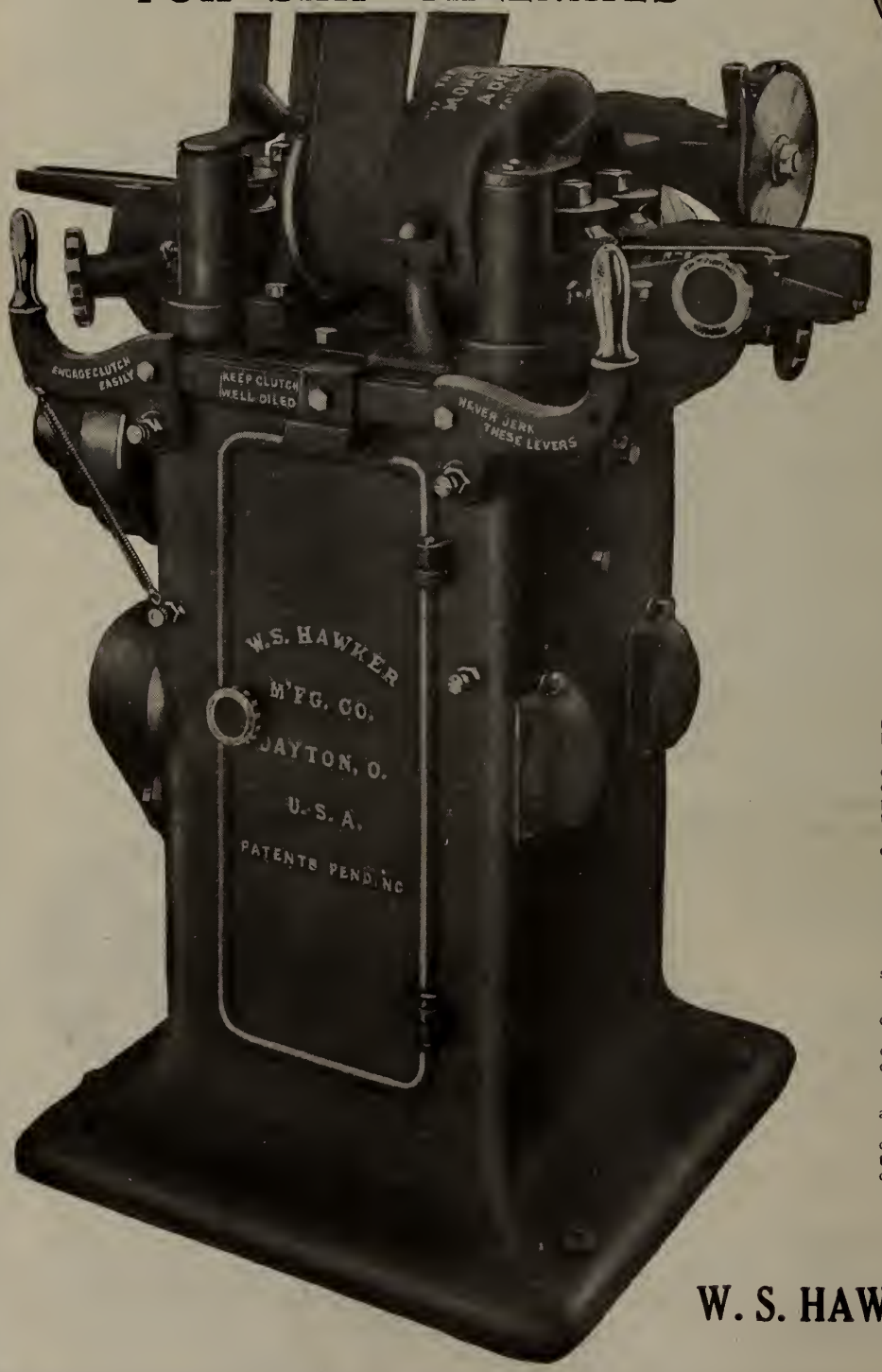
BELLEVILLE · ONTARIO

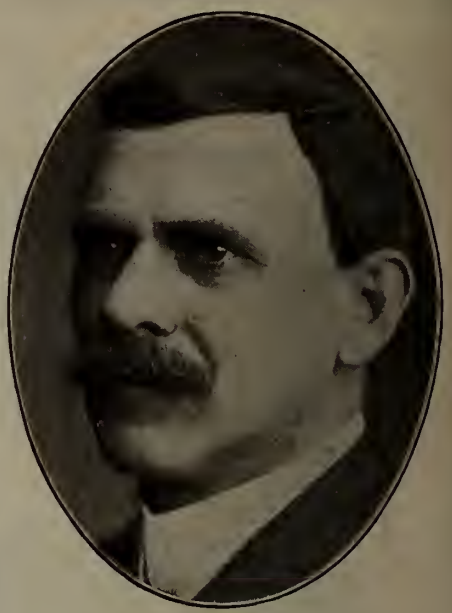
UNIVERSAL ADJUSTABLE CUTTER HEAD Patented
Infringements (maker or user will be vigorously prosecuted.

Two Heads

that have put 100% more profit in the production of Dowel Stock.

FOR SHIP TREENAILS





W. S. HAWKER.

Inventor and Designer of the World's most efficient Tubular Turning Machinery

THE

Money Maker Adjustable Rod

and

Dowel Machine

The machine that is sent under a guarantee to show you a gain of from 100 to 400 per cent. before you buy it.

The improved dowel machine that 90 per cent. of the largest and oldest machinery builders and dealers now endorse and recommend in preference to the solid chuck machines they themselves previously built.

One cutter head turns from 1/4 in. to 2 in. diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

Works stock as short as five inches.

Rolls automatically centre variations in squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid chuck dowel machine.

We can save you from one dollar out of every two, to four out of every five, that the operation of solid chuck machines costs you.

Engagements for competitive test solicited.

Formal orders not solicited. All sales made after demonstration.

The only question is, are you willing to cut cost of your dowel turning to one-half or one-third of what it costs with any make of solid chuck machine?

Machine delivers the goods before you buy.

State conditions of stock closely.

Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY

DAYTON, OHIO.

THE DEFIANCE
No. 207 Steering Wheel Rim Shaping Machine

will shape both the inner and outer circles of STEERING WHEEL RIMS to any contour desired.

There is a DEFIANCE machine for every operation necessary in the manufacture of Steering Wheels—such as the bending, jointing, equalizing, polishing.

Illustrated and descriptive circulars covering these machines, sent upon request.

The Defiance Machine Works

New York DEFIANCE, OHIO, U.S.A. London

HART MIRROR PLATE CO.

IMPORTERS AND MANUFACTURERS OF

MIRRORS

GRAND RAPIDS QUALITY

Grand Rapids, Mich.

Largest manufacturers of high grade mirrors in America serving the furniture trade exclusively.

Indispensable—

Attached to Jointer

This is an invention that has rapidly reached a position of importance in every woodworking plant where it is used, in fact it is proving indispensable.

The "Quicsharp" Grinder

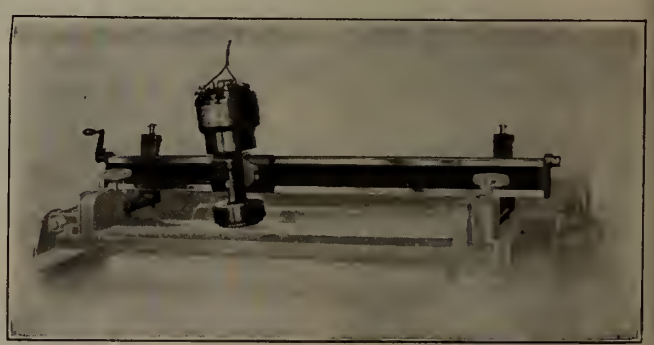
This machine has solved the grinding problem. The need for a machine that will quickly and accurately grind the knives of planers and jointers without the trouble of taking the knives off the machine, has for some time been recognized by users of woodworking machinery.

The Quicsharp Grinder is as simple to operate as safety razor, is adaptable to all makes and sizes of planers, is easily attached and light enough to be easily carried from one machine to another.

The Quicsharp soon saves its first cost,—and the expense of operation is light, being simply attached to the nearest lamp socket.

With the Quicsharp Grinder, knives are ground to a keen edge right on the machine in five to ten minutes, where it is usual for an operator to spend one half to three-quarters of an hour two or three times a day. With the Quicsharp Grinder in the shop there is no excuse for idle machines.

Send for complete details of this wonderful machine NOW while the question is fresh in your mind.



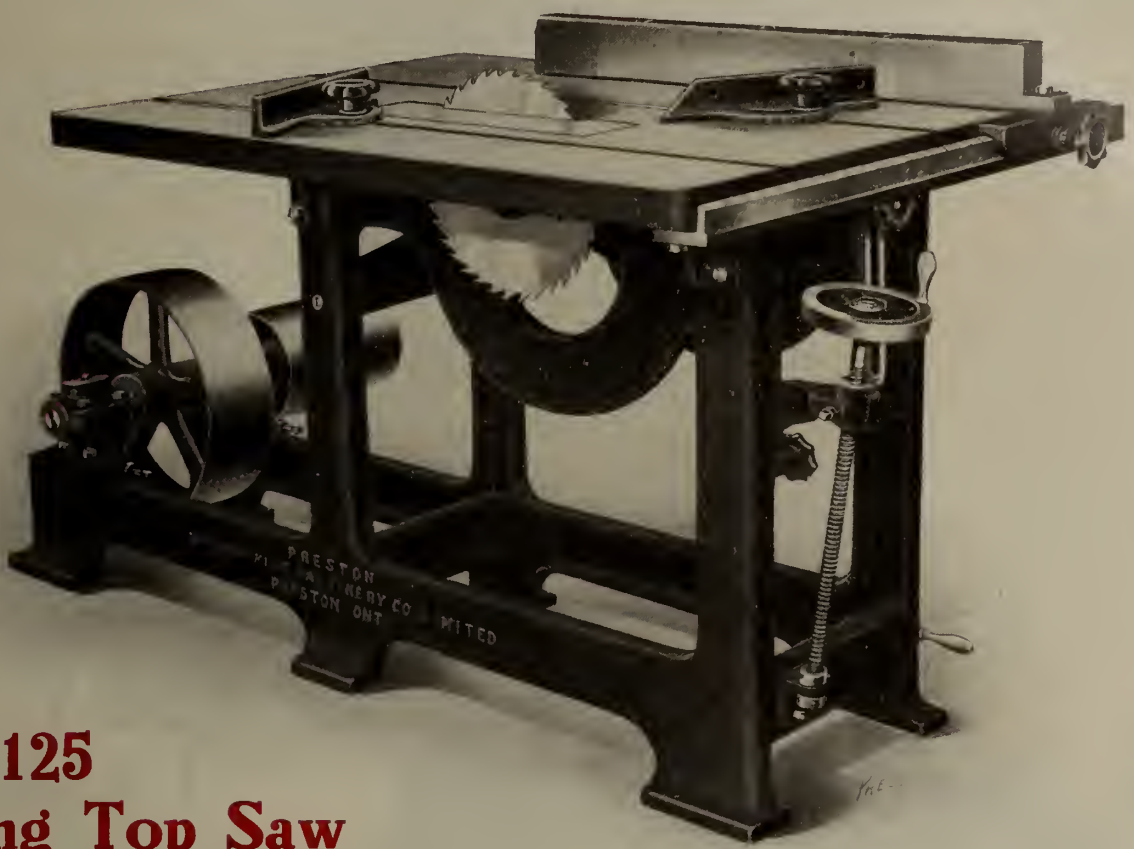
Attached to Planer

The

Preston Woodworking

PRESTON

You can always depend upon a "PRESTON" for quality



No. 125 Tilting Top Saw Table

A medium sized machine, well adapted for the Furniture Factory, the Sash and Door Factory, the Cabinet, Pattern and General Woodworking Shop. It is designed to give the greatest amount of efficiency and to take up as little space as possible.

The one piece cast frame makes it a substantial, rigid machine, and the easy and rapid adjustment of the saw makes it a simple matter to change from one operation to another.

For dadoing, grooving, bevelling, mitring and rabetting it cannot be beaten. You'll be interested in a complete description of this machine. Send for it.

Machinery Co., Limited

ONTARIO

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PONY PLANER 182

16″, 20″, or 24″ wide
6″ thick.

Feed Driven from Cylinder.

Upper Rolls 3″ Solid Steel.

Your Inquiries Solicited.

Cowan & Company of Galt, Limited

Galt, Ontario, Canada

Concerning the Hangers in your plant

ARE they fitted with ordinary friction-producing bearings that cut down production, waste fuel, and eat into your dividends?

And if so, are you aware that the large loss involved can be largely eliminated by installing S K F BALL BEARING HANGERS?

For with S K F Ball Bearing Hangers the shaft rides almost frictionless, not only when well aligned but also under extreme conditions of misalignment. The inner race tilts with the shaft—the bearing can never bind.

The economy of this feature of S K F Hangers is better appreciated when it is understood that in the average plant using line shafting for power transmission, friction destroys at least 25 per cent. of all the power produced or bought.

Other most important features of S K F Hangers are ***longer life, lower maintenance cost*** and a material saving in lubrication.

Canadian S K F Company Limited
Montreal Toronto

SKF INDUSTRIES

Hess-Bright Ball Bearings
S K F Ball Bearings
Atlas Steel Balls
Gronkvist Chucks
Transmission Hangers

A Service that contemplates more than the sale of a bearing

Every S K F Industries Service-salesman is a plant engineer equipped to consult on your power transmission problems. S K F Service made available through these men is built on a laboratory-backed ideal that seeks to increase Canadian output by lifting the friction load from industrial machinery.

Manufacturers are invited to avail themselves of this freely offered co-operation.

The S. K. F Research Laboratories where friction problems are solved

There is always a Demand for Lock Corner Boxes—*because*—

—1. They are the best package obtainable to protect your goods from water, air, dust, etc.

—2. Their strength and symmetrical design deliver a message of Quality that stimulates sales for the product they carry.

While the demand for this class of box is large, the supply is limited, because of the large initial investment heretofore required to manufacture them.

This obstacle has been overcome in the **No. 439 Lock Corner Machine**, which is sold at a price that enables every manufacturer to enter this field.

No. 439 works material up to 14″ wide and any number of pieces up to a total thickness of 10″. As one end only of stock is in the machine at a time any length may be worked.

Write to-day for Bulletin Y-6

J. A. FAY & EGAN COMPANY

ESTABLISHED 1830

World's Oldest and Largest Manufacturers of Woodworking Machinery

153-163 West Front Street - Cincinnati, Ohio

St. Francis Basin Hardwoods
Tennessee Aromatic Red Cedar

For Fall Shipment "Dry Stock"

Viz.:

100,000′—4/4″—No. 1 Common & Selects—Sap Gum
50,000′—4/4″—No. 2 Common.....Sap Gum
50,000′—6/4″—No. 2 Common Sap Gum
50,000′—4/4″—No. 1 Common & Selects—Red Gum-Pl.
75,000′—4/4″—No. 2 Common Red Gum-Pl.
35,000′—5/4″—No. 1 Common & Selects—Red Gum-Pl.
25,000′—6/4″—No. 1 Common & Selects—Red Gum-Pl.
50,000′—6/4″—No. 2 Common Red Gum-Pl.
75,000′—4/4″—No. 1 Common & Selects—Oak—Plain.
50,000′—4/4″—No. 2 Common Oak—Plain.
50,000′—4/4″—Sound Wormy Oak
30,000′—4/4″—2″ to 5½″—Quartered White Oak Strips

We also have a good supply of other items in Hardwood. Write us for information and prices delivered your plant.

Note: CEDAR, car load and less. Also mixed with Hardwoods.

GEO. C. BROWN & COMPANY

General Office, - MEMPHIS, TENN.

BAND MILLS, PROCTOR, ARK. LAKE VILLAGE, ARK.

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DRY AND PARTLY DRY STOCK

Ready for Shipment

Your inquiries will bring very prompt quotations. You can depend on straight grades, quick service, and well manufactured lumber.

RED GUM

11219 ft. 8/4 1sts & 2nds Qtd.
36728 " 8/4 No. 1 Common Qtd.
3870 " 6/4 1sts & 2nds Qtd.
880 " 6/4 No. 1 Com. & Sel. Qtd.
5500 " 5/4 1sts & 2nds Qtd.
14850 " 5/4 No. 1 Com. & Sel. Qtd.
1820 " 4/4 No. 1 Com. & Sel. Qtd
77264 " 6/4 1sts & 2nds
441589 " 6/4 No. 1 Com. & Sel.
77530 " 6/4 No. 2 Common
2527 " 5/4 1sts & 2nds Figured
31490 " 5/4 1sts & 2nds
310732 " 5/4 No. 1 Com. & Sel.
4400 " 5/4 No. 1 C. & B. FAS No. 1 C.
27880 " 5/4 No. 2 Common
31511 " 4/4 1sts & 2nds
195140 " 4/4 No. 1 Com. & Sel.
3070 " 4/4 No. 1 Com. & Btr. Figured
146845 " 4/4 No. 2 Common
37410 " 3/4 1sts & 2nds
38280 " 3/4 No. 1 Common
8700 " 3/4 No. 2 Common

SAP GUM

22000 " 8/4 No. 1 C. & B. Qtd. FAS No. 1 Com.
6700 " 8/4 No. 2 Common Qtd.
3600 " 8/4 1sts & 2nds Plain
5680 " 8/4 No. 1 Com. & Sel.
14120 " 8/4 No. 2 common
322495 " 6/4 1sts & 2nds
595540 " 6/4 No. 1 Com. & Sel.
237960 " 6/4 No. 2 Common
8500 " 6/4 No. 3 Common
67570 " 5/4 1sts & 2nds
138825 " 5/4 No. 1 Com. & Sel.
353014 " 5/4 No. 2 Common
2009 " 5/4 No. 3 Common
12502 " 1x18" & up Panel & No. 1
13564 " 1x11 & wider 1sts & 2nds
59109 " 4/4 9-12" Box Boards
104765 " 4/4 1sts & 2nds
433285 " 4/4 No. 1 Com. & Sel.
209134 " 4/4 No. 2 Common
117380 " 4/4 No. 3 Common
48163 " 3/4 1sts & 2nds
38530 " 3/4 No. 1 Common
8669 " 3/4 No. 2 Common

ELM—GREEN

95244 " 10/4 Log Run No. 2 Com. Btr.
26941 " 8/4 No. 2 Com. & Btr.
2100 " 6/4 No. 1 Com. & Btr. FAS No. 1 Com.
1500 " 6/4 No. 2 Com. & Btr.
5360 " 1" to 3" No. 2 Com. & Btr.

COTTONWOOD 50% FAS

1 car 4/4 Log Run 30% No. 1 Com. 20% No. 2 Com.

OAK

8130 " 4/4 1sts & 2nds Qtd. Red
22340 " 4/4 No. 1 Com. & Sel. Qtd Red
5710 " 4/4 No. 2 Com. Qtd. Red
2530 " 4/4 No. 3 Com. Qtd. Red
2895 " 4/4 1sts & 2nds Qtd. White
6864 " 4/4 No. 1 Com. Qtd. White
3744 " 4/4 No. 2 Com. Qtd. White
13709 " 4/4 No. 3 Com. Qtd. White
3450 " 10/4 No. 1 Com. & Btr. White FAS No. 1 Com.
4500 " 10/4 No. 2 Common Red
26392 " 4/4 1sts & 2nds Plain Red
27224 " 4/4 No. 1 Com. & Sel. Red
70410 " 4/4 No. 2 Com. & Sel. Red
61289 " 4/4 No. 1 Com. & Sel. White
62099 " 4/4 1sts & 2nds Mixed
17275 " 4/4 No. 2 Common Mixed
89865 " 4/4 No. 3 Common Mixed
104210 " 4/4 Sound Wormy

La CYPRESS

7150 " 10/4 No. 1 Common
3100 " 8/4 1sts & 2nds
9460 " 8/4 Select
3900 " 8/4 Shop
9590 " 8/4 No. 1 Common
17995 " 6/4 Select
5030 " 6/4 No. 1 Common
10300 " 6/4 No. 2 Common
4000 " 6/4 to 12/4 Dog Bds
18670 " 5/4 No. 1 Common
11200 " 5/4 No. 2 Common
14623 " 5/4 No. 2 Pecky
13650 " 4/4 Selects
9100 " 4/4 No. 1 Shop
17929 " 4/4 No. 1 Common
59221 " 4/4 No. 2 Common
53210 " 4/4 Pecky
7890 " 4/4 No. 2 Boxing

La WHITE ASH

40000 " 10/4 No. 1 Com. & Btr. FAS No. 1 Com.
7980 " 8/4 1sts & 2nds (Dry)
4200 " 8/4 No. 1 Com. & Btr. FAS No. 1 Com.
18900 " 8/4 No. 2 Com.
5100 " 6/4 1sts & 2nds
30305 " 6/4 No. 1 Com. & Sel.
13820 " 6/4 No. 2 Common
42000 " 5/4 No. 1 Com. & Sel.
12000 " 4/4 No. 2 Common
14321 " 4/4 No. 3 Common
13292 " 4/4 Sound Wormy

ARKANSAS YELLOW PINE—AIR DRIED

No. 1 Com.
176225 " 4/4 No. 2 Com.
6-8-10-12" Widths No. 3 Com.

PECAN—DRY

4500 " 8/4 Log
4500 " 8/4 Flitches
12000 " 6/4 No. 2 Com. & Btr.

ABERDEEN LUMBER COMPANY, Pittsburgh, Pa.

William S. Whiting Company

JOHNSON CITY, TENNESSEE

1 Band Mill *5 Circular Mills*

Hardwood Lumber

Oak	Basswood
Maple	Buckeye
Chestnut	Poplar
Ash	Birch

Rotary-Cut Soft Yellow Poplar Veneers
Quarter-Sawn White Oak Flitches
Sliced and Sawn Quartered White OakVeneers
Oak and Maple Flooring
Dowel Pins and Dowel Rods
Glued-Up Chestnut Cores and Dimension

5-16 ' Oak Parquetry Flooring Strips and Squares carried in stock at our warehouses:
138 44th St., Brooklyn, N.Y., and at Elizabethton, Tenn.

MAGIC
VENEER TAPE

is made of highest quality Kraft Paper that peels off your veneer in one piece, thus eliminating that tedious and expensive work of sanding or scraping.

YOUR especial needs of Veneer Tapes, whether Paper or Cloth, can be furnished by

The Gummed Products Co.

Troy - Ohio

Chicago Minneapolis New York

Don't Worry!

Your troubles making veneer tapes work properly will be o'er, if you always use

Nashua Veneer Tapes

These tapes are heavily coated with glue, hold fast to the wood, and make a good hinge to hold the two edges of veneer firmly.

Nashua Veneer Tapes

are made in Canada by Canadian workmen. Our Kraft, Hollands and Coarse Cloth Tapes are made from the best of materials. Our trade mark is your mark of satisfaction.

Send for Samples and Prices

CANADIAN NASHUA PAPER CO., Ltd.

Peterborough, Ont.

SERVICE

LUMBER

QUALITY

Oak

Poplar

Gum

Memphis Band Mill Co.
"Quarter-sawn White Oak Headquarters"
Memphis, Tenn., U.S.A.

Boland Lumber Company

Murray Bldg., Grand Rapids, Mich.

Manufacturers and Wholesalers Northern and Southern Hardwoods

Northern Woods:

Ash, Basswood, Beech,
Birch, Hard Maple,
Quartered Maple,
White Maple, Soft Maple,
Soft Elm, Rock Elm.

Southern Woods:

Cherry, Chestnut,
Cottonwood, Cypress, Gum,
Hickory, Magnolia,
Oak, Poplar, Sycamore,
Walnut, Willow.

Please send us your inquiries and it will be a pleasure to quote you and describe our stocks

The above photograph was taken at one of our logging camps and illustrates the up-to-date equipment used in all our operations from the stump to the lumber in our yards.

The five Oak logs shown on the trailers are each 12 feet long and were all cut from one tree, the butt cut measured fifty-one inches in diameter. These five logs measured 6489 feet.

We operate two modern band mills on our own timber, and manufacture all the lumber we ship, which enables us to furnish stock of even grade, color and texture.

We will appreciate an opportunity of serving you and will be pleased to quote you at all times.

We are manufacturers of all kinds of high grade Southern hardwoods.

DIRECT FROM PRODUCER TO CONSUMER

GAYOSO LUMBER COMPANY

MEMPHIS, TENNESSEE U.S.A.

Canadian Representative :

W. R. YOUMANS, Park View Hotel, Toronto, Ont.

Stock on Hand in Kitchener

7,000	ft.	4/4 SAP Gum No. 1 Com. & Selects
9,000	"	8/4 Qtd. Red. Gum, No. 1 C&B
5,000	"	5/4 Pln. Oak FAS
30,000	"	6/4 Pln. Oak FAS
30,000	"	6/4 Pln. Oak No. 1 Com.
30,000	"	8/4 Pln. Oak FAS
50,000	"	8/4 Pln. Oak No. 1 Com.
12,000	"	8/4 Pln. Oak Sd. Sq. Edge
1,200	"	4/4 Pln. Oak No. 1 Com.
15,000	"	4/4 Tenn. Red Cedar Brds. No. 1 C&B
35,000	"	4/4 Qtd. Wht. Oak FAS
35,000	"	4/4 Qtd. Wht. Oak No. 1 Com.
7,000	"	4/4 No. 2 Com. & Sd. Wormy Chestnut
23,000	"	5/4 No. 2 Com. & Sd. Wormy Chestnut
50,000	"	6/4 No. 2 Com. & Sd. Wormy Chestnut
12,000	"	5/4 FAS Chestnut
10,275	"	5/4 No. 1 Com. Chestnut
		Odd lots of No. 1 Com. Chestnut 4/4, 6/4 & 8/4
1,847	"	3/4 No. 1 C&B Qtd. Wht Oak
69	"	4/4 FAS Qtd. Wht. Oak
2,065	"	4/4 No. 2 Com. Qtd. Wht. Oak
1,000	"	3/4 No. 1 C&B Pln. Wht. Oak
2,624	"	3/4 FAS Sap Gum 13/17"
2,152	"	3/4 Select Sap Gum 3/12
8,573	"	3/4 Select Sap Gum 12" & up
470	"	5/4 Select Sap Gum
15,000	"	12/4 No. 1 C&B Hard Maple
15,000	"	4/4 No. 2 Basswood

PERCY E. HEENEY
202 Weber Chambers, KITCHENER, ONT.

GET THE HABIT

When you want good, dependable grades and satisfactory service on your Hardwood Lumber wants write or wire

STERRETT

SEPTEMBER SPECIALS

2 cars 4/4 Com. & Btr. Qtd. White Oak Ohio Stock, wide, good figure.
1 car 4/4 No. 2 Com. Qtd. White Oak —same..
2 cars 4/4 Com. & Btr. Chestnut. Worms no defect.
1 car 8/4 Com. & Btr. Plain White Ohio Oak.
5 cars each 4/4 Com. & Sap Gum & No. 1 Com. Cottonwood.

WILL S. STERRETT
810—2nd Natl. Bldg. - CINCINNATI, OHIO

Reese Sheriff Lumber Co.

WILLIAMSPORT, PENNSYLVANIA

Manufacturers of

Northern and Southern Hardwoods White Pine, Spruce and Hemlock

With special attention to **Oak, Chestnut, Poplar, Cherry, Walnut, Gum and Basswood.**

OUR MOTTO

REASONABLE PRICES - that you can afford to pay.
EFFICIENT SERVICE — that you have a right to expect
FAIR TREATMENT — that you can depend on getting

We would appreciate an opportunity of furnishing a portion of your lumber requirements.

"Hartzell's Choice Walnut"

The way Walnut comes to us

COMING AND GOING

One constant stream of American Black Walnut from "Stump to Consumer" flowing through a steady, reliable and satisfactory channel.

"Geo. W. Hartzell"

Logs in the rough coming in Veneers and Lumber of the highest quality going out daily year in and year out covering a period of 35 years.

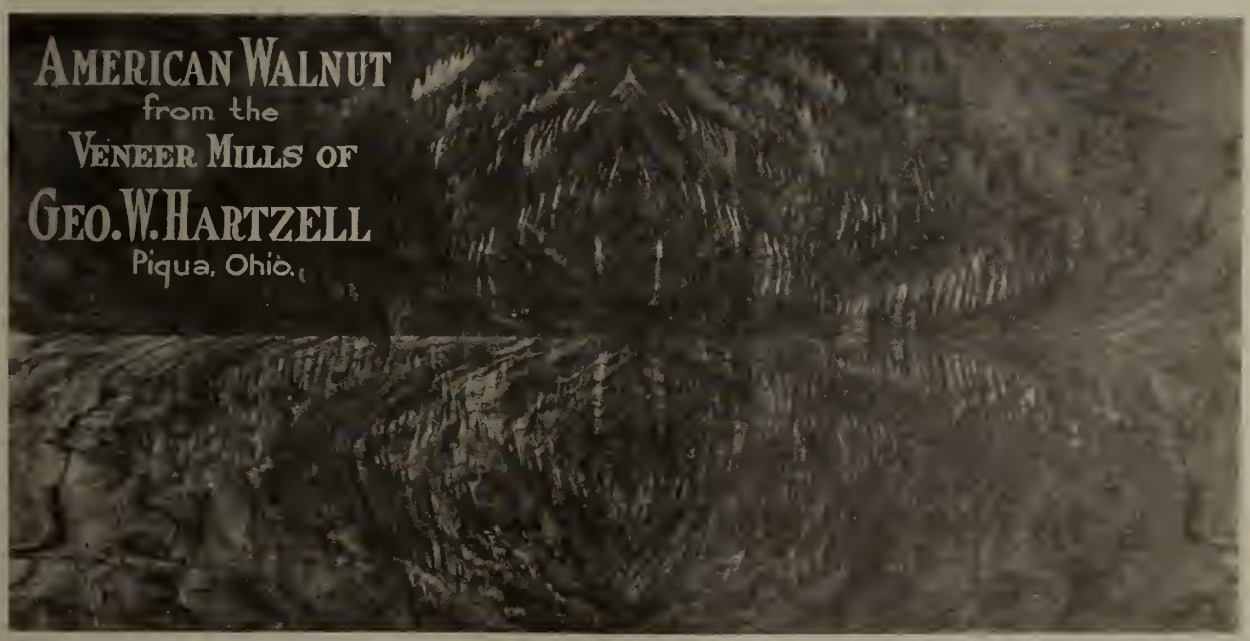
We rightfully claim your patronage because of "SERVICE and QUALITY," if there is any question in your mind about it

"Try Us and We Will Ship You the Convincer"

No Order too large, no Order too small to receive the close and careful attention it is our custom to give. That is a great part of our business, serving our customers.

"WRITE FOR SAMPLES AND QUOTATIONS"

Geo. W. Hartzell - Piqua, Ohio



The way it goes to our Customers

American Black Walnut

Enjoys World Wide Appreciation

In spite of most unfavorable rates of exchange, excessive ocean freight tariffs, and limited financial resources Europe wants America Walnut and is now buying. Europeans know walnut is the finest cabinet wood grown, and rightly refuse to consider substitutes.

Virtues of Walnut should be fully recognized on this continent as every phase of the cabinet wood situation today points out the advantage of featuring American Walnut.

All American Walnut is good but Iowa really affords the best.

We are prepared to supply you with
Walnut Lumber and Veneer

Des Moines Sawmill Company

Des Moines, Iowa

Glimpse No. 3 Into the Spirit of America's Second Greatest Industry

"Labor with a Smile is the Measure of the 'Boss.'"

Surmounting difficulties—riding over accidental troubles—meeting emergencies "head on" and with a grin of triumph which does not relax the set lips of determination—these are the test of a man or of an Industry (which, of course, is merely a mass of men).

Talk about "troubles"! The lumber industry, every man-jack of it, knows a lot about that word. Look at the photograph above. It is a recurrent, and unavoidable, episode in the hardwood industry. A vital logging railroad, on whose steady and efficient operation depends the prompt and sure meeting of your demands for an humble kitchen chair or a refrigerator, a luxuriously carven mantel, a neat baluster for the stairway of your new home (or the floors thereof)—the thresholds—picture-mouldings—heaven knows what that you never even think of—well, that elemental necessity was completely *washed out* by floods which no industrial mastery could forefend.

You can see the job those lumber boys are up against to rebuild that railroad and get it working again in a hurry. (And they seem to be enjoying this test of their skill and their organized devotion to *your service.*)

Let those of us who sit on *hardwood chairs*—in preference to metal or monoliths—and who delight in the varied arts of the cabinet-maker, study the photograph above and then enjoy our better understanding of the things that have to happen, and to be done by *somebody,* before we can relax in the comfort and security of home.

"Easy jobs" are hardly worth doing. Hardwood lumbering is no easy job. But it is worth doing. It must be done, and done well. You require it of us.

Write Us—and Watch This Publication for *Glimpse No. 4*

American Hardwood Manufacturers' Association

Memphis, Tennessee

American Oak	Cottonwood	Elm	Sycamore	Willow
Red Gum	Chestnut	Beech	Tupelo	Locust
American Walnut	Hickory	Basswood	Cherry	Magnolia
Poplar	Ash	Maple	Persimmon	et al.

COPYRIGHT, 1920, CROSBY CHICAGO

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

BROWN ASH

	Clear	No. 1	No. 2
1 in.	40,900	....	50,000	17,000
1¼ in.	58,500	7,300	36,200	15,300
1½ in.	36,500	....	35,000	7,500
2 in.	7,500	....	20,000	2,000

WHITE ASH

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	15,000	....	110,000	110,000
1¼ in.	117,000	4,500	140,000	40,000
1½ in.	22,900	1,200	39,000	65,000
2 in.	56,300	500	80,000	86,000
2½ in.	25,500	...	34,000	32,500
3 in.	87,500	....	75,500	33,500
4 in.	7,000	....	15,000	5,500

BASSWOOD

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	115,700	3,000	340,000	240,000
1¼ in.	151,300	14,000	235,500	70,800
1½ in.	94,600	....	41,800	15,000
2 in.	68,900	....	16,000	4,500
2½ in.	90,000	....	13,900	15,000
4 in.	1,300	....	450	....

BEECH

	1 & 2	No. 1 Com.	No. 2 Com.
⅜ in.	.....	.....	.....
¾ in.	2,000	.....	.....
1 in.	25,000	254,700	13,000
1¼ in.	33,200	10,600	12,000
1½ in.	80,800	7,500	8,400
2 in.	6,000	6,000	.....
2½ in.	.....	.....	.....
3 in.	1,100	5,000	5,500
4 in.	225	1,200	475

CHERRY

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	187,500	182,200	90,500
1¼ in.	5,500	4,600	4,500
1½ in.	32,000	21,700	57,300
2 in.	.....	16,200	52,900
2½ in.	5,500	2,700	2,200
3 in.	28,700	3,500	2,300
4 in.	5,900	.....	500

HICKORY

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	3,200	8,400	11,600
1¼ in.	1,100	2,500	2,050
1½ in.	6,600	11,300	25,000
2 in.	2,400	17,200	16,200
2½ in.	7,000	13,000	4,700
3 in.	3,500	7,580	7,200
4 in.	300	.....	275

CYPRESS

	1 & 2	Select	No. 1 Shop
1 in.	.....	2,000	500
1¼ in.	.....	8,800	.....
1½ in.	17,100	5,200	18,000
2 in.	24,000	24,200	4,600
2½ in.	8,000	3,200	.....
3 in.	69,400	23,100	12,000
4 in.	10,300	.....	.....

SOFT ELM

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	4,700	11,000	3,800
1¼ in.	41,500	38,200	6,800
1½ in.	12,500	13,300	5,400
2 in.	6,000	1,000	....
2½ in.	6,000	1,200	300
3 in.	39,280	8,500	8,000
4 in.	7,100	6,200	6,000

PLAIN RED GUM

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	30,300	31,000	15,500
1¼ in.	.....	.....	7,700
1½ in.	8,000	10,300	9,500
2 in.	4,500	3,800	7,500

QUARTERED SAP GUM

	1 & 2	No. 1 Com.	No. 2 Com.
4/4	.....	2,500	12,000
5/4	14,000	.....	.....
8/4	2,000	400	.....
10/4	350	29,000	3,000

QUARTERED RED GUM

	1 & 2	No. 1 Com.	No. 2 Com.
4/4	9,000	20,000	15,100
5/4	8,100	9,800	.....
6/4	3,900	4,500	4,600
8/4	19,100	11,500	3,600

SAP GUM

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	6,400	16,000	200
1¼ in.	.....	800	....
1½ in.	2,400	6,000	13,500
2 in.	4,490	12,700	10,400
2½ in.	.....	1,500	1,200

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	700	.....	9,700	400
1 in.	24,200	3,400	3,500	400
1¼ in.	3,000	.....	3,000	500
1½ in.	350	.....	500	100
2 in.	1,000	.....	7,100	.....

Also Large Stock of BEECH, BIRCH and MAPLE

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

Brown & Hackney, Inc.

MEMPHIS, TENN.

Manufacturers of High Grade
Bandsawn Southern Hardwood

LUMBER

September, 1920—Stock List

BROWN & HACKNEY, Inc., LITTLE ROCK, ARK.

QUARTERED WHITE OAK

10,000' 5/8" 1s & 2s
3 cars 5/8 No. 1 Common
3 cars 4/4 1s & 2s
10 cars 4/4 No. 1 Common
2 cars 4/4 No. 2 Common
1 car 4/4" Clear Strips
2 cars 4/4 Common Strips
1 car 8/4 No. 1 Common
1 car 8/4 No. 2 Common

PLAIN OAK

1 car 3/4" 1s & 2s Plain Red Oak
2 cars 3/4 No. 1 Com. Plain Red Oak
1 car 3/4 No. 2 Com. Plain Red Oak
3 cars 4/4 No. 1 Com. Plain White Oak
3 cars 4/4 No. 2 Com. Plain White Oak
2 cars 4/4 Sound Wormy Oak
4 cars 4/4 No. 1 Com. Plain Red Oak
2 cars 4/4 No. 2 Com. Plain Red Oak
1 car 8/4 Oak Dog Boards

PLAIN GUM

3 cars 5/8 No. 2 Com. Sap Gum
2 cars 6/4 No. 2 Com. Sap Gum
2 cars 4/4 No. 2 Com. & Btr. Black Gum
2 cars 6/4 & 8/4 Gum Dog Boards

CYPRESS

1 car 4/4 No. 1 Shop & Better
1 car 4/4 Pecky
1 car 8/4 No. 1 Shop & Better
3 cars 8/4 No. 1 Common
1 car 8/4 No. 2 Common

ELM

1 car 6/4 No. 1 Com. & Btr. Elm
2 cars 8/4 Log Run Elm

MISCELLANEOUS

1,800' 6/4" 1s & 2s Quartered White Oak
3,000 6/4 No. 1 Com. Qtd. White Oak
8,000 8/4 No. 3 Com. Qtd. White Oak
6,000 8/4 No. 2 Com. & Btr. Qtd. Red Oak
5,500 3/4 Com. & Btr. Black Gum
5,100 4/4 Log Run Lynn
1,800 4/4 Log Run Elm
15,000 4/4 Log Run Sycamore
3" and 4" Red and White Oak Bridge Plank

MARK H. BROWN LUMBER COMPANY
TRANSYLVANIA, La.

QUARTERED WHITE OAK

30,000' 4/4" 1s & 2s
40,000 4/4 No. 1 Common

QUARTERED RED OAK

8,000 4/4 1s & 2s
20,000 4/4 No. 1 Common

PLAIN OAK

24,000' 4/4" 1s & 2s Plain Red Oak
30,000 4/4 No. 1 Com. Plain Red Oak
10,000 4/4 1s & 2s Plain White Oak
30,000 4/4 No. 1 Com. Plain White Oak
50,000 4/4 Sound Wormy Oak

PLAIN GUM

100,000 4/4 No. 1 Com. Plain Sap Gum
50,000 5/4 No. 1 Com. Plain Sap Gum
100,000 6/4 & 8/4 Gum Dog Boards

QUARTERED GUM

25,000 4/4 No. 1 Com. & Btr. Qtd. Sap Gum
130,000 6/4 No. 1 Com. & Btr. Qtd. Sap Gum
50,000 8/4 No. 1 Com. & Btr. Qtd. Sap Gum

CYPRESS

50,000 4/4 No. 1 Com.
40,000 5/4 Shop
30,000 4/4 No. 2 Common

MISCELLANEOUS

15,000 4/4 Log Run Hackberry
50,000 4/4 No. 1 Common Cottonwood

WRITE US FOR PRICES

HAVE YOU TRIED

Quartered Black Gum

It beats Red Gum for flashy ribbon figure—

We have dry—

1 Car —4/4 FAS Qtd. Black Gum
2 Cars—4/4 No. 1 Com. Black Gum

also

Complete stock of band sawn
Plain & Qtd. White Oak
Plain Red Oak
Plain & Qtd. Red Gum

Rush Lumber Co.

Band Mill and Office - Memphis, Tenn.

If Dryness Counts--You Can't Beat This

Bone Dry Plain Oak

402,500' 2 " No. 1 Com. White and Red.
239,600' 2 " No. 2 " " " "
106,800' 2½" No. 1 " " " "
12,400' 2½" No. 2 " " " "
83,900' 3 " No. 1 " " " "
15,600' 4 " No. 2 " " " "

We also have a good stock of dry Oak in other thicknesses of both Plain and Quartered. Prices on request.

James E. Stark & Co., Inc.

MEMPHIS, TENN.

Canadian Hardwoods

Good Stocks, Right Goods,
Prompt Shipment

C. A. SPENCER, Limited
LUMBER MERCHANTS
Offices—500 McGill Building
MONTREAL - - Quebec

WARREN ROSS LUMBER CO.

JAMESTOWN, N. Y.

13,000′	4/4/ 1s&2s Bataan Mahogany	12,000′	8/4″ No. 1 Com. Walnut
		7,000′	8/4″ No. 2 Com. Walnut
5,000′	5/4″ to 16/4″ 1s&2s Bataan Mahogany	15,000′	4/4″ 1s&2s Pl. Red Oak
		4,000′	5/4″ 1s&2s Pl. Red Oak
25,000′	4/4″ 1s&2s Cherry	4,000′	6/4″ 1s&2s Pl. Red Oak
12,000′	4/4″ No. 1 Com. Cherry	20,000′	8/4″ 1s&2s Pl. Red Oak
5,000′	6/4″ 1s&2s Cherry	20,000′	4/4″ No. 1 Com. Pl. “
5,000′	8/4″ 1s&2s Cherry	4,000′	5/4″ No. 1 Com. Pl. “
2,000′	8/4″ No. 1 Com. Cherry	4,000′	6/4″ No. 1 Com. Pl. “
100,000′	4/4″ to 2″ No. 1 Com. & Btr. Beech	10,000′	8/4″ No. 1 Com. Pl. “
		15,000′	4/4″ 1s&2s Poplar S.N.D.
1,500′	5/4″ Select Walnut	3,000′	5/4 1s&2s Poplar S.N.D.
1,500′	8/4″ 1s&2s Walnut	3,000′	8/4″ 1s&2s Poplar S.N.D.

Direct mill shipments, etc.
Let us quote you.

J. H. Bonner & Sons

Memphis, Tenn.
Mills:
Jonquil and Ruffwood, Ark.

Manufacturers

Band Sawn
Hardwood Lumber

Write or wire for prices on
Gum, Oak, Elm, Etc.

Hardwood Lumber

Wire collect, or write for delivered prices on any or all of the following DRY STOCK

125,000′	3/4 No. 1 Common Walnut
100,000′	4/4 No. 1 Common Walnut
150,000′	4/4 No. 1 Common & Better Sap Gum
100,000′	8/4 No. 2 Common & Better Sap Gum
50,000′	4/4 No. 2 Com. & Btr. Plain Red Gum
16,000′	8/4 No. 1 Com. & Btr. Q't'd. Red Gum
10,000′	3/4 No. 2 Common & Better Plain Oak
200,000′	4/4 No. 2 Common & Better Plain Oak
100,000′	5/4 No. 2 Common & Better Plain Oak
13,000′	8/4 No. 1 Common & Better Plain Oak
140,000′	8, 10 and 12/4 No. 2 Common & Better Soft Elm & Maple
80,000′	4 and 8/4 No. 2 A & B Common Poplar
50,000′	4/4 Log Run Basswood
75,000′	8, 10 and 12/4 No. 2 Com. & Btr. Poplar
120,000′	4, 8 and 10/4 No. 2 Com. & Btr. Sycamore
150,000′	5, 8 and 10/4 No. 2 Com. & Btr. Beech
150,000′	4, 6 and 8/4 Sound Wormy Chestnut

The Woodruff-Powell Lumber Co.
South Bend, Indiana

J. R. EATON & SONS, LIMITED

MANUFACTURERS OF HIGH GRADE WOOD PRODUCTS

Wood Turnings, Hardwood Dowels, Turned Table Legs, Kitchen Tables, Kitchen Cabinets, Oak Extension Tables, Oak Library Tables, “Empire Brand” Hardwood Flooring in Maple, Birch, and Plain or Quarter Cut Oak, Solid Pine and Veneered Hardwood Doors.

A Large Factory equipped with up-to-date machinery is at your service to furnish “WHAT YOU WANT”— WHEN YOU WANT IT.”

YOUR ENQUIRIES SOLICITED

Orillia Ontario Canada

E. SONDHEIMER CO.

MEMPHIS, TENN., U.S.A.

Manufacturers and Exporters of

AMERICAN HARDWOODS

Specializing in RED GUM and SALIX

OUR BUSINESS RECORD

50 years of business under one name.
500 satisfied customers served annually.
5,000 or more inquiries receive courteous attention annually
5,000,000 or more boards tallied annually.
50,000,000 feet of Quality Lumber produced annually.
500,000,000 feet of standing Timber.

Also Pecan, Hickory, Sycamore, Oak, Cypress, Poplar, Tupelo, Circassian Figured Red Gum

Distributing Yard and Sales Office
McLean & Chelsea Ave., Memphis, Tenn. U.S.A.
Cable Address: "Sonderco"

We have Four Band Mills:
Sondheimer, La., Tallulah, La.,
Ferriday, La., Baton Rouge, La.

Walnut Lumber with Mahogany

Straight or Mixed Cars

WALNUT VENEERS

Plain---Striped---Figured---Circassian Effect

Let Us Know Your Requirements

The Kosse, Shoe & Schleyer Company

Eastern Branch
Baltimore, Md.

325 Powers Theater Bldg.,
Grand Rapids, Mich.

Main Office and Band Mill
Cincinnati, O.

WIRE AT OUR EXPENSE FOR PRICES *on the following* HARDWOOD LUMBER

HARD MAPLE
3 cars 1½" No. 1 Common & Better
4 cars 2½" No. 1 Common & Better

BASSWOOD
2 cars 1¼" No. 1 Common & No. 2 Common
3 cars 1½" No. 2 Common & Better
2 cars 2 " No. 2 Common & Better
1 car 2½" No. 2 Common & Better

ASH
2 cars 1¼" No. 1 Common & Better

SOFT ELM
3 cars 1½" No. 2 Common & Better

BIRCH
4 cars 1 " No. 2 Common & Better
2 cars 1¼" No. 2 Common & Better
1 car 2½" No. 2 Common & Better

ROCK ELM
2 cars 1½" No. 2 Common & Better

For a limited period only we are offering the above stock at attractive prices.

WHEELER-TIMLIN LUMBER COMPANY, Wausau, Wisconsin.

POPLAR

We offer for prompt shipment from Louisville, Ky., where cars are more plentiful and embargoes less stringent than at other points, the following:

5,000	5/8	1s and 2s
80,000	5/8	No. 1 Common
50,000	5/8	No. 2 Common
40,000	4/4	Saps and Selects
150,000	4/4	No. 1 Common
30,000	4/4	No. 2A Common
40,000	5/4	No. 1 Common
17,000	8/4	No. 2 Common A & B
250,000	4/4	Mill Run
16,000	5/4	Mill Run

This Poplar is Kentucky and Tennessee mountain stock. It's soft textured, shows good widths and lengths and is nicely graded.

WE CAN SURFACE OR RESAW

North Vernon Lumber Mills

NORTH VERNON, IND.
LOUISVILLE, KY. DYERSBURG, TENN.
WRITE FOR COMPLETE LIST AND PRICES

The Hyde Lumber Co.

Band Mills: LAKE PROVIDENCE LA.
Southern Office: MEMPHIS, TENN.
Bank of Commerce Bldg.
Northern Office: SOUTH BEND, IND.

MANUFACTURERS

Plain Red Gum
Quartered Red Gum
Plain Sap Gum
Quartered Sap Gum
Cottonwood, Cypress
Tupelo, Ash, Elm, Oak

CHARLES O. MAUS
Canadian Representative

American Hardwood Lumber Co.

St. Louis, Mo.

Large stock of—

Dry Ash, Quartered Oak
Plain Oak and Gum

Shipments from — NASHVILLE, Tenn., NEW ORLEANS, La., and BENTON, Ark.

British Columbia Forest Products

British Columbia Lumber Commissioner

No. 1 Adelaide St. E., Toronto
(Street Floor)

Personal calls or correspondence cordially invited from Dealers and others interested in British Columbia Woods

Telephone Main 6872. Note: We do not quote prices.

American Walnut Lumber

QUALITY

SERVICE

More evidence of our untiring efforts to procure the very best raw material for our product.

All Grades and Thicknesses

Pickrel Walnut Company

St. Louis, Missouri

ASTORIA MAHOGANY
LUMBER & VENEERS

One of many steam vats at the Astoria Mills

Cooked!

After mahogany logs have been selected for veneer making, they are placed in huge vats and cooked with live steam for many hours before being sent to the veneer machines. Great attention is paid to this process, various logs being cooked for varying periods of time in order to ensure uniform softening.

The resultant uniform quality of mahogany veneer is one of the factors which, over a period of nearly half a century, have made us the largest complete mahogany lumber and veneer organization in this country.

Astoria Mahogany Co., Inc.
1031 Steinway Avenue, Long Island City, N.Y.
Successors to
Huddleston-Marsh Mahogany Co. F. W. Kirch, Inc.
Astoria Veneer Mills and Dock Co., Inc.
Mills and Yard, Long Island City, New York
BRANCHES—44 North Market Avenue, Grand Rapids, Mich.; 2256 Lumber Street, Chicago, Ill.

OAK

Plain and Quartered
Uniform Color—Soft Texture

Poplar, Ash

and other

Hardwoods

We have 35,000,000 feet dry stock—all of our own manufacture, from our own timber grown in Eastern Kentucky

Prompt Shipments

The Mowbray & Robinson Co.
(INCORPORATED)
Manufacturers
Office: CINCINNATI, OHIO

MILLS
Quicksand, Ky.; Viper, Ky.; West Irvine, Ky.

Canadian Representative:
M. E. CUMMINGS, 814 Richmond Ave., Buffalo, N. Y.

30 Million Feet Hardwoods Yearly

Manufactured by

Darnell-Love Lumber Co.

Leland, Mississippi

We own and operate two large band mills with sufficient timber to supply these mills, at present capacity, fifteen to twenty years

Cutting

Oak, Ash, Gum, Elm

Cypress, Cottonwood

and various other Native Woods

Our Specialties are—

3/8", 1/2", 5/8" and 3/4" in Gum and Oak

and

8/4" Quartered Red Gum

8/4" Quartered Red Gum Sap No Defect

WE SOLICIT YOUR INQUIRIES AND ORDERS

Let us quote you on your requirements

4/4 Brown Ash.

4/4, 5/4, 8/4, 10/12, 12/4 16/4 Birch.

4/4 Basswood.

Edward Clark & Sons, Limited
807-9 Bank of Hamilton Bldg.
Toronto, - Ont.

— A name worth remembering —

Thomas E. Powe Lumber Co.
St. Louis, Mo.

Manufacturers and Wholesalers of

SOUTHERN HARDWOODS

Specializing in

Ash-Oak-Gum-Poplar

Mills: PRESCOTT, ARK.—DOTHAN, ALA.

ST. LOUIS YARD

Mixed Carload Shipments — Carry stocks of the following:

Hickory	Magnolia	Elm
Maple	Willow	Sycamore
Tupelo	Red Cedar	Beech
Cypress	Plain Oak	Quartered Oak
Sap Gum	Red Gum	Mahogany
Poplar	Ash	Black Gum
Yellow Pine		

A name that should be on your inquiry list for Hardwood Lumber

American Column & Lumber Co.
Brunson Building, COLUMBUS, OHIO

—Manufacturers of—

West Virginia

Soft Yellow Poplar
Plain White Oak
Plain Red Oak
Quartered White Oak
White Oak Timbers and Plank

Chestnut	Butternut
Basswood	Ash
Maple	Cherry
Hickory	Walnut
Beech	Sycamore
Buckeye	Black Gum
Birch	Hemlock

Oak and Hardwood Dimension Stock

Steele & Hibbard Lumber Co.
ST. LOUIS, MO.

52 Years in Business

We carry a large stock of dry

Hardwood Lumber

25 Different Kinds
Quick Shipment
Write or wire for Prices

We specialize Oak cut from Mild Texture Missouri Timber with thin sap both plain and quarter sawed.

We ship also from Sawmills direct; Red as well as Sap Gum and Poplar, both plain and quarter sawed Sound Wormy Chestnut, Cypress and Ash.

F. Huntington Smith
Canadian Representative.

Tustin Hardwood Lumber Co.

MEMPHIS **TENN.**

KILN DRIED AND AIR DRIED SOUTHERN HARDWOODS

We operate five mills and Memphis yard, specializing in KILN DRIED Sap Gum, Elm, Maple, Ash. *Send us your inquiries.*

Will quote low prices on following to points not embargoed

4 cars 4/4 No. 1 C. & B. Qtd. White Oak.
1 " 4/4 Fas Qtd. Red Oak.
1 " 4/4 No. 1 Com. Qtd. Red Oak.
2 " 4/4 Fas Plain Red Oak.
5 cars 4/4 No. 1 Com. Plain Red Oak.
3 " 8/4 No. 1 C. & B. Qtd. Red Gum.
4 " 8/4 No. 1 C. & B. Qtd. Sap Gum.

Johnson Brothers Hardwood Co.

(OUR NAME IS EASY TO REMEMBER)

Sales Agents:
Arko Lumber Co.
Arkansas City, Ark.

Bank of Commerce & Trust Building
Memphis, Tenn., U.S.A.

Double Band Mill
Capacity
100,000 ft. per day

Manufacturers and Wholesalers

SOUTHERN HARDWOODS

3,000,000 ft. dry stock on hand and 5,000,000 in process of drying—all thicknesses, ½" to 4", plain and quartered.
White and Red Oak—Red Gum—Sap Gum—Tupelo—Black Gum — Cottonwood—Salix—Willow—Pecan—Sycamore—Elm—Soft Maple—Mangolia.

We offer for quick Sale the following Bone Dry Stock:

1 c/l 4/4" No. 1 & 2 Common Qtd. White Oak
3 c/l 8/4" No. 1 Common Qtd. Red Gum, S.N.D.
2 c/l 10/4 Log Run Sycamore
1 c/l 10/4 Log Run Soft Maple
5 cars 4/4" FAS Cottonwood, Regular Widths
1 car 4/4" No. 1 Com. & Btr. 11" and wider Cottonwood
1 car 6/4" FAS Cottonwood
5 cars 8/4" Log Run Elm
2 cars 10/4" Log Run Ash

Wire us at our expense for quotations

Aromatic Tennessee Red Cedar

CAR LOAD LOTS
OR LESS

Earthman Lumber Co.
Murfreesboro, Tenn.

Quality plus Service

AT RIGHT PRICES

Let us quote you on concave chair seat, turned office, piano, restaurant and bath-room stool tops.

Solid table tops, cabinet work; iu fact woodwork of all description.

Algoma Wood Products Co.
ALGOMA, WIS.

F. T .DOOLEY, President. T. E. JONES, Secy.-Treas

F. T. Dooley Lumber Co.
Inc.

MANUFACTURERS and WHOLESALERS
of

SOUTHERN HARDWOODS

Plain and Quartered Oak
Cypress, Gum, Ash
Soft Maple and Elm

Send us your inquiries

Memphis ∴ ∴ Tennessee

Hardwoods

We can furnish you immediately Factory Stock including all grades and thicknesses of

Walnut, Chestnut
Mahogany, Teak, Oak
Ash, Cypress

ALSO

VENEERS

Oak, Maple, Walnut and other Fancy Woods

The McLennan Lumber Co.
Limited
MONTREAL

Felger Lumber and Timber Company

MANUFACTURERS AND WHOLESALERS

NORTHERN AND SOUTHERN HARDWOODS

Main Office:
GRAND RAPIDS
373 Mich. Trust Bldg.

Southern Office:
MEMPHIS, TENN.

Yellow Poplar Lumber Co.

Manufacturers of Band Sawed

Poplar Plain Oak
Quartered Oak
Chestnut Basswood

Capacity 50,000,000 per annum

SPECIALTY: Monogram Brand Oak Flooring

CANADIAN ENQUIRIES SOLICITED

COAL GROVE, OHIO, U. S. A.

We Offer For Prompt Shipment

PLAIN RED GUM

1 15,000 4/4 1sts & 2nds
2 150,000 4/4 No. 1 Com. & Sel.
3 120,000 4/4 No. 2 Com. & Sel.
4 14,500 6/4 No. 1 Com. & Btr.
5 30,000 6/4 No. 1 Com. & Sel.

QUARTERED RED GUM

6 15,000 4/4 1sts and 2nds
7 15,000 4/4 No. 1 Com. & Sel.
8 31,200 6/4 1sts and 2nds
9 16,000 6/4 No. 1 Com. & Sel.
10 9,600 8/4 No. 1 Com. & Sel.

PLAIN SAP GUM

11 35,000 5/8 No. 1 Com. & Sel.
12 250,000 4/4 No. 1 Com. & Sel.
13 140,000 4/4 No. 2 Common
14 75,000 4/4 No. 3 Common
15 11,500 5/4 No. 2 Common
16 10,000 5/4 No. 3 Common
17 9,000 6/4 1sts & 2nds
18 25,000 6/4 No. 1 Com. & Sel.
19 71,300 6/4 No. 2 Common
20 5,500 6/4 No. 3 Common
21 8,000 8/4 No. 1 Com. & Sel.
22 9,600 8/4 No. 2 Common
23 2,500 8/4 No. 3 Common

QUARTERED SAP GUM

24 35,700 4/4 No. 1 Com. & Btr.
25 13,000 4/4 No. 1 Com. & Sel.
26 28,000 8/4 No. 1 Com. & Btr.

PLAIN RED OAK

27 12,000 4/4 1sts & 2nds
28 200,000 4/4 No. 1 Com. & Sel.
28 120,000 4/4 No. 2 Common
30 13,000 5/4 No. 1 Com. & Btr.

QUARTERED RED OAK

31 75,000 4/4 No. 1 Com. & Btr.

PLAIN WHITE OAK

32 100,000 4/4 No. 1 Com. & Sel.
33 80,000 4/4 No. 2 Common

COTTONWOOD

34 33,200 4/4 1sts & 2nds

PECAN

35 6,800 4/4 Log Run

ELM

36 11,300 4/4 Log Run
37 40,000 12/4 Log Run

Send us your inquiries, as this is only a partial list of the stock we have at our mill

"CLAYTON QUALITY" TENSA DETA SOUTHERN HARDWOODS

UTLEY-HOLLOWAY COMPANY

General Office: 1226 Conway Bldg., CHICAGO, ILL. Band Mill: Clayton, La.

Indiana

Quartered Red and White

OAK

1,000,000 feet of dry stock carried at all times

ALSO PLAIN OAK AND ASH

We manufacture all stock carried

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
GEO. H. FOOTE, Vice-Pres. & Treas.
JOSEPH WALTMAN, Secretary

Mills at EVANSVILLE, Indiana

SPECIALS!

For Immediate Shipment

QUARTERED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.

PLAIN SAWED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.
5 " 1¼" Common.

QUARTER SAWED OAK

10 cars 1" No. 1 Com. and Btr., White.
10 " 1" No. 1 Com. and Btr., Red.

Thomas & Proetz Lumber Company

No. 3400 Hall St. St. Louis, Mo.

GUM

Sap Red Tupelo Black

Prompt Shipments any Time

Cypress Cottonwood Oak
Ash Elm Beech Sycamore
Crating Fir Spruce
Yellow Pine

INQUIRIES SOLICITED

Manufacturers & Wholesalers

Cornelius Lumber Co.

Home Office—Arcade Building, St. Louis, Mo.
Northern Office—Lumber Exchange, Chicago, Ill.
Northwestern Office—Bremer Arcade, St. Paul.
Southern Offices—Tupelo, Miss., Memphis, Tenn.
Saw Mills—Drew, Miss., Osmeek, La., Lake City, Fla.

ATTENTION:

"Auto Body and Furn. Manfgs."

We are one of the few firms in the country handling

White Ash Exclusively

We sort it to meet all requirements. **Tough** texture and **Medium** texture. Can furnish **Special Widths** and **Lengths** one to four inches thick. Write or wire when needing WHITE ASH.

THOMPSON, KATZ LUMBER CO.

Memphis, Tenn.

Cable Address "TomKats"

SPECIAL—DRY STOCK

Ready for Immediate Shipment in Straight or Mixed Cars

PLAIN WHITE OAK

		Feet
4/4	FAS	4,992
5/4	"	1,875
6/4	"	4,935
8/4	"	200
4/4	No. 1 Com.	99,523
5/4	"	8,458
6/4	"	8,190
8/4	"	5,540
4/4	No. 2 Com.	26,756
5/4	"	975
4/4	No. 3 Com.	4,278

PLAIN RED OAK

4/4	FAS	27,643
5/4	"	437
6/4	"	855
4/4	No. 1 Com.	56,005
5/4	"	9,396
6/4	"	4,447
8/4	"	1,810
4/4	No. 2 Com.	31,812
5/4	"	2,817
4/4	No. 3 Com.	15,041

QRTD. WHITE OAK

4/4	FAS	22,651
5/4	"	243
6/4	"	1,852
8/4	to 16/4 FAS	2,175
4/4	No. 1 Com.	28,720
5/4	"	14,561
6/4	"	10,237
8/4	"	1,300
8/4	to 16/4 No. 1 Com.	3,795
4/4	No. 2 Com.	5,719

QRTD. RED OAK

4/4	FAS	6,297
4/4	No. 1 Com.	17,442
5/4	"	2,112
6/4	"	1,116
8/4	"	2,240
4/4	No. 2 Com.	6,108

POPLAR

4/4	No. 1 Com.	13,395
5/4	"	1,787
6/4	"	4,297
8/4	"	2,480
4/4	No. 2 Com.	1,715
6/4	"	2,167
8/4	"	1,440

PLAIN RED GUM

		Feet
4/4	FAS	4,912
5/4	"	2,193
6/4	"	2,610
8/4	"	902
4/4	No. 1 Com.	13,482
5/4	"	12,319
6/4	"	6,045
8/4	"	5,704

PLAIN SAP GUM

4/4	FAS	26,720
5/4	"	23,990
8/4	"	4,320
4/4	No. 1 Com.	21,984
5/4	"	437
6/4	"	1,170
8/4	"	4,420
4/4	No. 2 Com.	5,453
5/4	"	2,193
6/4	"	3,360

QRTD. RED GUM

4/4	No. 1 Com.	14,686
8/4	"	1,200
8/4	No. 1 C. & B.	10,548
4/4	No. 2 Com.	41

QRTD. SAP GUM

8/4	FAS	21,120
8/4	No. 1 Com.	7,240

SOUTHERN ELM

4/4	Log Run	11,317
5/4	" "	1,334
6/4	" "	34,172
8/4	" "	10,884
10/4	" "	23,692
6/4	No. 3 Com.	1,766
10/4	"	812

SOUTH'N SOFT MAPLE

4/4	Log Run	31,642
5/4	" "	2,356
6/4	" "	5,760
8/4	" "	26,212
10/4	" "	43,724
8/4	No. 3 Com.	40
12/4	"	4,500

WALNUT

4/4	Log Run	2,900
8/4	" "	990

WHITE ASH

		Feet
4/4	FAS	22,709
5/4	"	27,106
8/4	"	10,424
10/4	"	12,097
12/4	"	4,680
4/4	No. 1 Com.	37,980
5/4	"	17,587
6/4	"	4,888
8/4	"	11,540
10/4	"	10,487
12/4	"	495
4/4	No. 2 Com.	8,318
5/4	"	1,112
6/4	"	15,253
8/4	"	1,616
10/4	"	4,605
12/4	"	21,360
4/4	No. 3 Com.	4,391
5/4	"	75
6/4	"	450
8/4	"	3,630
10/4	"	490
12/4	"	9,780

CYPRESS

4/4	FAS	10,542
5/4	"	450
6/4	"	12,165
8/4	"	1,440
4/4	Select	30,921
5/4	"	5,827
6/4	"	52,819
8/4	"	8,020
4/4	Shop	37,343
5/4	"	1,125
6/4	"	8,353
8/4	"	9,214
4/4	No. 1 Com.	72,757
5/4	"	3,818
6/4	"	4,241
8/4	"	1,680
4/4	No. 2 Com.	36,729
5/4	"	3,500
6/4	"	14,040
8/4	"	600

COTTONWOOD

4/4	FAS 6-10"	14,636
4/4	" 11 and up	6,327
5/4	FAS	4,312
4/4	BB 13-17"	1,440
4/4	BB 9-12"	2,505
4/4	No. 1 Com.	38,249
5/4	"	4,400
6/4	"	144
8/4	"	896

WRITE OR WIRE FOR ATTRACTIVE DELIVERED PRICES

Baker-Matthews Lumber Co.

Memphis, Tennessee

West Virginia Oak

Thoroughly Dry, Accurately Sawn, Soft Textured, and Uniform in Color.

Write us when needing choice stocks. All lumber produced from virgin timber of large size and excellent quality.

Twenty Million Feet Hardwood Ready for Immediate Shipment

OAK

Yellow Poplar, Ash, Hickory, Beech, Chestnut, Basswood, Walnut, Maple

THE THOMAS HALL LUMBER COMPANY

Manufacturers

CHARLESTON, - WEST VIRGINIA

M. BROWN, Canadian Repres. **Address: 83 Neville Park Blvd., Balmy Beach, Toronto**

Tallahatchie Lumber Company

MEMPHIS, TENN.

Manufacturers of

Band Sawn Hardwoods

Graded so as to be especially attractive to Furniture Manufacturers.

Careful attention to every detail of service.

SEND US YOUR INQUIRIES

Band Sawn Poplar, Plain and Quartered White and Red Oak— Quartered Red Gum, Sap No Defect

Below we offer, subject to prior sale and immediate acceptance, the following stock:—

ASH

4/4" No. 2 Com & Bet	10,000 ft.

BASSWOOD

4/4" No. 2 Com & Bet	30,000 ft

BEECH

4/4" Log Run	3,000 ft.
8/4" Log Run	40,000 ft.
10/4" Log Run	10,000 ft.
12/4" Log Run	6,000 ft.

CHERRY

4/4" No. 2 Com & Bet	6,000 ft.

ELM

12/4" No. 2 Com & Bet	2,000ft.

QTRD. RED GUM

4/4" No. 1 Com & Bet	22,000 ft.

QTRD. RED GUM, SND

4/4" FAS	6,000 ft.
6/4" FAS	18,000 ft.
6/4" No. 1 Com	20,000 ft.
8/4" No. 1 Com	30,000 ft.

PLAIN SAP GUM

4/4" FAS	18,000 ft.
4/4" No. 1 Common	18,000 ft.
4/4 No. 2 Common	12,000 ft.
4/4" No. 3 Common	10,000 ft.

QTRD. BLACK GUM

4/4" Log Run	50 000 ft.

HICKORY

6/4" Log Run	5,000 ft.
8/4" Log Run	8,000 ft.

MAGNOLIA

4/4" FAS	20,000 ft.
4/4" No. 1 Com	20,000 ft.

QTRD. W. O. STRIPS

4/4" 4" to 5½" Clear	15,000 ft.
4/4" 2½ to 3½" Clear	11,000 ft.

QTRD. WHITE OAK

4/4" FAS	52,000 ft.
4/4" No. 1 Com	150,000 ft.
4/4" No. 2 Com	60,000 ft.
5/4" No.1 Com	7,000 ft.

PLAIN WHITE OAK

4/4" No. 1 Com	10,000 ft.
4/4" No. 2 Com	30,000 ft.

PLAIN RED OAK

4/4" FAS	59,000 ft.
4/4" No. 1 Com	90,000 ft.
4/4" No. 2 Com	80,000 ft.
5/4" FAS	40,000 ft.

SOUND WORMY OAK

4/4"	100,000 ft.

POPLAR

4/4" FAS Yellow	36,000 ft.
4/4" No. 1 Com	200,000 ft.
4/4" No. 2 Com	125,000 ft.

We own our stumpage and operate our own band mill in Bude, Miss., manufacturing ten million feet annually, on which we specialize in Quartered White Oak, manufactured from genuine forked leaf White Oak and Yellow Poplar of fine soft texture grown in the hills of Southern Mississippi.

Our grades are dependable and the manufacture of our stock is unsurpassed. We respectfully solicit your enquiries, which will receive our prompt and courteous attention.

L. D. Murrelle Lumber Company

General Sales Office: 1524 Exchange Bldg., Memphis, Tennessee

Band Mill: Bude, Miss.

Stimson Veneer and Lumber Co.

(Inc.)

Office and Mill: McLean Ave. and Union Belt R.R.

Memphis - Tenn.

We sell only the product of our own mills and make band sawn lumber in all Southern Hardwoods.

We specialize in Quartered White Oak, Red Oak, and Red Gum.

With allied companies we make fifty million feet annually.

J. V. Stimson Hardwood Co.

Manufacturers and Exporters

Band Mills: Memphis, Tenn., Helena, Ark.

Memphis - Tenn.

STOCK LIST

QUARTERED WHITE OAK
- 3 cars 4/4" 1s and 2s.
- 5 cars 4/4" No. 1 Common.
- 2 cars 4/4" No. 2 Common .

QUARTERED RED OAK
- 5 cars 4/4" 1s and 2s.
- 10 cars 4/4" No. 1 Common.
- 4 cars 4/4" No. 2 Common.
- 2 cars 6/4" No. 1 Common and Better.

QUARTERED RED GUM
- 10 cars 4/4" 1s and 2s.
- 3 cars 4/4" 1s and 2s Fig.
- 2 cars 5/4" 1s and 2s.
- 2 cars 6/4" 1s and 2s.
- 15 cars 4/4" No. 1 Common.
- 2 cars 5/4" No. 1 Common.
- 2 cars 6/4" No. 1 Common.

QUARTERED RED GUM, Sap no Defect
- 5 cars 6/4" No. 1 Common and Better.
- 10 cars 8/4" No. 1 Common and Better.

ASH
- 4 cars 10/4" No. 1 Common and Better.
- 1 car 12/4" No. 1 Common and Better.
- 1 car 6/4" No. 1 Common and Better.
- 2 cars 4/4" No. 1 Common.
- 2 cars 4/4" No. 2 Common.

SAP GUM
- 10 cars 4/4" 1s and 2s.
- 20 cars 4/4" No. 1 Common.
- 10 cars 4/4" No. 2 Common.
- 2 cars 4/4" 18" up Panel.
- 5 cars 4/4" 13-17" Box Boards.

PLAIN RED OAK
- 2 cars 4/4" 1s and 2s.
- 2 cars 6/4" No. 1 Common and Better.
- 2 cars 10/4" No. 1 Common and Better.

PLAIN WHITE OAK
- 4 cars 4/4" No. 1 Common Plain.

COTTONWOOD
- 2 cars 4/4" 1s and 2s.
- 15 cars 4/4" No. 1 Common.
- 5 cars 4/4" No. 2 Common.

ELM
- 2 cars 4/4" Log Run.
- 10 cars 10/4" Log Run.
- 10 cars 12/4" Log Run.

MAPLE
- 4 cars 12/4" Log Run.

For Discriminating Buyers

Dry stock ready for prompt shipment

1 Cars 1 " Fas Plain Red Oak
4 " 1 " No. 1 Com. Plain Red Oak
7 " 1 " No. 2 & 3 Com. Plain Red Oak

1 " 1 " Fas Quartered Red Oak
7 " 1 " No. 1 Com. Qtrd. Red Oak
6 " 1 " No. 2 " " " "

1 " 1 " Fas Quartered White Oak
5 " 1 " No. 1 Com. Qtrd. White Oak
7 " 1 " No. 2 " " " "
1 " 1 " 1s&2s Plain White Oak

2 " 1 " No. 1 Com. Plain White Oak
2 " 1 " No. 2 " " " "

2 " 1¼" Fas Quartered Red Gum
5 " 1 " Com. & Btr. Qrtd. Red Gum
4 " 1½" " " " " "
3 " 2 " " " " " "
3 " 1¼" No. 1 Com. Qtrd. Red Gum

1 " 1 " Fas Plain Red Gum
3 " 1¼" Fas Plain Red Gum
6 " 1 " No. 1 Com. & Btr. Pl. Red Gum
3 " 1 " No. 1 Common Plain Red Gum
5 " 1¼" No. 1 Common Plain Red Gum
1 " 2 " " " " " "
3 " 1 " No. 2 " " " "

2 Cars 1 " Fas Sap Gum
2 " 1 " " " " 13" and up
3 " 1 " Sap Gum Box Boards, 13 to 17"

1 " 1¼" Fas Sap Gum
1 " 2 " Common & Better Sap Gum

3 Cars 1 " No. 1 Common Sap Gum
2 " 1¼" " " " "
5 " 1 " No. 2 " " "
1 " 1¼" " " " "
1 " 1½" " " " "
1 " 2 " " " " "

1 " 1¼" Fas Qtrd. Red Gum, S.N.D.
3 " 1 " C. & B. Qtrd. Red Gum, S.N.D.
10 " 1½" " " " " "
7 " 2 " " " " " "
2 " 1¼" No. 1 C. Qtrd. Red Gum, S.N.D.

1 " 1 " No. 1 Shop Cypress
2 " 1 " No. 1 Com. "
1 " 1¼" 1s & 2s "
1 " 1¼" Select "
1 " 1¼" No. 1 Shop "
1 " 2 " 1s & 2s "
1 " 2 " Select "
1 " 2 " No. 1 Shop "
1 " 2 " No. 1 Common "

5 " 1 " Log Run Willow

1 " 1 " Log Run Elm
1 " 1¼" " " "
2 " 1½" " " "
1 " 2 " " " "
2 " 2½" " " "
2 " 3 " " " "

WIRE FOR QUOTATIONS AT OUR EXPENSE

The

Frank A. Conkling Company

SOUTHERN HARDWOODS

Memphis, Tenn.

MILLS:
PERCY, Miss., ISSAQUENA, Miss.

Frank Purcell
Walnut Lumber Co.

Plenty of logs like the portion of our stock shown above have made possible the million and a half foot stock of well manufactured American Walnut Lumber which we now have to offer.

Prompt shipment
All grades and thicknesses
Guaranteed Inspection

12th AND BELT LINE
Kansas City - Kansas

Dacus-Richards Hardwood Co.

A. P. DACUS - H. J. RICHARDS

MANUFACTURERS
Southern Hardwood
Specializing in
RED GUM
SAP GUM
PLAIN AND QUARTERED
OAK

Randolph Building,
Memphis, Tennessee.
Mills at EVANSVILLE, Miss., and PRITCHARD, Miss.

Perkins Brothers
Kelso, Ark.

Manufacturers of
Southern Hardwoods

Quartered and Plain White Oak, Plain Red Oak, Gum Elm, Maple, Ash and Cypress

We are also prepared to cut dimension stock to order in Ash, Oak, Gum, Hickory and Elm.

Let us know your requirements.

Mercerau-Hawkins Tie Company

Huntington - W. Va.

Manufacturers and Wholesale Dealers

West Virginia and Southern

HARDWOODS

We specialize in

Oak Tie Siding
White and Red Oak
Yellow Poplar
Basswood
Chestnut and
Gum Lumber.

Canadian Sales in Charge of

C. W. PETERS

Vice President and Manager of Lumber Dept.

BEDNA YOUNG Lumber Company

Jackson - Tennessee

Manufacturers of
Quartered White and Quartered Red Oak

Please let us quote you on the following:—

1 car 5/8".FAS Qtd. White Oak, 6-9".
2 " 4/4" FAS Qtd. White Oak, 6" and up.
1 " 5/4" FAS Qtd. White Oak, 6-9".
1 " 5/8" No. 1 Com. Qtd. Wh. Oak, 4" & up.
1 " 3/4" No. 1 Com. Qtd. Wh. Oak, 4" & up.
3 " 4/4" No. 1 Com. Qtd. Wh. Oak, 3" & up.
1 " 5/4" No. 1 Com. Qtd. Wh. Oak, 4" & up.
1 " 5/4" FAS Qtd. Red Oak, 6" & up.
1 " 6/4" FAS Qtd. Red Oak, 6" & up.
1 " 4/4" No. 1 Com. Qtd. Red Oak, 3" & up.
1 " 5/4" No. 1 Com. Qtd. Red Oak, 4" & up.
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AMERICAN WALNUT

"The Cabinet Wood Superlative"

Little Doors That Open

(without sticking) after centuries of use.

There are little doors—and hidden drawers—that were fabricated 200, 300, 400 or more years ago. Some of them are supposed to open at the light touch of a delicate finger (with rare jewels on it). Some of them may stick (Oh, heavens!). BUT—*some of them are of WALNUT.*
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Everybody is glad to know that cabinet-work of that supreme hardwood is still being made—by artisans who are indeed artists. Would you believe it? It is *true!*
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"Walnut is Walnut"—there's no getting away from *that.*

The American Walnut Brochure, de luxe, is ready. May we have your written application? (Promptly answered.)

AMERICAN WALNUT MANUFACTURERS' ASSOCIATION
Room 1019, 616 South Michigan Boulevard, Chicago

ALL BRANCHES OF THE FURNITURE TRADE

are feeling strongly the Effects of the series of tributes to our American Walnut which are running continuously in most of the Best Publications in America. Above is an example.

THERE ARE STILL A FEW FURNITURE HOUSES IN THE COUNTRY

who are giving their better-posted competitors a great advantage over them with the Best Trade. WHY? Simply because they "heard somebody say" that American Walnut was getting scarce. *Let them ask us for THE FACTS!* (See address above.)

Chas. Gill Lumber Co.

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SPECIALIZING IN

MAPLE
BIRCH
AND
BASSWOOD

Complete Stock Crating Material

We solicit correspondence relative to all Northern Hardwoods

Chicago Office — 501 Lumber Exchange

Band Sawn West Virginia HARDWOODS

The W. C. Barlett Lumber Co.

Charleston, W. Va.

Manufacturers

ASH to WALNUT

We produce a complete line of Band Sawn Hardwoods, serving the Body and Wheel, Furniture, Piano, Cabinet and Interior Finish Trades.

If Superior Quality, Fine Width and Length, coupled with Real Service is desired, let us have your enquiries.

OAK ASH COTTONWOOD MAPLE

Chapman & Dewey Lumber Company

Manufacturers of

Southern Hardwoods

Band Sawn at our Mills in the St. FRANCIS RIVER BASIN

We solicit your enquiries

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Offices:

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GUM ELM SYCAMORE CYPRESS

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(Not Better than the Best but as Good as the Best)

FAS Plain White and Red Oak
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J. W. Darling Lumber Co.

N. W. Cor. 4th & Plum St. CINCINNATI, Ohio

In addition to our operation at Baton Rouge, La., we handle the sales of

J. H. Leavenworth & Son, Greenville, Miss.
Fisher Bros. Lumber Co., Cruger, Miss.
Kurz Brothers, Helena, Ark.

and have three buyers constantly traveling the South.

We are, therefore, in position to give the lumber consumer excellent service in

Oak - Gum - Cottonwood
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WAYNE LUMBER CO.

Manufacturers and Wholesalers of CANADIAN HARDWOODS

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A FEW SPECIALS FOR PROMPT SHIPMENT

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15,000' 1 " No. 1 Com & Btr.
10,000 1¼ No. 1 Com. & Btr.
30,000 1 No. 2 Com. & Btr.
15,000 1 No 2 Common
10,000 1¼ No. 2 Common

BASSWOOD

70,000' 1 " No. 2 Common
200,000 1¼ Log Run
1 car 1½ Log Run
1 car 2 Log Run

SOFT ELM

50,000' 1" Log Run
40,000 2 Log Run

BIRCH

10 cars 1 " No. 1 Common
5 " 1 No. 2 Common
3 " 1¼ No. 1 Common
7 " 1¼ No. 2 Common
10 " 2 No. 1 Com&1s&2s
7 " 2 No. 2 Common
3 " 2½ No. 1 Com&1s&2s
3 " 2½ No. 2 Common
4 " 3 No. 1 Com&1s&2s

HARD MAPLE

50,000' 1¼" No. 1 Com&1s&2s
10,000 1¼ No. 2 Common

BEECH

150,000' 1½" Log Run

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BOXING & CRATING
3 cars 1" Basswood, Elm & Ash
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All Lumber Shipped by Our Own Inspectors

Northern Hardwood Products

A full and complete assortment of Dry Stock

SPECIAL ITEMS OF INTEREST

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75M 4/4 Selects & Better
50M 4/4 No. 1 Common
70M 5/4 FAS
40M 5/4 No. 1 Com. & Btr.
60M 5/4 No. 1 Common
100 5/4 No. 2 Common
40M 6/4 No. 1 Com. & Btr.

BEECH

90M 5/8 No. 2 Com. & Btr.
200M 4/4 No. 2 Com. & Btr.
80M 4/4 Selects & Better
65M 4/4 No. 1 Common
120M 4/4 No. 2 Common
250M 5/4 No. 2 Com. & Btr.
100M 5/4 No. 1 Com. & Btr.
225M 6/4 No. 2 Com. & Btr.

HARD MAPLE

60M 4/4 End Dried White
50M 5/4 End Dried White
20M 6/4 End Dried White
18M 8/4 End Dried White
200M 8/4 No. 1 Com. & Btr.
150M 10/4 No. 1 Com. & Btr.
40M 12/4 No. 1 Com. & Btr.
50M 16/4 No. 1 Com. & Btr.

Our Facilities Include

TWO SAW MILLS COMPLETE PLANING MILL SIXTEEN DRY KILNS

THE BIGELOW-COOPER CO.

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FISHER BUILDING, - CHICAGO

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OAK	Furniture and Vehicle Dimensions Plain Sawed, Red and White Car Stock Wagon Stock
GUM	Plain and Quartered, Sap and Red
HICKORY	Flitch and Dimensions
ELM	2, 2½ and 3 inch.

HARDWOOD LUMBER

Thirteen Band Mills
Six Planing Mills
Eleven Flooring Units

Annual Capacity,
130,000,000
Feet

About a million logs each year are cut into beautiful hardwood lumber on our saw mills.

These mills are located in industrial villages which we have built in the mountains, in the heart of the forest primeval.

We regret we are not able to give you a panoramic view of these ideal industrial villages. The surroundings and the plants make a delightful picture of industrial beauty and sylvan charm.

In these villages we have other interests than our plants and lumber.

There are good SCHOOLS and CHURCHES, which we liberally support. In order that the schools may be the best, we give thousands of dollars annually to supplement state funds to employ teachers.

There are COMMUNITY CLUB HOUSES, which we have built and turned over to the community. These are adapted to various pleasant uses.. They are used for theatrical and vaudeville entertainments, moving picture shows, pool, billiards and various other community diversions.

There are TENNIS COURTS, BALL GROUNDS, and provisions for other out-door games and recreations.

Incidentally, on the yard at every plant there is about 8,000,000 feet of choice hardwood lumber.

And because we have superior mill villages, and give our employees superior treatment, and receive superior service from them, we are able to give our patrons

Superior Lumber and Superior Service

W. M. Ritter Lumber Co.

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Canadian Representative: John Hall, 160 Huron St., Post Office Box 32, Toronto

The Arrow Lumber Co.

Manufacturers and Wholesalers of

West Virginia Hardwoods and White Pine

Oak Timbers Our Specialty

PARKERSBURG, W. VA.

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NORTHERN BIRCH and MAPLE
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E. R. Spotswood & Son

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MANUFACTURERS OF

Kentucky Hardwood Lumber

We specialize in soft texture Kentucky Oak—Plain and Quarter Sawed, also in Ash, Basswood, Chestnut, Poplar, Beech.

Let us quote you on your requirements—our prices are right and we can make prompt shipments direct from our mills.

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The following books are offered at special prices subject to previous sale:

"Woodwork Joints," by Evans Bros., London England; 214 pages, with 430 illustrations and a complete index of eleven hundred references. Price $1.50.

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"Details of Cabinet Construction," by Evans Bros., London, England; 203 pages, fully illustrated. Price $1.50.

Seasoning of Wood; A Treatise of the Natural and Artificial Processes Employed in the Preparation of Lumber for Manufacture, with Detailed Explanations of its Uses, Characteristics and Properties, by Joseph Wagner. Published by D. Van Nostrand Co., in 1917. 274 pages, illustrated. Price $3 00.

"The Kiln Drying of Lumber," a Practical and Theoretical Treatise, by Harry Donald Tiemann, M.E., M.F. Just published, by J B. Lippincott Co. 316 pages, illustrated. Price $5.00.

The Woodworker Publishing Co., Limited

345 Adelaide Street West, Toronto, Ont.

3-PLY VENEERED PANELS IN B.C. FIR

We have stock of the following sizes :

½ in. GOOD TWO SIDES	¼ in. GOOD ONE SIDE	
24 x 72	18 x 56	36 x 84
26 x 72	24 x 72	36 x 90
36 x 72	36 x 72	

and can name very attractive prices.

The Wm. Rutherford & Sons Company, Ltd.

ATWATER and NOTRE DAME - MONTREAL

Special Stock Offered for Prompt Shipment

3 cars each 5/8, 4/4, 5/4 and 6/4 Plain Sap Gum
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3 cars each 4/4, 5/4, 6/4, 8/4, 10/4, 12/4 Qtd. Red Gum SND
5 cars each 4/4 & 8/4 Black Gum
5 cars each 4/4 & 8/4 Tupelo Gum
3 cars each 4/4, 5/4, 6/4, Plain Red Gum
3 cars each 5/8, 8/4, 10/4 and 12/4 Ash
5 cars each 4/4, 10/4 and 12/4 Elm
4 cars each 10/4 and 12/4 Maple
3 cars each 1/2, 5/8, 3/4, 4/4, 5/4 and 6/4 Qtd. White Oak
3 cars each 4/4 and 5/4 Plain Oak
3 cars each 4/4, 5/4 and 6/4 Quartered Red Oak
5 cars each 4/4 and 5/4 Sound Wormy Oak

Should you want any items not listed, we probably can supply and would apppreciate opportunity of quoting delivered prices.

MAY BROTHERS Office and Band Mills : MEMPHIS, TENNESSEE

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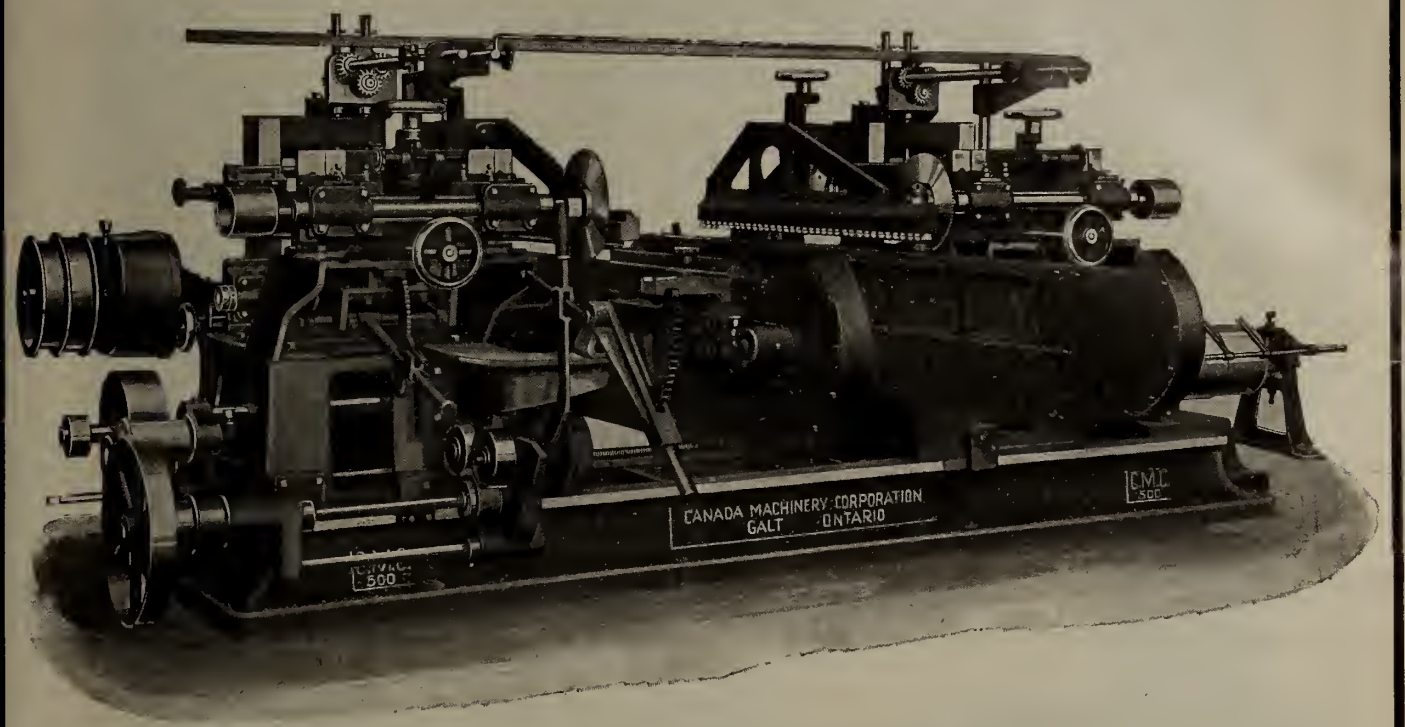
Double End Tenoner

MADE IN CANADA *UNEQUALLED ABROAD*



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in everything and particularly in machinery: The difference between the price of a mediocre machine and a good one is the best part of your investment. The first price of a poor machine is largely wasted, any savings effected being eaten up time and again by inconvenience, lack of power, irritating delays, breakage and repairs.

Purchasers of our No. 500 TENONER will find it a quality machine of the highest order; convenient of control and adjustment; strong in feeding and cutting capacity; rigid and accurate.

PARTIES INTERESTED. We are pleased to furnish complete descriptive matter to parties interested and to demonstrate machines in actual operation.

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Toronto Office and Warerooms : Brock Avenue Subway

Improved Glue Heater

No heat controllers or other safety guards are necessary with this heater, **because it cannot injure glue.** It's simple, substantially made of copper and costs less than any other.

Let us tell you more about it.

We make any size desired.

Cincinnati Glue Heater Company
Cincinnati, Ohio

"CASCO" Waterproof Glue

Mixed Cold—Used Cold

COST

FOR JOINTING—very much less than the hide glues.

FOR VENEERING—A little more per pound than vegetable, but little, if any, more per GLUE LINE FOOT.

Hundreds of large manufacturers are using "CASCO" to produce the BEST veneered products, at no increase in cost.

The Casein Manufacturing Co.
Manufacturers of Casein Glues for twenty-five years
15 PARK ROW NEW YORK CITY
NOTE. Send for Casco Red Book. It contains much information on glue, veneer and panels.

"The Woodworker's Standard"

Better Sanding Materials

Save money by using "CARBORUNDUM BRAND" GARNET PAPER AND CLOTH PRODUCTS. They are fast cutting—made flexible and easy for the sander operator to apply.

Carried in sheets and rolls up to 48" wide.
Prompt shipment can be made from our stock.
Ask for new price list.

Send for Price list

Norman Macdonald

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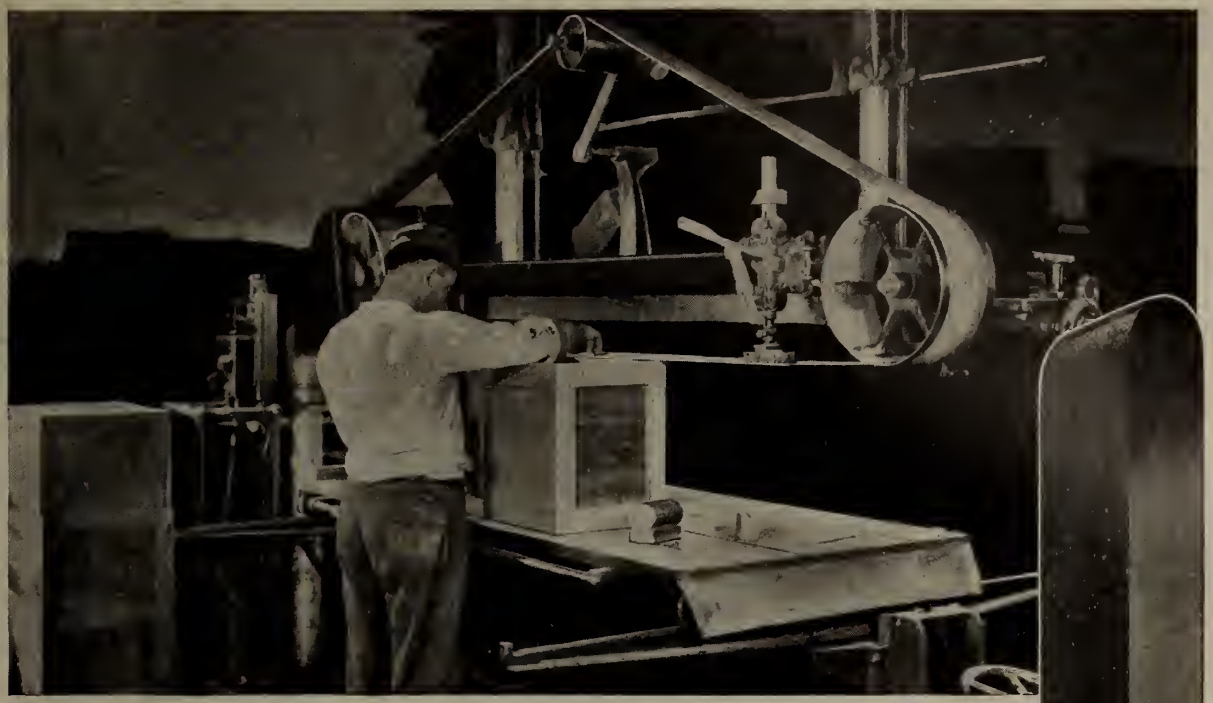

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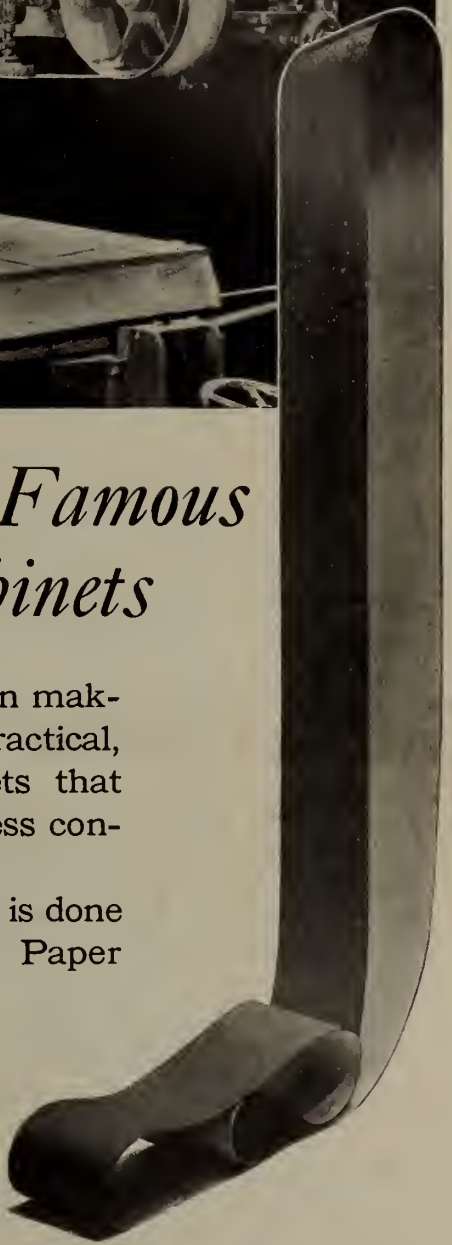
FOR years these people have been making sectional filing cabinets—practical, sturdy, beautifully finished cabinets that grace offices of thousands of business concerns the world over.

All of the sanding of these cabinets is done with Carborundum Brand Garnet Paper and Cloth.



Carborundum Brand Garnet Paper and Cloth

Make Good Sanders Better Sanders

The Carborundum Company

Niagara Falls, N. Y.

Grand Rapids New York Chicago Boston Philadelphia Detroit Cleveland Cincinnati Pittsburgh Milwaukee

Eastern Handle & Dowel Company, Limited

Farm Point - Quebec

High Grade

HANDLES

AND

DOWELS

We give special attention to Hardwood Dowels of Beech, Birch or Maple

Our Motto:
Quality, Efficiency and Fair Treatment

Please send us your enquiries and it will be a pleasure to quote you

Special attention given to all wood turnings

The Peter Hay Knife Co., Ltd.

Manufacture the Best

PLANER KNIVES and CUTTERS

OF ALL DESCRIPTIONS

The Peter Hay Knife Co., Limited

GALT, ONTARIO

IMPORTERS EXPORTERS

MANUFACTURERS

Reed and Rattan Products

Overseas Reed and Cane Co.

Ionia, Michigan

Subscribers' Information Form

Many letters reach us from subscribers enquiring where a certain machine, a certain kind of lumber or veneer, or some other class of goods, can be obtained. We can usually supply the information. We want to be of service to our subscribers in this way, and we desire to encourage requests for such information. Make use of this form for the purpose.

"CANADIAN WOODWORKER"
345 Adelaide Street West, Toronto

Date.....19..

Please tell us where we can procure .....

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.....

.....

Name .....

Address .....

PERIOD CARVINGS

for

FURNITURE

Quality the Best

Prompt Shipment

Largest Manufacturers of Imitation Wood Carvings in the World

Unlimited facilities for the manufacturing of high grade period wood carvings in composition and wood fibre. Reproductions of exclusive designs our specialty.

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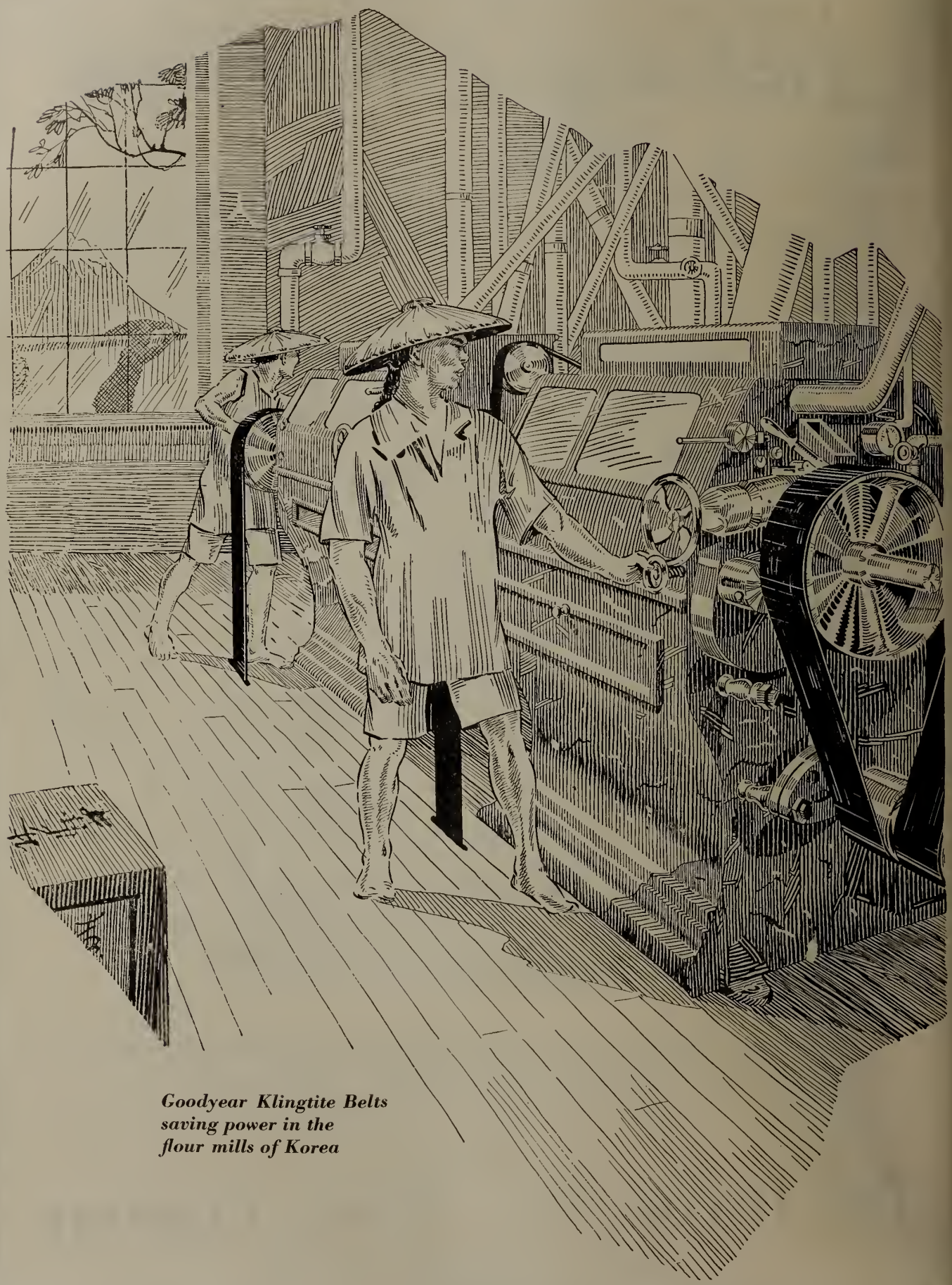
THE DECORATORS SUPPLY COMPANY

ARCHER, LEO AND LIME STREETS

CHICAGO



Goodyear Klingtite Belts saving power in the flour mills of Korea

World-Wide Acceptance of Goodyear Belts

THERE is a world-wide acceptance of the Goodyear Belting which dominates in Canadian industry.

This direct endorsement of the Goodyear principles of manufacture and application gives us no little pride. It means that the technical men of the world see eye to eye with Canadians in the matter of economical and satisfactory power transmission.

But it means much more to Canadian industry. It means a world-wide fund of data for the Goodyear men who advise with you on belting problems. It means that the cotton spinners of Lancashire, the silk manufacturers of Lyons, the steel plants of Sweden, the shipyards of Seattle, the flour mills of the far East—all will contribute their experience to help solve power problems in Canada.

In order to meet world-wide market conditions it has been necessary to change some of the familiar Goodyear brand names—but the change is in name only.

For example, Goodyear Extra Power Belt is now Goodyear Klingtite Belt, and when the Goodyear belting man specifies Goodyear Klingtite for a certain drive you are getting the old Extra Power in every particular.

Ask any Goodyear branch to send a man who is making transmission problems his special study No obligation. Phone, wire or write.

The Goodyear Tire & Rubber Co. of Canada, Limited

Branches: Halifax, St. John, Quebec, Montreal, Ottawa, Toronto, Hamilton, London, Winnipeg, Regina, Saskatoon, Calgary, Edmonton, Vancouver. Service stocks in other cities.

GOODYEAR BELTS

MADE IN CANADA

KLINGTITE GLIDE BLUE-STREAK

Paepcke Leicht Quality Hardwoods

SERVICE

Prompt Shipments—Dry Stock—Uniform Quality and Inspection

Band Sawn and End Trimmed—Full and Uniform Thickness

Complete Product of the Log, in the Grade Purchased

Good Run of Widths and Lengths

QUALITY

ASH
4/4" Log Run .. 50,000'
5/4" Log Run .. 15,000'
6/4" Log Run .. 30,000'
8/4" Log Run .. 30,000'
10/4" Log Run .. 20,000'
12/4" Log Run .. 100,000'

COTTONWOOD
4/4" Boxboards 13-17" .. .. 8,000'
4/4" 1sts and 2nds 13" & up .100,000'
4/4" 1sts & 2nds 6" & up .. 30,000

PLAIN RED GUM (Figured Wood)
4/4" No. 1 Com & Selects .. 10,000'
5/4" 1sts & 2nds . 8,000'

CYPRESS
4/4" No. 1 Shop & Better .. 75,000'
8/4" No. 1 Shop & Better .. 25,000'

QUARTERED WHITE OAK
4/4" Log Run .. 50,000'
5/4 Log Run .. 20,000'
6/4" Log Run .. 10,000'

SAP GUM
4/4" Panel & Wide No. 1, 18" & up .. .. 15,000'
4/4" Boxboards 13-17" .. .. 75,000'
4/4" 1sts & 2nds . 50,000'

ELM
5/4" Log Run .. 50,000'

PLAIN RED GUM (Plain Wood)
4/4" 1sts & 2nds . 50,000'
4/4" No. 1 Com. & Selects .. 100,000'
4/4" No. 2 Com. . 75,000'
1 ⅛ No. 1 Com. & Selects 13" & up . 12,000'
5/4" No. 1 Com. & Selects .. 10,000'
5/4" No. 2 Com. . 20,000'
6/4" 1sts & 2nds . 8,000'
6/4" No. 1 Com. & Selects .. 30,000'

PLAIN WHITE OAK
1/4" 1sts & 2nds . 30,000'
4/4" No. 1 Com. & Selects .. 75,000'
4/4" No. 2 Com. 50,000'

QUARTERED RED GUM (PLAIN WOOD)
4/4 1sts & 2nds . 20,000'
4/4" No. 1 Com. & Selects .. 25,000'
5/4 1sts & 2nds . 3,000'
5/4 No. 1 Com. & Selects .. 15,000'
6/4" 1sts & 2nds . 15,000'
6/4" No. 1 Com. & Selects .. 9,000'

QUARTERED RED GUM (SAP NO DEFECT)
6/4" No. 1 Com. & Better .. 50,000'
8/4" No. 1 Com. & Better .. 40,000'

SYCAMORE
4/4" No. 1 Com. & Bet. 13" & up .. .. 30,000'
1 ⅛ No. 1 Com. & Bet. 13" & up .. .. 7,000'
5/4 No. 1 Com. & Bet. 6" & up .. .. 50,000'
5/ Log Run .. 30,000'

PLAIN RED OAK
4/4" 1sts & 2nds . 30,000'
" 4/4 No. 1 Com. & Selects .. 60,000'
4/4" No. 2 Com. 75,000'

MAPLE
10/4" Log Run .. 15,000'
12/4" Log Run .. 35,000'

PAEPCKE LEICHT AND SUPERIOR QUALITY ARE SYNONYMOUS TERMS TO THE BUYER OF HARDWOOD LUMBER

PAEPCKE LEICHT LUMBER COMPANY

GENERAL OFFICES—Conway Building
111 West Washington Street, Chicago, Ill.

BAND MILLS—Helena, Ark., Blytheville, Ark.
Greenville, Miss.

ROBT. BURY & CO., Canada

LIMITED

Hardwoods and Veneers

THREE PLY FIR AND COTTONWOOD PANELS

LUMBER

Mahogany
(250,000 ft. in stock, all kinds)
Walnut
Qtd. White Oak
Plain Red Oak
Poplar
Gum
And all U. S. A. Hardwoods
Birch
Basswood
Maple
Beech
Elm
Ash
And all other Canadian Hardwoods

VENEERS

SAWN

Qtd. White Oak
Qtd. Red Oak
Plain Oak
Mahogany (all kinds)
English Oak
Teak Ash Cherry
Vermillion Birch
Poplar

ROTARY CUT

Birch, Poplar, Ash, Gum
Walnut, Basswood, Maple

SLICED

Mahogany, Walnut
Figured Gum

We Specialize in Mixed Shipments of Dry Hardwoods, Veneers and Panels

This is a good time to conserve your capital by making your purchases in this manner

Head Office and Veneer Warehouse
1 Spadina Avenue, TORONTO

Lumber Yard, Dry Kilns and Mill
Foot Spadina Ave., TORONTO

CANADIAN
WOODWORKER
and
Furniture Manufacturer

A Monthly Publication of Trade News and Practical Information, reaching the factories producing Interior Finish, Doors, Sash, Flooring, Boxes, Aeroplanes, Furniture, Pianos, etc.

Woodworker Publishing Company, Limited
345 Adelaide Street West - - - - - - TORONTO
Branches:
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Vol. 20 **Toronto, October, 1920** **No. 10**

Furniture Industry on Aggressive

A step of far-reaching importance to the furniture and allied industries was recently taken by the furniture manufacturers in the inaugurating of the nation-wide campaign, which is now in full swing, to increase the demand for good furniture. This comprehensive scheme, which includes active, aggressive work in several different fields, is being carried out through the agency of the Home Furnishings Bureau, an organization created for this specific purpose.

The object of the movement, which is described in detail elsewhere in this issue, is primarily to enlarge the market for furniture by arousing a greater interest on the part of the home owner and home maker, both present and prospective, in attractively furnished homes. There never was a time when more interest was being evinced in this subject than the present. By showing the home makers how the home can be made more comfortable and more attractive, educating them to the beauty and desirability of good furniture, and convincing them that good furniture at present prices is, in comparison, cheaper than nearly all other commodities, and is not likely to decrease in value, the furniture maker should be able to arouse a strong desire for better furniture.

There is no question as to the value of publicity. It has worked wonders in other fields and for other commodities. Advertising, persisted in, can increase the demand for furniture. An appeal to the home-loving instinct, which is so strongly implanted in the breast of the average Canadian, should have exceptionally gratifying results.

However, a note of warning might well be sounded. Immediate results should not be expected from a campaign of this kind. It is here where the danger lies. It takes time to mould the tastes of the buying public, but when once accomplished, the results will be worth the time and money expended. Many schemes of co-operative advertising have been launched with great enthusiasm and loud acclaim, only to die a natural death through lack of support by those directly interested The furniture industry is experiencing a quiet period and some may think that the advertising being carried on should result in maintaining the demand. It is too early in the campaign for direct results to be noticeable. In addition, the natural tendency when business is slack to reduce expenses by curtailing all expenditures. The campaign to arouse greater interest in home furnishings should not be allowed to founder for lack of support, for it is bound to pay handsome dividends.

The appeal, that is being made, is along general lines, and is not intended to boost any particular line or style of furniture. Better furniture and better furnished homes is an appeal for better home surroundings, better than each individual now enjoys, so that all furniture manufacturers will benefit by the increased volume of business that, through time, will assuredly result.

A prosperous furniture industry means more business, not only for the furniture manufacturer but for the manufacturer of lumber and woodworking machinery and of all the material used in furniture making. It is then in the interests of all concerned that the furniture manufacturers be encouraged and in some way assisted in this aggressive publicity work.

New Freights and Box Manufacturers

The recent increase in freight rates tends to emphasize the importance of a properly designed container, whether box or crate. The modern box should be built to designs and specifications that will ensure the following requirements: maximum service, safety to contents, low rates and reasonable first cost.

"Service" has of recent years become a very important factor in the box-making industry. Some of the larger box men have established testing and designing departments, manned by experts whose duty it is to study boxes under severe test conditions and to apply the knowledge so gained to the peculiar needs of different industries and various products. Others have consulted and co-operated with the Forest Products Laboratories at Madison, Wis., in an effort to improve box design and construction.

The results and findings of many of these tests have been published from time to time in the Canadian Woodworker. This information should be of real value as a guide in assisting the box maker to help overcome the increased burden placed on all shippers by the 40 per cent. increase in freight rates. It is more essential than ever that a box should contain just the right amount of material, so put together and perhaps reinforced, to ensure a safe arrival of the contents. More than is necessary is waste and adds to the cost of the box. In addition an extra pound or two, due to unnecessarily heavy material in a container takes on added importance when the higher rates are considered.

How Home Building Costs May be Reduced

Millmen Should be in Position to Advise Customers—Built-in Features of Modern Kitchen Cut Down Costs—Most Important Department in Home

By W. H. Shaw

Successful home building to-day has come to mean more than the erection of four walls and a roof for a shelter. The real home is not only the result of study of the basic principles of construction but the outgrowth of a thorough sympathy with certain new factors affecting the inside life of the home. Electricity, inventive genius, and the housekeeper are three influences that have brought about a great change in construction ideas.

So persistently have these influences enlarged their radius of activity that even the architectural scheme has been moulded to new forms. Time-worn methods have disappeared and we find the home taking on a new aspect. We are living in an age of convenience; therefore, contractors and builders should see the importance or even necessity of building well-designed, well-equipped, drudgeless homes for their customers or prospective buyers.

How Saving Can Be Effected

How many building contractors realize that the prospective home owner can get a modernly equipped kitchen free and also save many extra dollars in construction costs of the new home—if he will plan his kitchen from the start to make use of all modern conveniences? The builder to-day is confronted by high costs in material and labor. He knows that this is the reason some of his best prospective clients are hesitating to build. Any suggestion therefore that will cut the building cost without taking away any of the modern conveniences, will be very welcome.

It may be that the bungalow idea in our homes has been a material help in making the kitchen a more notable factor in our home building. While the kitchenette, with its compactly planned, and often cramped space, is not always to be desired, yet the idea is one that has met with general favor and we find that with some modifications and variations in form it is present in many modern homes.

The kitchen cabinet is a substitute for the old-fashioned large pontrees, permits of economy in construction, throws one big item of expense over from construction to equipment cost, and also gives the housewife a kitchen which is more satisfactory to her. Considerable space can be saved by concentrating cupboards, pantries and china closets right in the kitchen to match in with the other woodwork of the room, especially is this true where a breakfast room is next to the kitchen and one cupboard built in the wall, provision having been made with wider studds, will serve as a cabinet for both rooms. The important thing for the builder is to plan and build his kitchen in such a way that the proper space is provided for these pieces of built-in furniture. These spaces should be properly located with respect to good light, position of sink, kitchen range, etc.

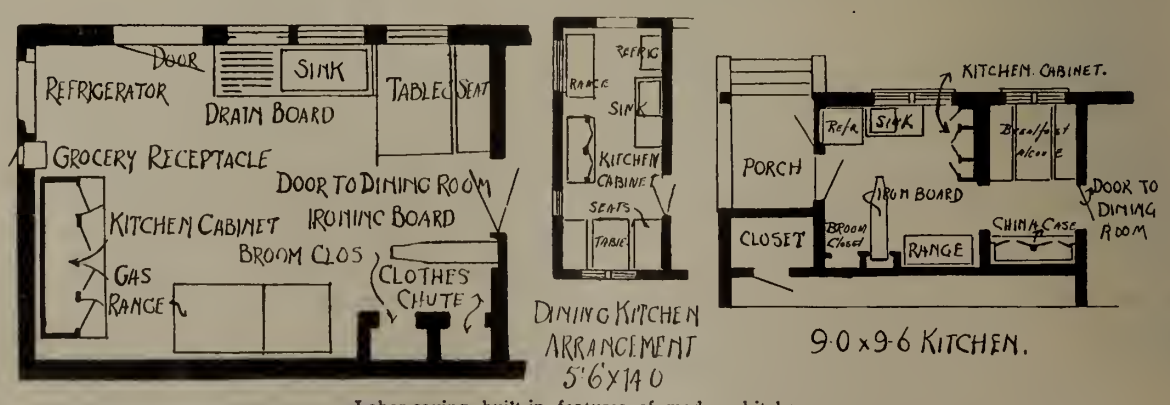
Every Foot Saved Counts

In these days, when every square inch of space inside the new building has to be figured, this saving in construction cost is a large item, to say nothing of the increased convenience and satisfaction which the head of the house who presides over the kitchen will enjoy when the modern kitchen equipment is installed.

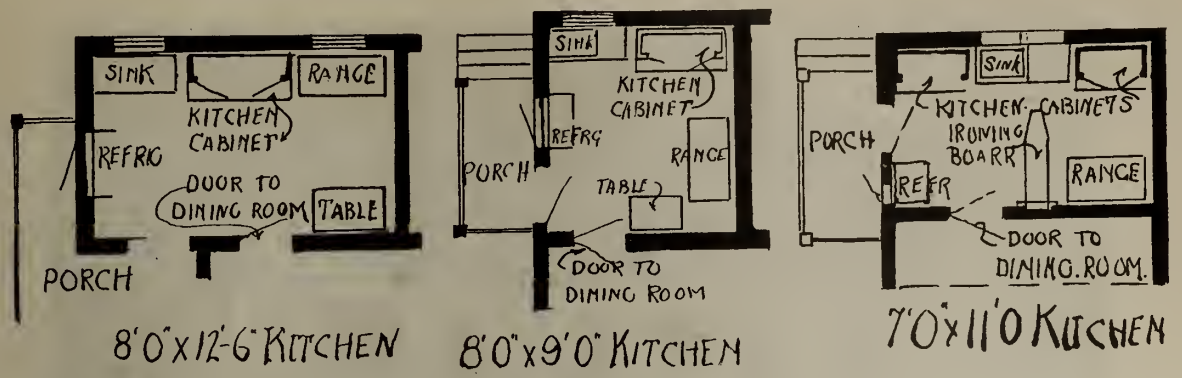
Contractors to home builders and also speculative builders, putting up homes in quantities for sale to meet the present critical housing shortage, must take advantage of these ideas which will hold down the expense and at the same time give them a real talking point for the sale of their houses. For it is a well known fact women look at first and scrutinize closest, and when it is all considered it is the women folks who are the real buyers of the homes.

Apartment buildings and apartment hotels are coming to the front in many localities and in these also every square inch of space is at a premium and must be used to its fullest extent. The "stock" kitchen cabinet is usually standard equipment for apartments, and space saving dwellings of every kind.

This is the age of ready-made products, ready-to-wear, ready-to-use. While it is never—well, hardly ever—quite what one individually desires, yet it saves so much thought, and thinking is such a laborious process, that many people are willing to pay the extra price and be satisfied with less in results. In times past it has been easier to buy a kitchen cabinet that nearly fits requirements than to build one and take



Labor-saving built-in features of modern kitchen



Construction costs lowered through proper planning

the responsibility of creating such an article as one wants, and many an enthusiast has accepted the line of least resistance.

Advantages of Kitchen Cabinets

If stock cabinets are planned to be used, successful planning of a kitchen in this manner calls for active co-operation between the builder and the manufacturer who produces kitchen cabinets. From the kitchen cabinet maker the buider gets his information on the sizes and details which enables him to go ahead and figure intelligently on the size and layout with the kitchen cabinet included. The cabinet manufacturer, on the other hand, will welcome advance information about new home building under construction.

The good points of the modern kitchen are its step-saving arrangements on a limited floor space and its cheerfulness, due to light walls, woodwork, etc. Cupboards are usualy planned to utilize every availaable space, and cupboards close to the ceiling and floor do this. All sanitary ones have doors to keep out the dust. Special cupboards for dishes, cooking utensils, provisions, ironing board, cleaning utensils such as a broom and mop, and a cooling closet are desired by most women.

Modern efficiency lays special stress on concentration, and the assembling of the equipment for each part of the work. A little study of the plans given in the different parts of this series, shows the concentration of each feature of the work, and the relation of one part to the others. The sink, the cabinet, the range, the ironing board, the refrigerator, etc.

Progress, supply and demand, are agencies ever at work and sometimes a glance backwards brings a realization of the change that is steadily going on. To-day everything is being done in a different way. A glance at one of the old colonial kitchens will prove to the house builder that much progress has been made in this part of the house. In the first place, the activities which in olden times centred in the kitchen have been separated. The laundry work in the majority of cases is done in a room by itself. The family eat in a room apart—unless it be a breakfast alcove, instead of one end of the kitchen, as was the custom. Refrigerators now care for food, and the large pantries for storage of large quantities of dishes and supplies has now been forsaken and all exchanged for the modern beautiful kitchen with its white enamelled sidewalls and woodwork, linoleum covered floor, electric range, and one-piece sink, set high enough to avoid backaches, modern, well designed kitchen cabinet with its up-to-date flour and sugar bins, is surely an evidence of the progress made in the improved "workshops" of the well planned modern house of to-day.

New Association of Wood Users

The Association of Wood Using Industries was formed in Chicago on September 29th. This organization is made up of the various national and district trade associations of those engaged in the remanufacture of wood. The object of the new association is to co-ordinate the energies of the different wood-using industries, together with other public or private agencies, so that there may be adopted and put into execution a definite form of reforestation, protection of existing forests and conservation of the products of the forests. With the increasing scarcity and higher costs of lumber, active steps must be taken to insure an adequate supply of raw material if the wood-using industries are to continue to exist.

The members of the new association will comprise representatives from all industries other than those engaged in the cutting of lumber, and should be an important factor in determining the reforestation policy of the American government. The following officers were elected:—

President—Mr. E. E. Parsonage, of the John Deere Plow Co., Moline, Ill.

Vice-President—Mr. Hugh P. Baker, of the Book Paper Mfrs. Assn., New York, N.Y.

Secretary—Mr. W. D. Baker, of the National Furniture Council, Chicago, Ill.

Treasurer—Mr. F. A. Vogle, of the Tanners Council of U.S.A., Milwaukee, Wis.

Executive Committee—Officers of the Association and Mr. W. A. Babbitt, of the National Association of Wood Turners, South Bend, Ind.; Mr. W. Harry Davis, of the National Association of Egg and Egg Case Filler Mfrs., Chicago, Ill.; Mr. John Foley, of the American Wood Preservers Assn., Philadelphia, Pa.

Twenty-five associations were represented at the meeting and many others have expressed a desire to actively participate in the organization but were unable to be represented.

A saw specially sharpened and set will not give satisfaction if the belt that drives it is not the master of the saw.

A well balanced cutter block makes a harmonious sound.

Attractive home embodying novel ideas

House Built For Simplified Housekeeping

Living and Sleeping Quarters on One Floor—Results in Greater Convenience and Comfort—Every Effort Made to Conserve Steps and Labor—Many Built-In Fixtures

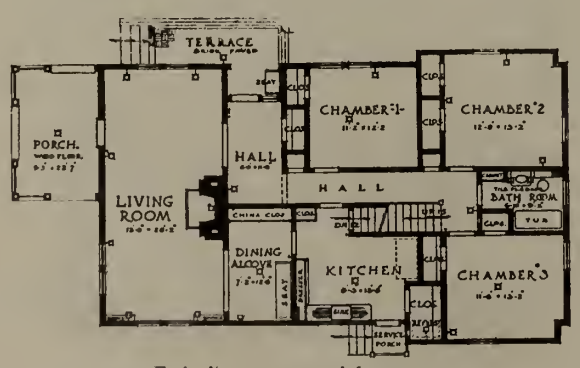
By G. H. Williams

Every family that contemplates living outside of the great centres of population is today faced by the baffling problem of domestic help. Women are asking themselves, more and more, "How can I give my children the benefits of living out of town and have a household that I can manage unassisted?" This was the dominant thought in designing the house shown herewith. Mr. L. G. French, the owner of this residence, himself an engineer, and editor of the Journal of the American Society of Mechanical Engineers, naturally had some very definite ideas of his own on the subject. The architect has worked these out admirably.

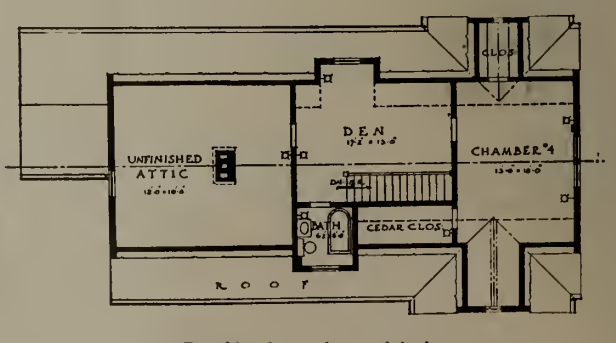
The solution adopted was to place all the rooms necessary for the everyday needs of the family on one floor, giving over the upper storey to those rooms that have only occasional use. The first floor is arranged with two distinct parts Living and sleeping quarters, so divided that each may be independent of the other.

To simplify dining service and avoid the maintenance of a separate large room, a dining alcove has been built off the living room. In it is a large built-in dresser for china, linen and silverware, which though a step from the dining table, is nevertheless concealed from the living room. Should it be desired to entertain a larger number of guests than can be seated in the alcove, the table is readily moved into one end of the living room, which has been made long for the purpose, and is still in close contact with the kitchen.

The kitchen has been arranged to facilitate the preparation of food and the washing and putting away of the pots and pans with a minimum of washing. A dresser is placed next to the drain board of the sink and pots and pans may be placed in it as they are dried, without preliminary stacking up. The refrig-



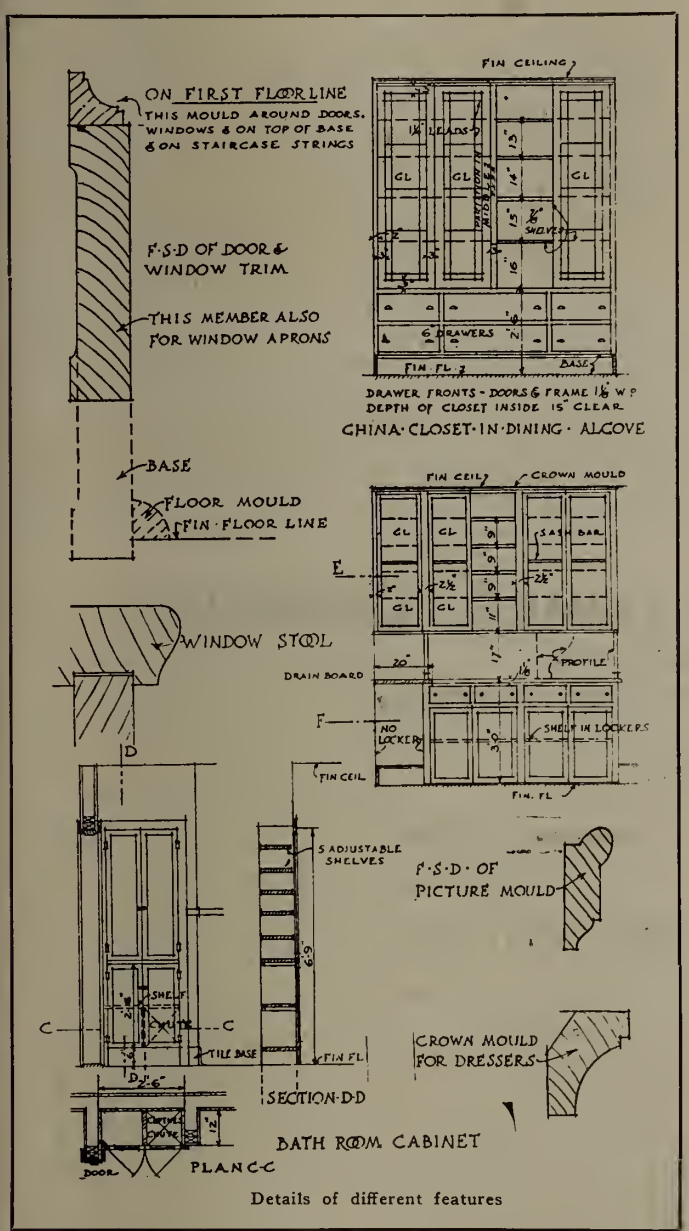
Embodies many good features



Provides large den and bedroom

erator closet with vegetable shelves is conveniently near the range and working table, again eliminating steps. It is always well to make special provision for brooms and cleaning materials. A locker is here provided in a corner of the kitchen where it is about equi-distant from all corners of the house.

Although the bedrooms are on the first floor, the topography of the lot is such that they are well above the ground. The slope of the ground also brings the cellar entrance at grade and makes the adjoining basement laundry a light pleasant room. In it is a closet



Details of different features

for the clothes hamper which is placed open, directly under a clothes chute built into the medicine and towel cabinet in the bathroom above. Both stone and timber are employed in the construction of the walls, stone being used for the basement walls, which at the rear are a full storey above brade.

The stairs to the upper floor run between partitions, with a grill on one side to give light to the first floor hall. This arrangement eliminates considerable expense in building the stairs and makes it possible to hang curtains in winter, to prevent the heat of the first floor from rising to the second. The upper floor has a large open hall, used by the owner as a work room, a large spare room, a second bath, a closet for clothes storage and a storage attic, part of which, if desired, can be finished to afford another bedroom.

In the exterior design an attempt has been made to get away from the "California" type, with its low-pitched roof suggestive of southern climate. Inspiration has been drawn from example of Northern Colonial work.—"Building Age."

Woods Used in Musical Instruments

Resonant woods, like spruce and southern white cedar, are employed widely in the manufacture of pianos and similar musical instruments. For some other instruments, like the violin, wood of unusual strength, as maple and birch, is sought in order to give necessary rigidity, says an article on "Wood for Musical Instruments" in American Forestry for September, 1920.

Spruce takes up and transmits vibrations more perfectly than any other wood that can be had in adequate quantities. The cause of spruce resonance is thought to lie in the wood's long fibres and in their uniform or regular arrangement. The fibres vibrate like so many taut cords.

Of a toal of 43,000,000 feet of softwoods estimated to be used in the manufacture of musical instruments in this country each year, more than 29,000,000 feet is spruce. White pine is second on the list of softwoods with 9,000,000 feet used annually.

The quality of wood in a violin has much to do with the value of the instrument and the old master makers of violins selected their wood and prepared it with as much care as they bestowed on the actual shaping and joining. Maple has always been one of the finest violin woods and it is nearly always combined with some softwood, like pine or spruce.

Hardwoods constitute 80 per cent. of all the material furnished by forests to the manufacturers of musical instrumetns in this country, or about 208,000,000 feet annually. Maple heads the list with 45,500,000 feet; yellow poplar is second with an annual consumption of more than 40,000,0000 feet, and 38,000,000 feet of chestnut is used each year. Oak, elm, birch, basswood, red gum and black walnut follow chestnut on the hardwoods list in the order named. Yellow poplar is an excellent cabinet wood, taking a smooth, fine polish. Highest grade panels may be made of yellow poplar, the casual observer supposing them to be rosewood or ebony. Red gum is also a fine cabinet wood for musical instruments. It closely resembles circassian walnut.

A new material for large musical instruments is California redwood, which is used in a big Detroit pipe organ because of its resistance to shrinkage. In that respect it resembles mahogany.

Matches Not Fit Food for Rats

The theory of the rat and the match as a cause of fire has been presented to Fire Commissioner Latulippe, in a communication from Chicago, where some extraordinary experiments have been made, with the view of deciding whether the origin of fire can truthfully be traced to this cause. The substance of the report on these investigations, which were made by the engineers of the Underwriters' Laboratories, working in conjunction with the match manufacturers, is that the rat and match theory is a myth, and that rats and mice would rather starve to death than eat the modern match heads.

Home Furnishing Campaign in Full Swing

Dealers Enthusiastic About New Movement—Result in Enlarged Market for Furniture--Interest of Artisans to be Aroused—Place Industry on New Level

By R. G. Wells

The Publicity Campaign of the Home Furnishings Bureau is in full swing. The first gun in this important movement was fired on September 21st when a large advertisement carrying the caption, "Let the Homes of Canada Reflect the Nation's Prosperity," appeared in a large number of daily and weekly papers. This has been followed by several other advertisements designed to arouse a greater interest in good furniture and to create a desire for better furnished homes.

In this national campaign, the Bureau hopes to secure the co-operation and active assistance of the retail furniture dealer. It looks as if they will be successful. The work has been under way for only a few weeks, yet the response has been very gratifying Many dealers have written in, expressing thir appreciation of the scheme and offering to co-operate to the fullest extent of their ability. Better than that, many have linked up their individual advertising with this movement, some having caught the very spirit of the campaign itself, and their advertisements will be found side by side with those of the Home Furnishings Bureau.

The slogan, "Better Furnished Homes Mean Greater Happiness," will soon be found in many window displays and in prominent locations in the different furniture stores. In addition, it has been suggested that this caption appear on all the stationery of both the manufacturers and the retailers. There is an old saying that "whatever is worth doing is worth doing well," and it is to be hoped that all concerned will enter enthusiastically into this campaign to increase the interest in attractively furnished homes.

Various American periodicals and associations of furniture manufacturers are evincing considerable interest in the publicity work. Inaugurating this campaign, the furniture industry of Canada has literally put one over on their confreres to the south. The American furniture manufacturers have, on several occasions, discussed a publicity scheme of this kind, but little or no headway seems to have been made. As one well-known publication puts it: "It is, perhaps,

"BETTER FURNISHED HOMES" CAMPAIGN
Conducted by the
Home Furnishings Bureau
IDEAL
The Improvement of Canadian Homes
SLOGAN
"Better Furnished Homes Mean Greater Happiness"
COMMERCIAL OBJECTIVE
Increase in the sale of furniture particularly in small towns and farming districts
PLAN OF PROCEDURE
WITH MANUFACTURERS
1- Talks to manufacturers showing possibilities of the propaganda and what has been accomplished by advertising in other lines
2- Letters to Manufacturers outlining the plans and keeping them informed as to progress of campaign
3- Induce the manufacturers to use in their advertising and on letterheads, etc., the slogan "Better Furnished Homes Mean Greater Happiness" so as to link the campaign together
4- Encourage manufacturers to trade-mark their goods.
5- Encourage manufacturers to get out booklets of their own for circulation among the public
6- Manufacturers should post artisans about the campaign so that they will take more pride in their work
WITH TRAVELLERS
1- Each manufacturer should call his travellers together and carefully explain the objects of the campaign
2- Central committee should issue booklet for travellers explaining how they can help to promote campaign
3 Ask travellers to urge dealers to put in "Better Furnished Homes" window displays.
4- Arrange to have a combined meeting of furniture travellers and have addresses showing how they can help dealers
WITH RETAILERS
1- Use trade papers, letters and folders to explain the campaign
2- Send to Retailers folders containing copies of all advertisements used in magazines, etc
3- Assist dealers through articles in trade papers on improved selling methods and window decoration
4- Educate dealers to improve their local advertising and to use the campaign slogan "Better Furnished Homes Mean Greater Happiness"
5- Supply dealers with cards and other material for window display. Prizes for best window displays
6- Get dealers together at different centres and explain to them the objectives of the campaign
7- Conduct a Home Furnishing Week in the Spring and Fall and have dealers co-operate
8- Establish a reference library of magazines and books on Furniture and Furnishings
WITH CONSUMERS
1- Advertise in newspapers, farm papers and magazines, with slogan, "Better Furnished Homes Mean Greater Happiness"
2- Prepare articles on home improvement that magazines and farm journals would print free of charge
3- Encourage magazines to boost home improvement by furnishing them with cuts of different classes of furniture for free publication
4- A competition might be launched offering prizes for articles or essays on subjects connected with home improvement
5- Encourage speakers at Womens Institutes to give talks on home improvement and furnish them with suitable material
6- Encourage different manufacturers to get out booklets of their own, for circulation among the public, showing lines of better furniture
7- Have general booklet on "Better Furnished Homes" prepared for circulation among public

Chart showing scope and activities of "Home Furnishing" campaign

unfortunate that Canada must take the initiative in this step. Red-blooded Americans don't like to see our northern neighbors beat us in anything, yet they have gone and done it again." The American manufacturers have talked a lot about this thing, but, as Mark Twain has said: "There has been a lot of talk about the weather, but nothing is ever done about it."

To Increase Demand for Furniture

The prime object of this movement is to arouse in the minds of the Canadian public a greater interest in the design, construction and finish of the furniture, whether fine or medium, that enters into their homes, and to assist them in securing an artistic arrangement of furniture and furnishings. As the idea is developed, they will better appreciate what the different periods in furniture are and what they stand for. The increased interest in fine furniture, which will be aroused, cannot help but result in increased purchases of furniture and an enlarged market for the products of all our furniture factories.

It should be absolutey understood that the object of the Bureau is not to push the sale of any particular style or kind of furniture but rather to increase the demand for furniture of all kinds by arousing a greater interest in home furnishings and by instructing the home makers of Canada as to how they can improve their homes. The term, "better furnished homes," is a comparative one and means better than they now enjoy. That being the case each and every furniture manufacturer should benefit by the campaign now in force.

Arousing Interest of Artisan

A certain amount of educational work is to be undertaken among the artisans in the various factories. The different styles of furniture, which have been handed down by the old masters, live because they express the character and spirit of these men. To such well-known furniture designers as Sheraton and Chippendale, the manufacture of furniture was not a hobby or even a calling, but was a part of their very lives. To this, largely, may be attributed the fact that their furniture stands as a monument to their name long after they have passed away. They were proud of the pieces they had created, proud of the fine lines and proud of the careful workmanship that entered into its construction. They knew what pleasure was for they had done good work.

While conditions are somewhat changed, the artisan in a modern factory producing a line of high-class furniture, has just cause to be proud of the product of the organization of which he forms a part. True, he does not produce the finished article and is, therefore, not able to say that the furniture produced is a creation of his hands, but the thoroughness and carefulness with which he does his work is reflected in the appearance and quality of the finished furniture. The design and workmanship of the furniture which is being placed on the market to-day is moulding the tastes of the general public and is having an elevating effect on the standards of living found in the average home. Is this not something to be proud of? The pride of achievement and the pride of workmanship should guide the mechanics in the Canadian furniture factories, for they are producing furniture that bears the stamp of an artist and which will, in all probability, be handed down to succeeding generations as heirlooms.

The Home Furnishings Bureau plans on working in close touch with the retail dealer and will assist and co-operate with them in every way possible. Not only that but educational work is to be done among the representatives of the furniture manufacturers, so that they will be prepared to do their share in spreading the gospel of better furnished homes. In this connection a convention is being planned for the travellers, at which they will be able to get together and formulate plans for furthering the good work. The result of this movement should be to raise the furniture industry to such a high level that instead of being an industry devoted only to the manufacture and selling of furniture, it will be an industry devoted to creating, manufacturing and selling artistically furnished homes. "Better Furnished Homes Mean Greater Happiness."

Furniture Manufacturers Meet

The Furniture Manufacturers' Association held a general meeting in Toronto on September 17th, at which the plans of the Home Furnishings Bureau were outlined and general business conditions discussed.

The furniture industry is experiencing a slack period, which, coupled with the general air of uncertainty that pervades all markets, calls for calm and courageous judgment on the part of the furniture manufacturer. Conditions in the raw material and labor markets do not justify a general reduction in furniture prices, and any attempt, by even one furniture maker, to unload stock at reduced prices, would have a most disastrous effect, as it would tend to demoralize the market and result in an air of uncertainty that would curtail buying for many months to come.

According to the most recent reports shipments for July were 86 and for August 80. It is anticipated that this figure will show an improvement for September. The information presented at this meeting revealed the fact that skilled workmen were still scarce and that costs for the period ending August 31st did not point toward lower factory prices. A considerable reduction had taken place on oak lumber but this was negatived by the fact that the product was not costed on the basis of the high levels reached by oak. Had this been done oak furniture would have been selling for more than walnut. Something that would have been hard to do.

In all probability another meeting will be held in a few weeks when conditions have had a chance to clarify and to a certain extent stabilize. This would enable the furniture men to form a much clearer idea of the outlook.

Maintain Efficient Fire Brigade

The Canada Furniture Manufacturers, Limited, Woodstock, Ont., maintain at their woodstock plant an efficiently equipped firehall, manned by a well-trained fire brigade. This brigade consists of six employees of the company, headed by Chief Berlett. The firehall is located across the street from the plant and caters to the comfort and convenience of the firemen, provision being made for commodious sleeping apartments for the men, a billiard room, club-room with card tables and other similar features, in addition to the usual fire-fighting appliances. The fire pump installed in this building is for emergencies only and is capable of supplying an auxiliary water supply of about 1000 gallons per minute. A 100 h.p. electric motor furnishes power for the pump. The members of the fire brigade are Fire Chief Chas. Berlett, Ronald McInnes, Stanley Morris, Wm. Gray, Arthur Stewart and Wm. Masell.

Day of Opportunity for Furniture Industry

Industry Faced with Strong Potential Demand—Application of Art to Furniture Making—Quantity Production of Attractive Pieces—Good Furniture Defined

By Frank Purdy

That the value of the art element in manufactured products must be very definitely taken into account, is now a conceded fact that is, fortunately, if still slowly, becoming more generally recognized by manufacturers and dealers.

Changed conditions brought about by the war have, however, necessarily altered our opinion about many matters and have made us all think intently about many things which we have heretofore considered of slight importance, or have even been quite insensible to. In connection with our industrial life, for example, we are beginning, at last, to appreciate three important facts:

First: That our great wealth of raw material is not inexhaustible, that it must be conserved, and that

New design shown at Grand Rapids furniture exhibition

it must be increased in value by converting it to a greater extent than formerly into completed manufactured products by our own skill and talent, rather than disposing of it too lavishly in bulk to foreign markets, for others to enhance, if we would retain our economic stability and insure our country's progress along material lines.

Value of Art to Industry

Second: That any manufactured product requires not only the introduction of the art element in some cases in some form in order to complete it, and that approximately half the work in the making of any article requires art training, but that it is this abstract art element that is largely responsible for the ultimate commercial value of an article, and that the character of the art introduced—whether poor, mediocre, fine or superfine—can increase the value of crude material from one to one thousanl per cent. or more. To illustrate, it is art, and art alone, that transforms the $5 gold nugget into the $500 French brooch. In the same way a few feet of raw timber may be worth, perhaps, $10 to $20, yet the exquisitely designed antique reproduction made from these very logs will sell without difficulty for ten or twenty times that amount; art, and art alone, has been added. That is what is meant by the value of the art element in industry..

Third: That we have right here in North America a great wealth of creative talent, most of it as yet unrevealed, but nevertheless waiting to be discovered and put to use, and that if we will recognize this talent, train it and apply it to our industries, in place of the foreign talent now needed at home, but formerly resorted to by our manufacturers, we will at once and at the same time, increase the value of our raw materials, strengthen our whole industrial fabric, and—through the development of our creative force and the commercial use of art—grow in culture and refinement.

If we would express our awakening to these facts, we must do so by action, not by mere thought. While the facts, or principles cited, apply to all our manufacturing interests, they seem to fit just now with striking force to the home furnishing industry. In this industry the present moment is, I believe, particularly opportune and momentous. Together with our ever-present responsibility to the great ideal of better homes and more beautiful living, a responsibility emphasized just now because of many disturbing influences, we are facing three practical conditions which definitely concern the furniture or home furnishing industry. These three conditions are: (1) The unprecedented need and demand for furniture. (2) The equally unprecedented call from foreign countries for ready-made furniture. (3) The coming expanded world-trade for which we must competed with foreign industry on a more equal basis than before. The sum of these three conditions implies greater and better production.

Call for Greater Production

Now, if such is the unparalleled state of affairs insofar as our furniture industry is concerned, what are the radical steps to be? How are our great captains to the furniture industry—manufacturer and dealer, wholesaler and retailer—who so largely, if unconsciously, mould the home, to meet this responsibility, and make the most of the present stimulated trade conditions? Shall the furniture industry go on for better or for worse? Shall our undeveloped possibilities in the field of industrial art, now coupled with lack of artistic aid from Europe, permit us to lose one of the greatest industrial chances of history, or, determined to win, shall we face the music with well-laid plans and decisive action? Surely an opportunity combining so closely patriotic service with individual gain is worth intense and orderly thinking.

Let us analyze the problem further. In spite of a certain big volume of business, and with reassuring exceptions, this continent has failed singularly in the past to make good in the furniture industry, or at least to take full advantage of her possibilities. Excellent high-priced furniture has been turned out by combining foreign talent with our raw materials, and by paying the piper in reduced profits to our country, and in limiting such furniture to the few. Of the strictly low-priced furniture industry, through utter disregard of good art, through the misuse of accepted foreign and historic designs in an unintelligent effort to adapt them to our modern machinery, and in attempting to attract an uncultivated public taste by offering bizarre novelties, we have made an atrocious bungle. Here the nation, as a whole, in a more or less discontented

home life and stagnating creative or art impulse, has also paid dearly.

Let us continue. Of one thing there is absolutely no doubt. The furniture industry is needed to-day as it has never been needed before. Whether for better or for worse, it is bound to grow. With almost the whole civilized world clamoring for homes, production of the wherewithall to make these homes habitable and comfortable must increase. In addition to this very positive fact, it is also true that those who used and are buying furniture to-day are largely those with incomes under five or six thousand dollars. Consequently, the present demand is for comparatively low-priced goods. This is all plain enough. It seems to me, therefore, that the specific question to be squarely faced and fairly answered in this: How is this necessary, low-priced, quantity production to be provided for, if we would foster the ideal of more beautiful homes and observe the trade value of good art in manufactured products ? How, in other words, can we make quality compatible with quantity and low prices ? This may prove a hard nut to crack, possibly, but one worth cracking.

Better furniture on a quantity basis, for to-day and the future—furniture that will elevate and satisfy the home, that we can all afford to buy and pay for, and that will meet the acid test of competition in foreign markets—can only come: (1) Through a broader understanding by the entire home furnishing industry—manufacturer, dealer, salesman—as to just what good art applied to articles of everyday use, such as furniture really means. (2) Through a more common recognition of the full value of art in industry to the nation, to the trade, and to the people. (3) Through the more intelligent application and greater emphasis of the art element in the manufacture of furniture.

To this must be added the encouragement and use of high standard designs created for quantity production, and a more careful selection of the simple historic patterns in relation to faithful reproduction by machinery. The proper wedding of art and machinery, more particularly the hitching up, as it were, of trained creative talent with the productive factory system is, of course, the important point here. While the machine has its limitations, it is, to-day, nevertheless, one of the greatest allies of art. Give the machine good designs to execute, quality designs that will bear rapid, manifold reproduction without loss of line or contour, and, long misused and abused, it may at least be the means of planting art appreciation in every home in this country.

Defining Good Furniture

But what is meant by good, or so-called artistic furniture ? A piece of furniture that is good—artistic, if one will have it so—means simply and solely that it is thoroughly fitted to its purpose, and honest in construction, without sham or pretense in form, finish or decoration. It is beautiful when it expresses — in shape, color, finish—the most effective utility when it is at once "a satisfaction and an inspiration." It obeys no passing fad or fashion. It is not necessarily costly in material, workmanship or ornamentation. Harmony with its surroundings—will it fit the place ?—must always be the guiding thought in its selection.

He who would make good furniture for any purpose must be thoroughly cognizant and always conscious of these facts, and in complete sympathy with them. He would make good furniture, particularly to meet the present need, must have equal faith in this creed, and must, in living up to it in his business, have designs meeting these ideals selected or created for him, and definitely fitted to successful machine production on a large scale and at low cost. If he will do this and if in doing it make use of local talent, properly trained, we will see the day, I am optimistic enough to believe, when a good furniture is common —when only good furniture will be tolerated—in every home.

The use of this talent in place of foreign and the creation of high standard designs specifically suited to machine reproduction, will unquestionably reduce the cost of production to the manufacturer to such an extent that he can offer his goods to the public at prices that will meet the present demand, yet amply support his business. This, I am quite sure, is the crux of the matter in the present furniture problem; quality, quantity and low prices made compatible. Add to this, honest reproduction in the less costly or "meaner"

An attractive china cabinet from Grand Rapids

woods, while execution without waste is considered in every stage of the game, from the first sketch to the finished product, and the low-priced furniture business should stand unrivaled as an enterprise of service and profit.

Co-operation of All Branches.

But while all this concerns the manufacturer specifically, he cannot meet the problem alone with success. To put art and furniture together, on a paying basis, is by no means a one-man game. There are, in turn, the dealer, the salesman and the public still to be reckoned with. Each has his own part to play, and each must co-operate whole-heartedly with the other. The dealer must know good furniture, and sense every phase of its value just as surely and as truly as the manufacturer does, and in demanding for his trade good furniture—true value, not "eye value"—that can be sold at low prices, strengthen the manufacturer's stand accordingly. Further, by coming to the same conclusion that articles of true artistic merit are, after

all, the "best sellers," he will increase and strengthen his own trade as well. A customer will buy more, and pay more, if he is convinced that he is acquiring something of permanent value for his money.

There is much ahead of us, if we are only all big enough to see it, and are willing to pull together—artists, manufacturers, dealers and public. The comfort and beauty of the home is no small matter to work for, particularly if we can build up its necessary furnishings on the results of our own art talent applied to our own raw materials. Any intelligent effort that we can make as a nation in this direction must result in our material welfare and cultural advancement.—"Good Furniture."

The Red Flag of Overhead Costs

Gives Warning of Dangers Ahead—Lowered Production Increases Load Carried—How High Overhead Eliminated Profits

By W. A. Babbitt*

Along the main lines of travel, at the dangerous turns, an enterprising tire company has erected life-like "silent policemen" who stands with red flag in hand, warning all drivers to slow down and prepare to change direction. To drive ahead at the same speed without changing one's direction, or to drive ahead at the same speed and attempt to change one's direction both invite disaster and probable instant death. So life-like are these giant "silent-policemen" that horses usually crowd over to the inside of the curve. But the records of many a famous death curve are ample evidence of superior mentality of horses, to say nothing of mules.

At a recent meeting of folks interested in the Forest Service, a speaker described a pessimist as a man who insists on wearing both a belt and suspenders. To press the figure a little further, it might be said that there are optomists who are so sure of future contingencies that they never wear belt or suspenders.

Of this type of optomists are the fools who attempt to take "death curves" a fifty an hour, and the manufacturers who scorn to know what their overhead is, and drive on unmindful of its warning.

Frankly, we are not making overly rapid progress in getting wood turners, to put their cost accounting on a scientific basis, and to arrange their accounts so that they will have the necessary indexes to show from week to week just where their operations are leading them. We are still having a hard fight to make wood turners believe, with the kind of faith that results in consistent action, that overhead is the friend and protector of sound business. Deep down in their business thinking, they still cling to the old idea that this overhead thing comes straight from the father of lies and bedevils the figures they wish to make in order to get business, that they know they ought not to take. This paragraph evidently has a few mixed figures of speech in it, but the writer hands himself a bouquet of saying that it rather nicely describes the situation.

A Case in Point.

Just recently, a proposition in cost accounting was submitted to the office of the National Association which so completely and strikingly illustrates certain benevolent aspects of this dread bogey of overhead that it might be worth while to go into the matter in detail.

Financial statisticians tell us that any concern that undertakes to manufacture lumber is in the "bloody angle" of industry. These financial statisticians confine their work almost entirely to mortuary records. With solemn glee they tell us that a man who goes into the manufacture of lumber takes ninety-five chances of winning. About the same as an unfavorably located snowball where weather conditions are less favorable. So just to give a new angle of vision, this discussion concerns a sizable lumber operation, which was able to hold its position by a desperate operation, but whose every attempt to go over the top and capture a profit was completely defeated.

Estimates Conservative in Extreme.

It certainly looked good. Their stumpage was near to their mill. The mill was on a great transcontinental railway. Their power plant was practically new. Their machinery first-class. Their organization lined up well both for ability and experience. The rated capacity of their mill was 25,000 ft. per day. But they did not propose to overestimate their ability. So they planned their season's operation on an estimated production of 15,000 ft. per day. The railway assured them that there would always be an ample supply of cars. Their banking situation was all that could be desired. Their market was assured almost from the outset. The labor situation was not what it ought to be, but far better than the average, taking one similar operation with another.

When it came to figuring anticipated profits, again they took such a conservative view as would be expected from such experience and successful business men. They figured to cut a million and a half feet and make $15.00 per thousand. It was hard to see how they could miss it.

How It Worked Out.

They cut a million two hundred thousand. They didn't make a cent. They probably are several thousand "iron men" in the hole. A post mortem is always a grisly job, but the results are often very instructive to the living. The concern in question is a long way from being dead, but its operations for 1919-20 are defunct. The autopsy of this particular "Corpus Delicte," as the lawyers would say, was not difficult because it involved a straight proposition of "single stream" production. By this is meant that the mill had only one job, viz., to saw logs into lumber.

The logs were delivered at the skidways at a fixed price of $30.00 per thousand. The raw material account therefore is determined for us. The cost accounting that remains is simply to separate the direct or productive labor from all other expenses against this operation, including indirect or so-called non-productive labor. Having isolated direct labor; and having assembled all other costs of the operation into one amount, the method of cost accounting required by the U. S. Government for purposes of determining tax liability, (which method has always been the official method of the National Association of Wood Turners) directs that the cost of direct labor shall be divided into the sum of all other costs in order to determine the

*Address before New England Association of Wood Turners.

ratio which overhead bears to direct or productive labor.

Three Main Factors of Cost.

Having determined this ratio, the problem of cost accounting is reduced to three factors: 1. Raw Materials—This includes every item actually entering into and becoming a part of the finished article. It excludes all supplies, such as machine oil, packing. 2. Direct Labor—This excludes every other item of expense and is confined to the wages of the labor which changes the shape or condition of the raw material into some other shape or condition, usually a saleable product. 3. Overhead—This includes every other item of expense not covered by (1) and (2).

The complete cost formula would then be as follows: Assume the raw material to cost $20.00; the direct labor to cost $8.00; and all other expenses to cost $16.00. The sum of these is obviously $44.00, or the entire cost. The overhead ratio is $16 \div 8 = 2$, or in terms of percentage the overhead ratio is 200%. In other words, it costs the shop two dollars in order to keep each dollar's worth of labor at the machine which manufacture the goods to be converted into money, wherewith to meet the payroll, the bills for raw materials, and the myriad of other expenses of operating a plant. Now it is evident that if the labor at the machine is slack or incompetent, it will produce less saleable output than is required to pay expenses and profit. Production may fall to the point that not even expenses can be met. It is not the purpose of this article to discuss cost accounting. It is intended to show how the ratio of overhead to direct labor is really a red flag to warn the operator that danger is ahead.

The Red Flag of Warning.

One thing stands out plainly. If an hour's production is lost, the loss is not only the cost of the direct labor involved, but also the cost of the overhead resting on that labor, and also the profit anticipated, as a reward for undertaking the risks and expenditures involved.

If an operation shows a very high overhead ratio, say 500%, it follows that every hour of lost production carries with it an enormous penalty. In such a plant a two hour lay off due to any cause would cost about as follows: On the basis of 10 hour day, with the direct or productive labor costing $10.00 per hour, using $20.00 worth of material per hour, with a plant overhead of 500%.

2 hrs. at $10.00 per hour (direct labor)	$ 20.00
500% overhead	100.00
20% profit on above	24.00
20% profit on $40 worth of raw material	8.00
Total direct loss	$252.00

There might be some small saving in the way of unused supplies, fuel, etc., but all such savings would be more than wiped out by the cost of restoring production to its normal speed.

Actual Overhead Figures.

With this lengthy but necessary explanation, it will be interesting to examine the operation costs of the saw mill in question. The figures given represent actual costs prevailing in Maine last winter.

Indirect Labor Per Day.

Superintendent	$ 7.25
Millwright	7.25
Filer	8.75
Engineer	5.25
Blacksmith	5.25
Fireman	4.75
Night watch	4.50
Yard boss	6.25
2 jumper loaders	9.00
6 lumber stickers	25.50
5 sawmill helpers	22.00
6 sorters and tiemen	27.50
3 men and single horses, yard	18.00
Total indirect labor	$151.25
All other expenses, salaries, supplies, taxes, depreciation, selling expense, etc.	$140.00
Total daily overhead	$291.25

Direct Labor.

11 sawyers and trimmers averaging $6.25 per day $68.75

Overhead ratio, 424%.

Cost of Two Hours Shutdown.

Two hours' direct labor, $13.75; two hours' indirect labor, $58.25; lost profit on above, 20%, $14.50; lost profit on material, $18.00. Total, $104.50. Or roughly $50 per hour.

The owners of the mill write: "Owing to breakdowns, climatic conditions, and other unforeseen troubles, our production dropped from 15,000 feet per day (estimated) to an actual production of 10,000 ft. per day." To anyone at all familiar with cost accounting, it would have been just as easy to forecast the result as to figure up afterwards. Their lumber cost $70.00 in the yard instead of the estimated $50. Their distributed overhead ate up all their profits and $5.00 per thousand besides, assuming they have no losses on collections.

Many important lessons should be drawn from this true and accurate story of a winter's operation. Here are five:

1. Where the overhead is high, the hazards are great.
2. Lavish investment in extra tools and spare parts is far more economical than shutdowns.
3. Overhead, figured week by week, is the red flag to warn operators of their danger, before they were wrecked.
4. Undistributed overhead due to shutdowns, failure to maintain the production speeds on which the work was estimated, slack and incompetent productive labor, will surely and quickly destroy both profits and capital.
5. The plant that attempts to run without its operative overhead definitely established is criminally reckless as the railroad that attempt to run without safety signals.

Employs None But One-Armed Men

England's greatest employer of one-armed men was a recent visitor to Winnipeg. He is W. H. Dunkley, of London, manufacturer of carriages, and is on a preliminary survey of land and social conditions in Canada, with a view of bringing poor from the slums of London to Canadian farms.

Since the armistice Mr. Dunkley has employed none but one-armed men. He has now three hundred of them in his factory and has found that these crippled soldiers properly trained, not only can do almost the work of a man with two hands, but are given a new interest in life working entirely with men of their own kind.

Value and Application of Standards

Calculating Efficiency of Workmen—How Friendly Rivalry Stimulated Production—Exact Basis for Fixing Piece Rate—Valuable Data for Preparing Estimates

By James J. Martindale*

(Third of series)

Referring to the article in the September "Canadian Woodworker," in which it was explained how a standard time of 10.4 hours per 100 had been built up for a certain job—it can be assumed that all jobs in a department would be studied and analyzed in the same thorough manner with a corresponding result.

This work takes time, as it must be done in a careful painstaking way. It is vitally important that all facts bearing upon the particular job studied be recorded on the time study blank. It is also most necessary that each time study be "worked up" at once,—that is, develop the standard time soon after taking the observations. In no case allow the figures to get "colder" than 24 hours.

How Efficiency is Calculated.

If a man worked 8 hours on four different jobs—the output of each job multiplied by the standard time applying to each job would furnish in each case standard hours. The summation of the four "standard hour figures" for the four jobs, divided by the actual hours (8) gives an efficiency result for the operation of that day. This result can be shown in a daily report similar to form shown in the accompanying illustration. This report will give the efficiency of each man as compared to every other man and will also give the standard hours, actual hours and efficiency figure of the department as a whole.

It is quite possible to increase production by the use of this report and still not change one piece-rate in the department as evidenced by the following "story" : "What do you think about that paper they stick up every noon, Andy?" "I don't know, but I'll tell you something, Bill; I'm just as good a carcass builder as Peterson and I'm tired of seeing my name under his in that there list. I'm going to show him up tomorrow." Thus spoke two men in a rubber tire carcass building department. Andy "went out" and easily made one more carcass than Pete and the race was on.

Result of Friendly Competition.

Both Pete and Andy as well as all other builders felt their daily earnings were limited to $4.50. The general opinion that rates would be cut if the pay exceeded this amount prevented the older men from turning out more tires. Accordingly, stalling was most apparent, particularly in the afternoon. The management had not been able to instill faith in the men as to the stability of piece-rates when once set. Andy's decision to beat Pete had not been reached on the spur of the moment. The paper (efficiency report), showing relative standing of men had been "put up" every day for three weeks. Both Andy and Pete had been jokingly chided as to their standing a number of times and the seed sown for a friendly race. Moreover assurances had been frequently and positively given that rates would not be cut.

Pete and Andy slowly jockeyed around. Their pay jumped to $5.00, then to $6.00, and still there was no cut. Other builders "took the chance"—turned in more tires and the race was on in earnest. The men gained faith in the company—their work was made easier for them—the petty and vexatious delays that held them up were reduced—life in the plant became more attractive. They relished the fact they were showing their true abilities and not hiding them.

Pride of Workmanship Developed.

All of us like to be experts in our line. The trick bicyclist and the crack swimmer like to perform. Rubber tire carcass builders are no exception. Pete and Andy developed a very poetry of motion. Their hands, body, feet and head were beautifully synchronized as to movement and how they enjoyed being watched. Production went up 22%. Piece-rates were not changed. Best of all, the plant atmosphere was made over. The men were proud of their working place—they felt Responsibility and could look their superiors confidently in the face.

In the case mentioned, where a standard time of 10.4 was obtained, if it was desired that an operator earn 70c per hour—the multiplication of 70 and 10.4 gives a piece-rate of $7.28 per 100 pieces. This piece-rate is set upon facts—it is not based upon what the foreman "thinks" or what past records show up. Past records if referred to at all are used only as a check. Therefore the rate is just to the operator and the company—does not allow of favoritism to any man. Sometimes errors will creep in. When this occurs the mistake must be corrected at once.

Take Employees Into Confidence.

It has been found in work of this nature that it is wise to be absolutely open with the men. Secrecy in

*James E. Morrison Co., Industrial Engineers, Detroit, Mich.

EFFICIENCY REPORT

Department Date 191

MAN No.	PRODUCTIVE HOURS						NON-PRODUCTIVE HOURS							Total Hours
	Standard Hours	Actual Hours	Effy.	No S. T.	No Count	Total	Truck	Mach. Change	Waiting			Trouble	Misc.	Total
									Mat.	Work				

Form for daily efficiency report

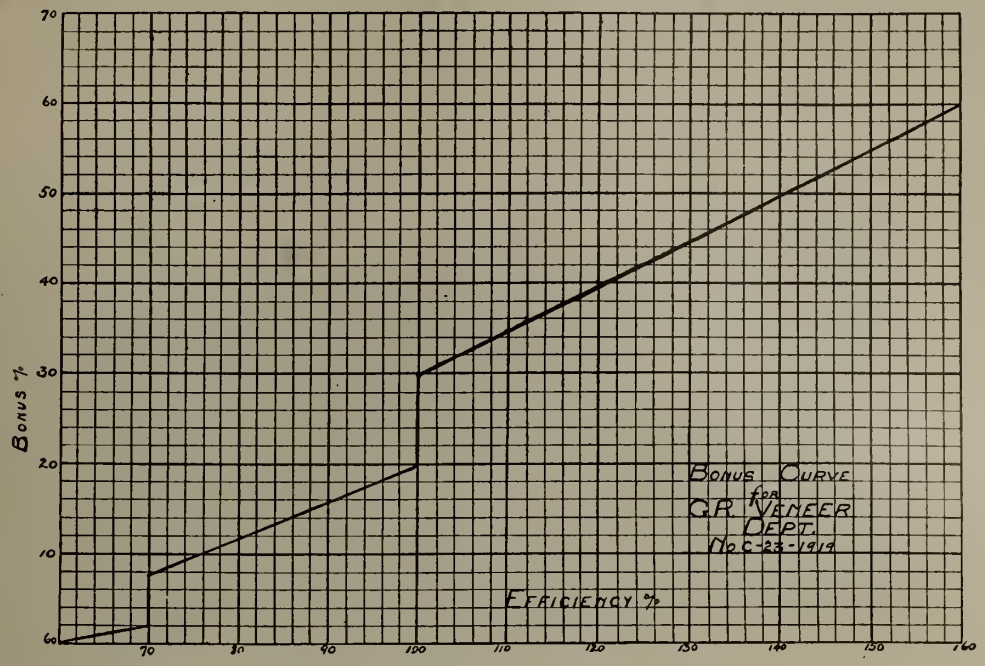


Chart showing how bonus was figured

making time studies does not pay. One should inform the worker about the study and get his co-operation. A good time study man must be of an observant type, analytical in nature and continuously imbued with a spirit of kindness and helpfulness towards the workers.

Two years ago standards were set in a certain plant in New York State on a small percentage of the total establishment. Last winter the employees of this particular shop formed a Works Council and among their first communication to the management was a request that standard times be set on all the remaining plant activities. In view of the present great labor unrest, dissatisfaction, etc., this action on the part of labor is most interesting. It is like a ray of sunshine on a cloudy day.

Bonus as Aid to Production

A bonus form of pay is sometimes set up, based upon the showing of the efficiency report. A bonus curve is shown on the accompanying chart which was used in a woodworking shop to take care of a particular condition. A gang of ten men were employed in the department—their work all dependent upon the operation of one machine. These men were, however, indifferent to any efforts to help them and their customary efficiency was lower than ordinarily met with when inaugurating industrial betterments.

It was felt that the curve should start at a figure lower than the average, namely 60%, in order to get the men earning bonus as soon as possible. Further, when the gang reached 70% efficiency an increment of 5% was added to furnish an additional spur in money for further effort. At 100% a 10% increment was added, giving a total of 30% bonus for 100% efficiency. The increment at 100% performed the function of getting the gang out of the 90% class over 100% and kept them there. A 10% raise in pay for slightly extra effort was not to be ignored. In this case the gang efficiency report was posted in a prominent place every day. Production in this particular department due to this work increased over 100%.

Checking Non-productive Labor.

On the right hand side of the efficiency report under "Non-Prod. Hours" are shown the hours of delay over which the worker has no control—such as "wait for material," "wait for work," etc. When a superintendent or general manager daily receives such a report as this on a department he has absolute control over that department. He can, with reasons based on facts, ask the foreman and the production department to reduce the delay hours.

Every delay hour (Non-Prod. Hour) changed over to a productive hour means increased standard hours and therefore increased output. Every hour thus swung over makes the department more efficient as it has a beneficial effect on the minds of the operators—they do not have to contend with so many troubles and waits—their stride is less interrupted. The foreman can take care of those hours over which he has control, but if he is held up for material due to a fall down in the production department or a primary department, he will of course quickly show up the location of the trouble and then it is the manager's duty to iron out the cause for "wait."

Enables Manager to Keep in Touch.

The general manager, and his request cannot be construed as unreasonable, can ask the industrial engineer or time study man to bring up the efficiency of the low operators shown on the report and call for an increase in total standard hours of the department. This report will prove up a good or weak foreman—will show his progress or retrogression.

A series of standard times once obtained can frequently be compiled in various charts. When a new job is to be estimated upon, it can be divided into its elemental operations and by referring to the proper charts, the standard times for these operations can be quickly obtained and added together to obtain a total standard time and consequent labor cost for the job as a whole. Thus the standard time will form the basis for the labor estimate which added to material, overhead and profit will form the quotation.

St. Thomas, as Handle Manufacturing Centre

Oldest and Largest Handle Factory in Canada—Local and Overseas Markets Reached—Northern Woods Make Best Handles

By W. E. Clarke

Handle manufacturing is an industry that is growing and expanding in Canada in a very quiet, but none the less effective manner. Of recent years many new handle plants have been started, in different parts of the country, and the manufacture of this line gives every indication of assuming large proportions.

There are several reasons for this active development, among which the following might be mentioned: Formerly a large proportion of the handles used in Canada were of American origin. When the United States entered the war, this source of supply was practically cut off, owing, largely, to the Government requisition of lumber and manufactured wood products. An opportunity was thus created that was taken advantage of by numerous Canadian woodworkers. Another reason is that the Canadian handle men find that they can compete with the American manufacturers, with the result that, at present, fewer handles are being imported from the States than in pre-war days. Again, the strong demand which exists, both domestic and foreign, has had a certain bearing on the growth of this business.

Woods Commonly Employed.

The woods used are principally hickory, white ash, maple and a certain amount of rock elm. For broom handles, beech, birch, maple and other hardwoods answer admirably. Hickory and ash are imported from the different American producing centres, the Canadian supply of these woods being totally inadequate to satisfy the requirements of the industry. Where local woods are procurable they are preferred, for northern-grown timber is stronger, tougher and heavier than that grown in warmer and less rigorous climates. These are very desirable qualities in wood for the manufacture of handles. When imported, the handle material is brought in, in the shape of billets or what is known to the trade as dimension stock. These are all sized and graded ready for turning. Purchasing material in this shape practically eliminates all waste as well as effecting a saving in freights. In addition, being rough sawn, it enters Canada free of duty.

During a recent visit to St. Thomas, Ont., the writer had the pleasure of visiting the three handle factories which are located in that city. St. Thomas may not be very large or known as a woodworking centre, yet it boasts what is claimed to be the oldest and largest handle factory in Canada, the J. H. Still Mfg. Co.

This progressive concern was first located in Tilbury, Ont., where it was founded by the late J. H. Still in 1885. Three years later, 1888, the plant was moved to St. Thomas. Here the business has grown and expanded, until at the present time employment is given to about fifty hands and the output of the plant averages about 300 dozen handles per day. It is just possible that this output will be doubled in the near future. The handles manufactured include axe, sledge, pevey, fork and shovel handles. In addition such articles as whiffle-trees, double-trees, neck yokes, etc., go to make up complete line.

When the local woods are used, they are worked right from the stump to the finished product. Such timber is purchased standing and is felled, cut into cants, then ripped into billets and finally made into the finished product. Numerous automatic gauge and copying lathes are operated. This firm caters largely to the domestic trade and do not experience any difficulty in placing their entire output. While there undoubtedly exists a strong demand for handles for overseas shipment, yet they feel that the domestic market has the first claim on their product.

Newer Concern Has Fine Plant.

The Elgin Handle Co. of St. Thomas, is practically a newcomer in the handle field, having been organized in 1915. The original partners were experienced handle men and the business has grown and expanded under their skilful guidance. This steadily increasing volume of business necessitated larger quarters where greater production could be secured. About a year ago the plant of John Heard & Co., manufacturers of carriage stock, was taken over and fitted up as a handle factory. It requires considerable drying space to operate this business as the billets or planks are usually stacked in drying sheds for seasoning. This requires from 2 months in summer weather to 6 or 8 months when drying conditions are not so favorable. Another factor is that where hickory is imported it must be brought in during August, September and October, and a sufficient supply stocked for the total requirements of the following nine months. The hickory manufacturers can cut only about three months in the year, and all business should be transacted in that period.

The Elgin Handle Co. produce about the same line as the J. H. Still Mfg. Co. They are, however, making a stronger effort to secure some permanent export connections. At the present time a few shipments are being made to Europe and practically regular shipments to South Africa, that is, nearly every boat sailing for South Africa, carries a consignment of Elgin handles. Owing to the difficulty experienced in securing skilled mechanics, production in this plant is slightly below normal. At the present time about twenty men are employed, and the output totals in the neighborhood of 125 dozen per day.

Output Confined to Broom Handles.

The Peerless Handle & Broom Supply Co. operate a small plant on broom handles and similar lines, such as mop and straight handles for snow shovels. One Ober handle lathe, together with auotmatic trimming and chucking machine and a belt sander, go to make up the installation. About six men are employed and about fifteen cars of finished handles are produced each year.

An effort, which it is hoped will be successful, is being made to organize a Canadian Wood Turners' Association, which is to be either affiliated with the National Association of Wood Turners, an American organization, or conducted as a separate association. Every wood turner should take an active interest and help in the formation of this much-needed association.

Lumber unloaded from cars direct to kiln trucks

How Others Have Lowered Handling Costs

Costly Methods Being Replaced by Labor-Saving Devices—Saving of $3 Per Thousand Not Uncommon—Work Conducted With Fewer Hands and Lower Overhead

By J. C. Heath

The labor required for handling lumber in the yard and around the plant is a big factor in the cost of all articles made of wood. Of late years this subject has received considerable attention and many manufacturers have made an effort to put the handling of lumber on an efficient basis and thus reduce this item. There are two costs involved,—one, the direct cost, which consists of the expense of handling, trucking, piling, etc., while the other, which may be termed an "indirect cost or loss," consists of the depreciation of the lumber due to seasoning, warping and checking. This latter loss may be controlled and to a certain extent eliminated by careful handling and piling and through the expenditure of a little thought and effort.

In this article it is proposed to deal with the labor costs involved in handling the lumber and suggest how the work may be done to better advantage. No effort should be spared to cut down the unproductive labor employed around any plant. The more successful a factory manager is in this respect, the less he need fear the competition of other organizations. Instances can be cited where woodworkers have succeeded in reducing the cost of handling and piling lumber $3.00 and $4.00 per M.,—no small item when hundreds of thousands of feet are handled. Another feature is that the unproductive labor, which was practically going to waste in the lumber yard, may be taken into the plant and put at productive work.

Slow, Laborious Method.

Under the old system, which is followed in so many plants, the lumber is unloaded from the railway cars and piled on waggons, hauled to the site on which it is to be piled, and there unloaded and piled in stacks. When this stock is needed, the pile must be torn down, the lumber loaded on trucks or wagons, taken to the kiln, loaded on kiln trucks, dried, run into dry storage and in some cases unloaded again on to wagons and hauled into the plant. This can hardly be classed as a very efficient method of handling stock, as each board is picked up five or six times, each time involving an outlay of labor and money and also resulting in a certain loss due to breakage and other damage.

The logical solution is quite apparent. Instal a series of tracks in the yard and unload the lumber direct from the car to the dry kiln truck. The accompanying illustration shows the yard of an up-to-date woodworker who has adopted this system. By having the kiln and factory connected by a series of rails, as most up-to-date plants have, the material is moved right into the plant with only one handling. In the modern factory these kiln trucks loaded with lumber are spotted on a lumber elevator, located convenient to the operator of the swing saw, sticker or planer as the case may be, and lowered so that the top of the load would be at a convenient height for the man to work from. As the pile is reduced the elevator is raised so that the top of the pile is kept at a heighth which enables the operator to do more work with less effort.

Gravity System Economical.

Sometimes owing to the large amount of stock carried, the length of time it is kept in the yard and the limited amount of storage room available, the storing of lumber on kiln trucks is not altogether practicable. This would seem to bring us back to the first

consideration of excessive handling. The gravity conveyor system can be employed to advantage in a case of this kind. By rigging up a line of conveyors, the lumber may be, in many instances, moved from the

Mechanical stacker for high piling

cars to the pile or from the pile to the kiln or plant by gravity. Where this form of equipment can be utilized, it will be found to be both convenient and economical.

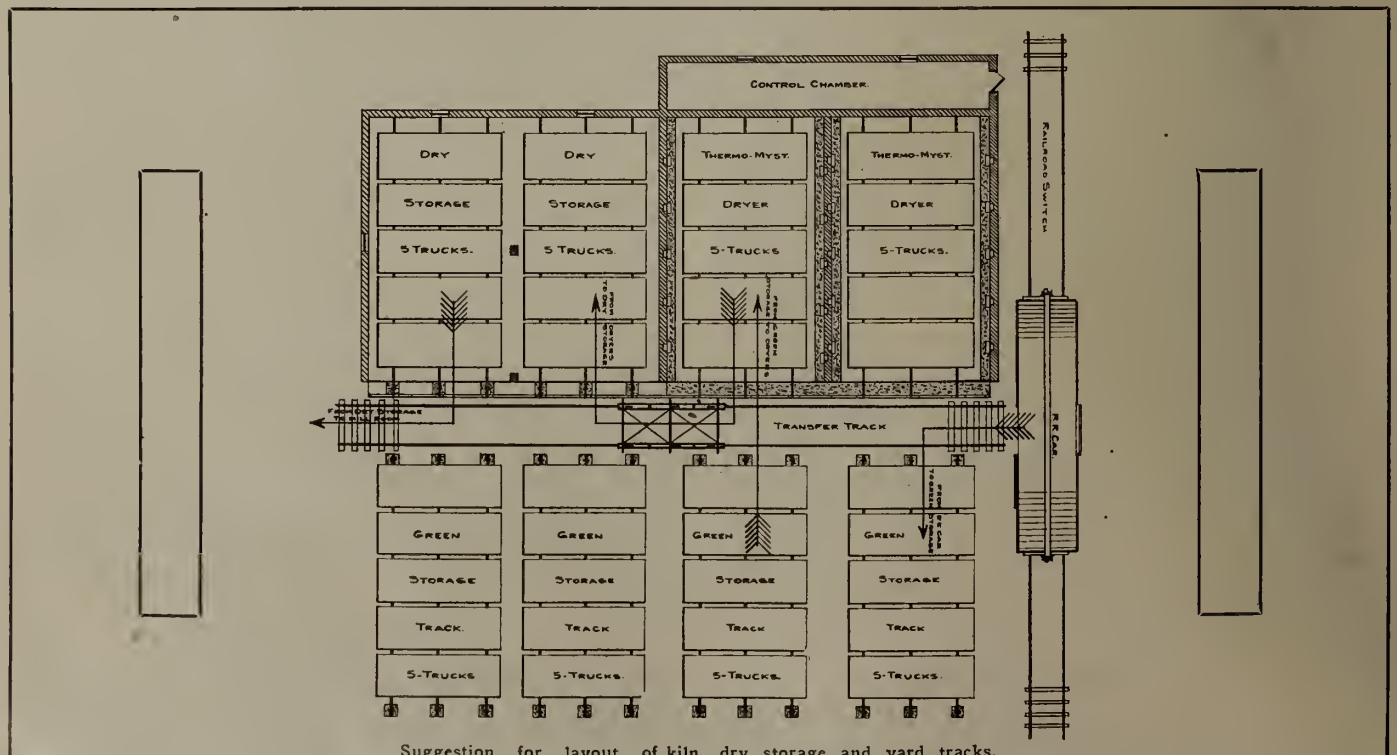
Engineers have come to the rescue of those who, owing to restricted piling areas are forced to build high piles. When lumber is raised 20 or 30 feet by hand, it is a slow, back-breaking costly method. With the aid of some of the newly-devised lumber pilers or stackers, the piles may be made as high as 40 or 50 feet and as cheaply as if it were only a few feet high. The capacity of some of these mechanical stackers is stock from 6 feet to 20 feet long, 4 inches to 18 inches wide and 1 inch to 4 inches thick. From 7,000 feet to 18,000 feet, depending entirely on the lumber being handled, may be lifted on one of these in an hour. The same machine is just as handy for unloading or taking down the piles, and in addition to the reduced labor, will actually save a certain amount of money due to a smaller percentage of loss from split and broken pieces.

Has Many Advantages.

The manufacturer, who uses only a small amount of lumber, can adopt some of the above suggestions to advantage. The saving that may be effected and the labor that will be released for other and more productive work, will go toward reducing costs and increasing profits. The first cost of installing same system in the lumber yard may seem high, but the fact that manufacturing operations may be carried on with fewer hands, a smaller ratio of overhead and with the decreased manufacturing costs, should more than compensate for the outlay involved.

Doors Wanted For Export

A large importing house in Belfast is desirous of getting in touch with a number of Canadian door manufacturers who are in a position to make early deliveries. Doors from Canada have been reaching this market, and selling lower than the local product. It is believed that this business may be extended to considerable proportions. The name of this firm may be secured by writing the publishers of this paper. Refer to inquiry No. 2002.



Suggestion for layout of kiln, dry storage and yard tracks.

Kiln Drying Most Important Operation

Can be Made Pay Big Dividends—How Lumber Dries—Steaming to Relieve Strains—Should be Given Greater Consideration

By H. L. Henderson

The demand for better kiln drying of lumber is due to several economic factors which were not present just a few years ago. The cost of lumber has increased greatly in the last three years until it behooves the manufacturer to take more interest in the care of his raw product, the price of which has bounded upward. Just to cite an instance or two we might consider white ash of good grade which sold for around $85 in 1917 and is now bringing upward of $300 per thousand feet, an increase of 250% in three years. White oak and yellow birch have jumped 280% in the last three years and practically every other species of wood has soared in price.

It does not take a great deal of figuring then to show that a kiln load of lumber worth from $5,000 to $6,000 with a loss due to improper drying as high as 10% would make lumber decrease in value from $500 to $600 by just running it through the kiln. If only 1% or 2% of this loss could be saved in the drying it would more than pay for a good kiln operator and would soon pay the cost of a good kiln.

Kiln Drying vs. Air Drying.

Another reason why the spotlight is being turned upon the dry kiln situation is the scarcity of air dried lumber. This means that greener lumber must be dried with the consequent extension of time required to evaporate the greater amount of water from the wood. In other words, kilns that were serving an industry and giving excellent results while using air dried lumber were found to have only half the capacity or in some cases less when green or partially air seasoned lumber had to be dried. This necessitated not only the addition of more kilns but required that a better kiln be used for drying green lumber.

As the price of lumber jumps upward, we find it more profitable to kiln dry lumber directly from the sawmill. Again considering a good grade of lumber worth in the neighborhood of $200 per thousand, that has been on the sticks for a period of two years in order to dry it down to 12% moisture content, the interest on the money tied up would be close to $25. On the other hand, if this same material were put directly in a dry kiln, (assuming that it was a well constructed kiln and operated properly) in four to six weeks' time it would be dried down to 5% or 6% moisture content at a cost of not over $20 per thousand. It is very likely that if this lumber were properly handled in the dry kiln there would be very much less loss due to warping or surface checking than would be acquired by the air seasoning method.

Types of Kilns.

There are various types of dry kilns in service and it might be well to enumerate them. The first type of kiln might be called the tight heated box in which the lumber is placed and practically baked dry. In the blower type of dry kiln, heated air is forced through the piles of lumber by means of fans or blowers. In the ventilated type of kiln the circulation of air through the kiln is induced by heating coils placed underneath the lumber causing the air to rise and pass through it and then out through properly constructed and spaced ventilation. In the condensing type kiln the moisture from the stock is taken up by the hot air from the strain coils, while the condensing coils placed along the walls cool and condense the moisture contained in the air, causing it to settle along the walls or drop in special troughs. This air is again heated and circulates through the lumber, removing some more moisture. I have not time to go into the methods of maintaining humidities within these various types of kilns but in passing would say that in many cases no attempt is made to regulate either the humidity or circulation, depending largely on the amount of heat that can be applied to the lumber.

Many kinds of all these various types are now in service and many of them are giving excellent satisfaction. There are also many others that are not giving good service. Some were installed for redrying lumber of a low moisture content and when attempts were made to dry green or partially air dried stock the lumber was very seriously injured. Some of the kilns seem to be drying lumber successfully but the time required is from three to five times the necessary period that it would take to dry the same amount of lumber in a properly constructed kiln.

How Lumber Dries.

In order to dry lumber properly basic principles of drying should be understood. When lumber comes from the log it may contain anywhere from 35% to 100% and in some cases more of water, depending on the species, etc. This is made up of two kinds, namely, the water which saturates the cell walls of the wood and is called Hydroscopic water. This makes up about 25% of the dry weight of the wood. The free water is the water which fills the cell cavities and makes up the remainder. This moisture must be driven off before the lumber can be used. There are many reasons why this lumber should be dried before using and among them are: reduction of its weight, preventing decay, increasing its strength, and giving it a fixed dimension. Generally speaking, when lumber dries there is very little shrinkage until after all the free water is evaporated. From the 25% moisture content downward, the greatest amount of shrinkage takes place and continues right down to a very low moisture content. This factor of shrinkage then is the one that does the greatest amount of damage to lumber during the drying process.

In the process of kiln drying, the lumber is heated artificially and the moisture is evaporated at the surface of the boards. The air surrounding the lumber absorbs this moisture until it becomes saturated, after which it must be displaced by drier air in order to keep up the process. In other words, temperature and circulation are very important factors in the drying of lumber. The rate of evaporation of the moisture from the surface of the boards, however, must not be faster than the rate at which the water comes from the centre of the board to the surface. Should this be the case, the surface will dry off quickly and the outer cell of the board will become drier than the centre. Accompanying this rapid drying of the surface we get shrinkage and when the shrinkage power becomes greater than the strength of the wood, checks appear. If this pro-

cess is continued the outer shell of the lumber becomes dried and sets in an expended condition which we term case hardened. As the centre dries down to a low moisture content, these surface checks which were started in the early part of the kiln run, extend on to the centre of the board and result finally in honeycombing of the centre. To prevent the too rapid drying of the surface, the air surrounding the lumber is kept at such a state of relative humidity that it absorbs moisture from the surface of the lumber only as fast as it can come to the surface from the centre.

Circulation, Humidity, Temperature.

From the foregoing discussion it is evident that conditions of temperature humidity and circulation of the air passing through the pile must be maintained at the proper points in order to properly dry the lumber. After the moisture content of the lumber has dropped below the fibre saturation point then it is safe to gradually raise the temperature of the air and lower the relative humidities until the lumber is dried down to 5% or 8% moisture content as the case might be.

Steam is used almost entirely for obtaining the necessary temperature in the kiln but it also plays another very important part in drying lumber. Either live or exhaust steam is mixed with the air of the kiln to maintain humidity. At the beginning of the kiln run, lumber should be thoroughly steamed. This preliminary steaming heats up the lumber to the temperature at which the drying is to start, without any evaporation taking place and furthermore tends to neutralize the stresses that were set up during the air seasoning. It does not open the pores or dissolve the saps, sugars and tannins as is commonly supposed. During the drying process it is quite often found that the lumber has become case hardened or the surface has become over dry and by steaming for about an hour at a temperature of from 10 degrees to 20 degrees higher than the drying temperature these stresses are relieved. At the end of the run should the lumber be found to be case hardened it is possible to again steam it and relieve the case hardening. The length of the steaming period and the temperatures at which it is steamed, depends largely on the thickness and the species of the lumber. If the lumber is steamed too often or too long, however, during the run or at the end, the stresses are very likely to be reversed. Quite often we get discoloration of the lumber and in some cases brashy or weak lumber results.

Essentials to Good Drying.

How is it possible, now, to obtain good drying? The first essential is a well constructed and properly operated dry kiln. By this is meant a kiln in which the temperature can be regulated, and the humidity controlled, and where the circulation can be maintained at the proper rate. The kiln building should be well constructed so that there will not be leakage of heat around the doors or through the walls and should be well insulated so as to be as little disturbed by outside temperature as possible. A good workman cannot work without good tools to work with and the same is true of a dry kiln operator. He should have good instruments which will show him what conditions of temperature and humidity he is obtaining in the kiln at any particular time and he should have a complete record of the temperatures and humidities that the lumber was subjected to during the run. Another point in the proper drying of lumber is to see that the lumber is piled properly on the kiln trucks. Properly piled lumber will come out with a minimum of end checks and warping while improperly piled lumber will cause a great deal of loss in the best kiln made. It is very essential also that the operator, who is called upon to run the kiln understands the fundamental principles of drying. He should know something about the structure of the different kinds of wood. He should be able to test the lumber for case hardening, moisture content, etc., and should know how to handle his kiln in order to get the best results. He should keep records of the temperatures and humidities in each kiln and know how fast the lumber is drying under these conditions. These records should be filed for future reference. If anything goes wrong in the drying of the lumber and no records are kept it is impossible to locate the cause. If, on the other hand, the record of the drying was plotted in graphic form it would be very easy for him to glance over the curves and note the cause of the poor or slow drying.

Not Given Sufficient Attention.

The drying end of the lumber industry has not received the attention it deserves. If the metal working industries paid as little attention to their heat treating furnaces as the lumber industries do to their lumber treating kilns, it is safe to say that they would be many years behind the times. Better kilns handled more efficiently will help to solve many of the production problems. A good dry kiln is just as necessary in the preparation of lumber for manufacture as the heat treating furnaces are to the metal industries and should receive the same consideration from the management. Upon its proper functioning depends not only the quantity produced but also the quality. Just like a high grade costly machine in a factory, it requires continued attention by a skilled operator. It is also safe to say that if more brain work were used in an operation in which many thousands of dollars are involved, the loss commonly resulting in the artificial seasoning process would be many times reduced and the saving would greatly exceed the cost of this service and in addition would help to conserve our fast disappearing supply of lumber.

Tackle It!

By C. P. McDonald

Tackle it!—don't give the world the idea you're a quitter; don't lay down just because you think the goal is out of reach, but tug for it and plug for it and play the role of "gitter"—the higher you may have to climb the sweeter grows the peach.

Take the bit between your teeth and set your muscles to it, although to goad and hump yourself may go against the grain; just chuckle as you hit the pike and tell yourself you'll do it, a lot of labor is the price of every little gain.

Tackle it. Go to it like a thoroughbred in harness; forget the sluggards who gave up before they got a start; forget the distance to the prize—its nearness or its farness—and face the grind ahead of you with laughter in your heart. Hopeless though it seems to be, keep digging like the devil; things are bound to come your way if you but stick it out. Play the game of winning on the square and on the level—purge your soul of discontent and visionary doubt.

Hit it up for all you're worth—don't mind the bumps and bruises—the climb is stiff, but what's the odds if finally you win? The fool who always goes down grade instead of uphill, loses—he cannot finish something if he never will begin.

How Barrel Staves are Manufactured

Description of Two Methods Commonly Employed—Staves Cut to Conform to Curve of Barrel—Many Different Woods May be Used—Comparative Figures on Sawn and Sliced Stave

By H. A. Ralphe

Timber to the extent of millions of feet is worked up annually into staves for barrels and kegs. The woods used are chiefly elm, B. C. fir, pine, basswood, poplar and, in the United States, red gum. Elm makes a very fine barrel and is usually given first choice, but it is a species that is not available in every locality, so that recourse has been made to the other and more common woods. Sawn staves in fir, pine, basswood or poplar make a good, general-purpose commodity barrel, but for shipping such materials as flour, sugar and similar products, a cut or planed stave is customary.

The methods employed in producing staves may be divided into two divisions—sawing and cutting or slicing. The sawn stave may be further classed as flat, curve and bilge sawn. The cut stave is cut, or sliced, on a knife, to conform to the circumference of the barrel.

Flat staves are often sawn on the ordinary circular saw. Owing to the amount of material wasted in hollowing and hacking these pieces, this method is not followed to any great extent. The ordinary procedure is to saw the material on a drum saw, which gives a curve, conforming to the size of the barrel. This method eliminates a certain amount of waste and makes a satisfactory stave for ordinary barrels, though the sawdust made represents so much waste material. If a bilge drum saw is used the product conforms both to the circumference and bilge or bulge of the barrel.

Owing to the fact that the saw leaves a comparatively rough face and that a certain amount of sawdust clings to the surface, the sawn stave is not generally employed for sugar or flour barrels. The objection is that the sawdust gradually works loose and mixes with the contents of the barrel. Special machines are on the market, in the form of single or double surfacers, that will plane one or both sides of the stave. With the sawn stave surfaced in this manner it could be used for practically any material. One advantage of the sawing method is that smaller material can be worked up than when the slicing process is followed.

Slicing Process Economical

The sliced or cut stave is made from steamed stock and, as mentioned, is cut to conform to the curve of the barrel. The sharp knife used leaves a smooth surface free from sawdust or chips of any kind. Thus the stave may be used for any purpose, just as it leaves the knife. The waste due to the saw is eliminated, thus effecting a saving in material. As a rule the slicing process will producec about 15 per cent. more staves than the sawing method, from average timber. Special equipment in the shape of steaming retorts, is necessary.

Which ever way the staves are cut they are usually made from logs or bolts. If logs are used, they are cut into bolts in a saw mill. The material is usually cut to rough stave lengths on a drag or swing cut-off saw. Sometimes a bolter or splitter is employed instead of a saw to split the logs into pieces, preferably quartering them. The men required in the saw mill and power department would be the same whether sawing or slicing were resorted to; in fact two drum saws could be supplied with material by the same staff.

Description of Equipment

The equipment needed for manufacturing sawn staves, after the bolts are roughed out, would include one set of equalizing saws, to cut the bolts to the exact stave length, one drum saw, one planer to surface one side of stave, or double surfacer if two sides are to be dressed, two foot bilge jointing machines, two packers, two tables, together with the necessary wheel barrels and stave waggons. The capacity of this outfit would run from 10,000 to 12,000 sawn staves a day, depending largely upon the skill of the operators and the quality of the timber worked up. Ten men and four boys would be needed to operate this equipment and handle the product as follows: A man to wheel bolts to saw, operator for equalizing, operator for drum saw, culler, man to carry culls, a man and horse to haul staves to drying sheds, two pilers, two jointers, two packers (boys) and two tadders (boys).

For manufacturing sliced staves from the bolts, the equipment differs slightly and would consist of one set of steam boxes, say, twelve compartments, equalizing saws, stave cutter or slicer, four, foot bilge jointers, four packers, four tables, four stave waggons and a number of trucks for wheeling the bolts to and from the steaming chambers. An endless chain is sometimes installed to carry the stock to and from these boxes. This installation tends to reduce the labor costs. The output would vary from 40,000 to 50,000 staves per day.

As the slicing machine has a greater daily output than a drum saw, more men are required to operate this outfit. About eighteen men and eight boys are needed. These would be distributed as follows: Two filling the steam boxes, two pulling steam boxes, bolt wheeler, man to operate equalizer, man to operate slicer, culler, cull carrier, man and horse for drawing staves, two pilers, four men to operate stave jointers, four packers (boys) and four tadders (boys).

Comparison of Two Methods

It is difficult to compare the two methods as each is best under certain conditions. Where the timber is hardwood, such as elm or gum, and of good size and quality, the slicing process is considered to be the best. For small timber, under 8 inches in diameter, and especially for softwoods, such as pine, basswood, poplar, B. C. fir and other similar woods, the saw works to better advantage. The drum saw is usually installed where long staves are to be manufactured and the bilge saw for keg staves. Timbers as small as 4 inches in diameter can be worked to advantage on the saws.

A man or company with a limited capital and a small amount of timber should find the equipment for making sawn staves very economical and satisfactory.

W. S. Hawker dowel machines in Clarke Bros plant.

Pins are dried and polished in large tumblers and dumped into hopper bottom bins for sorting and packing.

Automatic clothes-pin lathes and slotters in Lake Jolly plant.

Hardwood Products from Nova Scotia

Output of Lake Jolly Plant Confined to Dowels and Clothes-pins—Modern Production Equipment Installed—Wood Refuse, Mechanically Stoked, Provides Power—Welfare of Employees Considered

In addition to large pulp and sawmill interests, the firm of Clark Bros., Limited, Bear River, N.S., operate a large woodworking plant at Lake Jolly, N.S. This firm was incorporated in 1919 under a Dominion charter to take over the business and assets of Clarke Bros., Limited, operating under a provincial charter, granted in 1911. Previous to that time the business was conducted as a partnership by W. G. and W. W. Clarke. These two gentlemen are well known in Nova Scotia business circles, having been in business there for over thirty-five years.

W. W. Clarke, of Clarke Bros., Bear River, N. S.

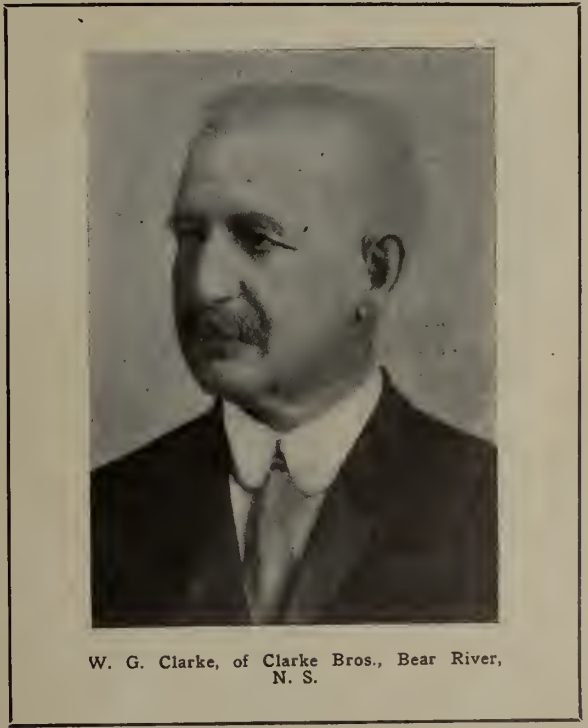
The reorganization as outlined above, was made principally with a view to developing a large pulp enterprise at the mouth of the Bear River, but at the same time the existing operations of the company were reorganized and extended. During the spring of 1919 the woodworking plant at Lake Jolly, which had been engaged in manufacturing both hard and softwood products, such as lumber, sash, doors, wood finishes, dowels and clothes-pins, was thoroughly overhauled and converted to the manufacture of dowels and clothes-pins.

Most of the logs for these articles are brought in by water. During the winter when the lake is frozen and the raw material is hauled in on the ice, a convenient log haul-up is provided to carry the logs into the plant. Here a 60" Simonds saw is used to cut the logs into suitable lengths for the dowels and pins. The short pieces are now broken up on either a Ricker saw or an 8" Fay & Egan band saw. The Ricker saw is used on the smaller pieces while the band saw takes care of the heavier stock. The material for the dowels is cut into bolts and piled in drying sheds where it is allowed to season before being worked up. The rough stock for the pins is cut 5/8" thick and in lengths of about 4 feet.

The clothes-pins are made from the green stock and are turned on a number of Smith automatic lathes. After being turned they are passed to automatic slotters where the slots are cut. The next operation is to dry the pins. This is done in a large specially-constructed drier in which they are allowed to remain for five or six hours. The final finish is given in a large drum or tumbler which polishes and smooths. The output of the clothes-pin department runs as high as 300,000 pins a day.

In the dowel department 144 different sizes of dowels are manufactured, the sizes ranging from 3/16" to 1" in diameter and from 12" to 72" in length. The smaller sizes are run on a dowel planer while the larger stock from 1/2" up is manufactured by a battery of the latest type Hawker dowel machines. The output in dowels runs from 30,000 to 40,000 a day, depending largely on the sizes going through. About two and a half million feet of hardwood are worked up annually into pins and dowels.

The power for this plant is generated from the hardwood refuse, three 60 h.p. boilers, fitted with Dutch ovens, being installed. The stocking is entirely mechanical. The waste material is carried by branch conveyors to a main conveyor which conducts it to the furnaces. In addition a Sturtevant shavings exhaust system takes care of the righter material from the lathes and planers.



W. G. Clarke, of Clarke Bros., Bear River, N. S.

This firm takes a great interest in their employees and provide both housing accommodation and recreation. A number of families are living in the vicinity of the mill in houses owned by the company but a

greater part of their employees are accommodated in two large boarding houses operated by the company, one being for male employees and the other for the female workers. At present a fine moving picture hall and recreation room is being built. This will be for the free use of all employees and their friends. Pictures will be shown at least two nights each week and during the remainder of the time the hall will be available for reading, games and other social purposes.

In addition to the sawmill and woodworking enterprises mentioned, this company operate three lumber mills and electric light plant, a weekly steam packet service between St. John and Bear River, several small vessels for exporting the different products, and also repair blocks for wooden vessels. The new sulphate mill, which will be in operation shortly, will have a capacity of from 10,000 to 12,000 tons of sulphate pulp per annum.

The Engineer and the Woodworking Industry

Field for Development and Research Work Almost Unlimited—Manufacturing Operations, Standarization, Kiln Drying and Production Methods Require Special Consideration—Authorative Knowledge as to Value of Wood for Certain Purposes Required

By Thomas D. Perry*

Woodworking, one of the oldest civilized trades, is now one of the largest industries on the American continent. It is doubtful whether any other major group of modern manufacturers gives evidence of less scientific knowledge of its products. The reason for this is quite apparent.

Agriculture has been very slow in adopting scientific means to improve the efficiency of its workmen because son could easily follow father with no special training. Carpenters' sons could do likewise; hence, a few branches of rudimentary woodworking were not at all difficult to acquire. In each case one or two or a half-dozen men could complete the finished product and no extensive organization, capital or costly machinery was necessary.

The problem of the metal worker was far different. The necessary processes were complex and expensive. They demanded skill for the many necessary steps between the iron ore and the rolled boiler plate or the seamless boiler tube. It was therefore quite natural that the engineer was attracted to the intricate and involved problems of the metal worker, and that the metal worker, in his turn, felt the need of the trained scientist.

New Conditions Demand Improvement.

A survey, no matter how superficial, will demonstrate that, while the woodworker may not have needed the engineer in the past, he certainly needs him now. Raw material is increasingly more valuable; and wasteful methods are increasingly more culpable; labor requires higher wages; mechanical methods are in demand; manufacturing units are larger; need for co-ordination is more pressing; and output is more standardized. Proper adjustments to meet these conditions will permit larger and more intensive production.

The woodworker is by no means wholly to blame for not desiring or utilizing engineering knowledge. The engineer seems to have considered that such simple problems as those of the woodworker were beneath his dignity and not worth while. It follows, therefore, that if the woodworking industry and the engineering profession are to be of mutual benefit, a broader aspect and a complete readjustment of attitude are necessary.

It may be of interest to enumerate a few of the branches of the woodworking industry and suggest a few of the problems that need better solutions. The fundamental division is between primary woodworkers, converting timber and logs (natural growths) into lumber or some other form of raw material intermediate between the tree and the final product; and secondary woodworkers, who take the lumber and make it into pianos, furniture, caskets, house trim, etc. The problems are quite unlike, although there may be a few exceptions where the primary manufacturer still produces the finished product, as in the case of cooperage and flooring and many kitchen implements made directly from this log.

*Grand Rapids Veneer Works, in Mechanical Engineering.

Wasteful Methods Employed.

The sawmill operator has the problem of bringing logs to the mill, which includes hill and valley logging, land and swamp skidding, rail and water hauling, all more or less complicated by the rotation of the seasons and the variations of the weather. Considerable engineering skill has been shown in some of these problems, mostly, however, in the direction of machine design. The utilization of waste in such plants stands out as a gigantic travesty on the principles of economy. It is frequently said that steam power does not cost the sawmill man anything because he has plenty of waste, therefore, why watch the economies of steam consumption!

Nearly every sawmill has a large waste burner to consume the refuse so that the burning of the waste will not be an undue hazard to mill buildings and lumber yards. Temperatures of 800 deg. are not unusual in these burners. The better class of waste is put under the boilers and the remainder in the waste burner,(by means of which untold potential power is dissipated. The waste from trimming trees in the woods is left where it offers fuel for forest fires. In a few instances the author has known of the utilization of mill and woods waste for power production such as the manufacture of artificial ice in southern states and for making wood fibre for wrapping papers. These few instances, however, are exceptions to the rule of universal and unjustifiable waste in lumber production.

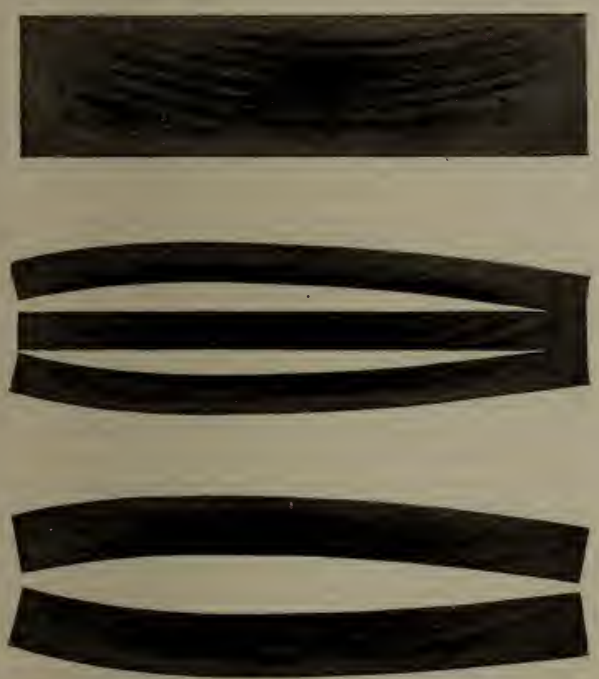
The rotary cutting, slicing and sawing of veneers is subject to all of the above problems, and in addition has several refinements such as preparing, cutting and handling thin and delicate sheets, selecting for figure, preventing discoloration, keeping flat, etc.

Drying Problems Require Attention.

Another question, which needs the attention of the engineer is that of artificial drying. The problem of establishing the conditions of heat and circulation are

not so difficult, but the tendency of the wood to dry too rapidly on the surface and establish internal strain is usually overlooked. The establishment and maintenance of a proper degree of enveloping humidity is the most difficult part of the drying operation, usually not appreciated by engineers. Of the various systems on the market each has its advantages: the blower types for veneer, finishes, glued work, etc., where there is no great thickness to be dried; the condensing kiln for the very thick and green lumber where plenty of time is available and careful operation possible; the ventilating type for speed and efficiency in the average plant of the majority of lumber producers and consumers. Artificial drying for piano actions, phonograph horns, and high-grade furniture requires a more refined process than that of general lumber drying. The opportunity for research and practical investigation along these lines is very great.

Cooperage, or the making of barrels, kegs, tubs, pails and casks, is in a very primitive condition and would completely discourage any engineer who might assume the problem of developing it. In a tight barrel the staves are first baked dry in a kiln, then machined to size and then assembled in barrel form and hooped



Moisture still remaining in centre of piece

for one-third of their length. The next operation is steaming to soften and render the assembled staves pliable so that the bulge of the barrel can be produced. When the hooping operation is completed the barrels, without heads, are set over little fires to again bake them dry. This process is only typical of others as crude.

Other Questions Must be Answered

The strength of timber of various species has been the subject of many tests under varying conditions, but a recognized standard compilation does not exist. The airplane has brought this subject prominently to the front, because the life of an airman or the success of his military mission would frequently depend on the reliability of wood parts. This phase of strength, recognized in only two of many uses, offers a vast field for consistent investigation and comparative study. What relation has density, or frequency of growth rings, or heart and sap wood to strength and elasticity? The authorities are few and their conclusions far from final. The tip of an airplane propeller moves at the rate of five miles, or 26,000 ft. per min. How can wood be made to endure this strain?

Wood is used in automobiles for spokes, felloes, bodies, top bows, dash boards, foot boards, running boards, battery parts, and sometimes for the all-important work of distributing the weight of body and engine on the axles. Authorities vary widely as to the merit of wood and steel wheels, and as to the relative comfort and durability of wood and steel trusses from body to axles. No conclusive authority exists for intelligent guidance. Airplanes and automobiles are not the only vehicles of transportation that use wood in large measure. There are wagons, buggies, freight cars, passenger cars, boats and ships in which strength and durability are absolutely essential in material design and fabrication.

Could Assist in Factory Problems.

Production methods or industrial engineering are hardly developed as yet in the woodworking industry. Factory equipment and systems are largely lacking in productive efficiency. The application of production processes which have proved successful in other lines than woodwork is hardly to be regarded as more than experimental in such a new field. The average woodworker has very little regard for the production engineer at the present time. However, there are developing here and there unrelated and unco-ordinated examples of scientific factory production. What better service could be rendered by engineers and engineering publications than to assist in standardizing and disseminating the best results? A few firms are specializing in this work, but there is available no supply of trained men from which to recruit their staffs of workers.

The foregoing is far from exhausting the list of the many opportunities in woodworking for suitably trained engineers. The demands for recreation and amusement require golf clubs, ball bats, billiard equipment, bowling-alley equipment, dominoes, checkers, chessmen, and gun stocks, all of which call for manufacturing efficiency in diverse lines. The domestic equipment of the average home embraces matches, toothpicks, clothespins, cutlery handles, churns, caloric cookers, hollow woodenware, rolling pins, potato mashers, broom handles, skewers, and many other articles. Each is made in sufficient quantity to occupy many factories and employ hundreds and often thousands of workmen.

The field for the engineer in woodworking is almost unlimited, but the development of such a new and untried line will take education, patience and adaptability on the part of all who are vitally interested in the trades that employ so large a proportion of our citizens.

Choice Lumber from Mahogany Stumps

The mahogany of Panama is a tree sometimes reaching a height of nearly 200 feet and six feet thick. It often grows in clumps so that it is not uncommon to find it to the number of 10,000 large trees to the square mile. Such a forest of mahogany, however, is rare, although there are occasionally places of this sort. As a general rule, the mahogany occurs in scattered clumps, so that an average of two or three such big trees as those above mentioned per acre is the most that timber men would expect to find.

Interesting Facts on Durability of Wood

Durability of Wood Controlled by External Influences—How Immunity from Decay is Usually Achieved—May Last Thousands of Years Under Favorable Conditions—Examples of Extreme Durability

By J. Hudson Davis, F.R.H.S.

Wood substance—the material of which the walls of the cells in wood are built—is one of the most stable of the innumerable varieties of organic compounds. No matter what the particular kind of wood—as oak, alder, birch, cedar, poplar, etc.—with freedom from specially injurious external influence each species alike appears to last indefinitely. Most organic bodies immediately life has ceased begin to putrefy. This putrefaction is due to the amount of nitrogenous matter they contain; and in exact ratio as the nitrogenous elements are present or absent, so the process of putrefaction goes on with greater or with less rapidity.

The extraordinary durability of wood is due to the nearly complete absence of nitrogen from its composition. Nitrogen constitutes considerably less than one per cent. of the total bulk of any wood substance. Wood is therefore not much subject to decay arising from internal weakness, nor from chemical changes like those that occur during putrefaction; while senility (or decay from age) of any part of the wood substance is practically unknown. The period of its life appears to be controlled solely by external influences.

What Causes Decay in Wood

Failure, when failure occurs, is nearly always due to one of three causes, namely: (1) To external chemical influences; (2) to mechanical, or physically disruptive influences; and (3) to the influence of a few of the larger and more voracious of the vegetable parasites. By chemical influences is meant that kind of influence by which wood is subject to the direct actions of corrosive liquids, vapors or gases. This often occurs in ordinary circumstances through the formation of sulphuric, nitric, and other acids, by the action of rain-water on various kinds of soil; and it also occurs by simple maceration. The wood in such cases is affected in exactly the same way as pulpwood is affected during the process of its reduction in the digesters, preparatory to its use for paper manufacture. That is to say, these chemicals render soluble certain of the wood elements, with the consequence that its general organization is broken down. Certain kinds of combustion, or oxidation, also come under this heading particularly the kind of eremacausis (or slow chemical combustion) to which the name wet rot has been applied.

By mechanical influences are implied abrasions and all manner of injuries arising through contact with other hard substances, or through the ravages of wood boring insects, or from splits, shakes, sun-cracks, and other violences against its natural constitution, whether they are due to changes in locality, to changes in temperature, to moisture, or to any similar cause.

The fungial parasites and their work are doubtless sufficiently well known not to heed a general description here. Now, these three influences are so persistently operative, and so vital in their results, that only on comparatively rare occasions do we find examples of ancient timber and woodwork that have not at any time been subject to their or combined effects.

Obviously, the greatest sphere for the employment of wood lies within the radius of a few feet above or below the surface of the earth; and, unfortunately for its longevity, within this radius also the destructive influences under discussion are found in their fullest activity. The earths surface the great field where innumerable natural chemical processes are constantly going on. And it is here, also, that the danger of attacks from insect life is greatest; and that injurious vegetable growths are most frequent in their occurrence.

When, therefore, examples of pieces of long preserved timber have come down to us, these have usually spent the period of their existence in some way outside the scope of the influences named. They are, however, none the less valuable on that account, as they teach us what are limits of possibilities with regard to the life of this wonderful material.

Immunity from attack, under natural conditions, is usually achieved in one of three possible ways. (1) The wood may be completed submerged in harmless liquids, usually in water; (2) it may be buried in a soil that is dry and not subject to extreme changes of temperature; and (3) it is equally lasting in ordinary atmospheres, if only it enjoys protection from the baneful influences mentioned above.

Authentic Examples of Longevity

As examples of the first of these conditions, the oak, beech, birch, larch, and alder posts and planks procured from the Irish crannogs and Swiss lake-dwellings are absolutely authentic. The wood procured from the Bavarian and Irish bogs and morasses furnishes another instance; a still more recent one being the discovery of a whole forest of enormous black walnut trees, submerged in the southern part of the State of Kentucky, in the United States of America. Other and oft-quoted instances are the piles of the Emperor Trajan's bridge across the Danube. These were of oak and alder, and after sixteen centuries of complete immersion, were taken up and found to be petrified for three-quarters of an inch on the external surfaces, but the rest of the wood was sound and good, differing little from freshly cut material. The piles of Old London Bridge, England, the canoes discovered in trenching through the Lincolnshire fens, and many other samples of the durability of wood under submerged conditions, are also extant. Perhaps the very latest is that of the discovery of the site of Charlemagne's bridge across the Rhine; the newly found piles of this bridge were withdrawn from the bed of the river and made into furniture about the year 1893. They furnished an exceedingly handsome wood of a dark brown or walnut colour. The wood was ordinary oak.

The durability of wood under the second of these conditions is to be found tested and proved in many parts of the world. Deep down below the surface of the ground, where chemical changes proceed slowly or not at all, where no harmful insects pentrate, and no injurious vegetation thrives, many forests of hard woods and of pine trees have lain buried for untold

ages of the past. Two examples may suffice in this connection.

Mining for Buried Forests

A short time ago the French Consul at Montgze, in Upper Tonquin, reported a very curious mining industry which is carried on in that district, and which, just now, represents a source of much wealth to the local population. This is comprised in certain mines where are found buried the gigantic trunks of pine trees which have been swallowed up in some longforgotten convulsion of nature. Many of the trunks are a yard and more in diameter, and the wood they furnish is said to be of an imperishable nature, and is, for this reason, much sought after by the Chinese, for making into coffins, etc. The date of the subsidence is, according to the latest computation, placed at 5,000 to 7,000 years ago.

Nebraska, in the United States, is the centre of a particularly forestless district amounting altogether to several thousand square miles. For many years past the efforts of the Department of Agriculture have been directed towards supplying this regrettable deficiency in tree-growth. Of the ultimate success of the planting experiments which are being carried on, many critics are dubious because of the excessive dryness of the climate. The authorities, however, are very hopeful from the fact that the district is not absolutely treeless even now, and the mining of enormous timbers out of the Nebraskan sandhill serves to indicate that this section of the country, at least, has not always been in a forestless condition. Here again the trees lie deeply buried, and consequently have experienced none of the destructive influences common to wood lying on the surface of the earth.

Will Keep in Dry Air

But the durable qualities of wood are equally remarkable when it is exposed in the air, providing only it is kept dry, and kept safe from mechanical and chemical injuries. The fungi will not attack it in a dry condition. The amount of nitrogen in its composition is not sufficient to promote their growth while the wood is in a dry state, and moisture in the air, as well as moisture in the wood, is essential to their life and well being. It is in the very large buildings that we most often find aged woodwork in a very good or perfect state of preservation. And then it mostly forms parts of roofs, high up from the ground, or is in some other way far removed from the disturbances incident upon everyday life. The reason for its good preservation in such situations is probably not difficult to find. Usually, much of the ground surface in its vicinity is paved in some way, so that the injurious chemical exhalations of the soil are wholly obviated or reduced to a minimum; and usually it is found in an atmosphere not congenial to or out of the reach of depredatory insect life. In some cases, no doubt, the natural secretions of the wood are in small measure an efficient protection; but the various phases of that subject cannot be taken here, and must now be left for treatment at some future time.

Early Egyptian Examples

In each of the following cases the third condition named above will be found to apply. Rondelet mentions the fact that the fir trusses of the old portion of the roof in the Basilica of St. Paul in Rome were made in the year 816, and in 1814 were still sound and good, having thus lasted just one thousand years. The timber work of the outer domes of the church of St. Mark at Venice were still in a good state when Tredgold wrote his work on carpentry. It was then more than 840 years old. There are many other examples similar to these, for instance the oak found by Mr. Woods, in 1871, on the pavement of the Temple of Diana at Ephesus; and the gates of St. Peter's at Rome. (These were of Cypress wood, and after being in use 600 years were still in perfect condition).

Egypt has furnished more wonderful examples still in the coffins, domestic apparatus, and furniture abstracted from the pyramids and other tombs of the dead. In the British Museum may be seen much old Egyptian woodwork, evidently wrought with very primitive tools, but still in a well preserved condition. It may possibly be true that the simple Egyptian workman had over much confidence in the supposed everlasting qualities of his material and workmanship; but it is after all astonishing to think that his sanguine ambitions have already been fulfilled to the extent of at least 4,000 to 5,000 years.

In this case, again, the wood has been preserved under conditions where no animal or vegetable parasites could thrive; the dry atmosphere and the sand of the desert preventing, to a large extent, much prolificacy of vegetable life, and the dearth of this latter being in itself an effective handicap on the prosperity of pernicious insect life.

Continuous Groove for Cane

Where woven cane is used on furniture, the method commonly followed in making the groove to receive it is to run the groove in the different parts before assembling. This work is usually done on the shaper. The two main objections to this procedure are that the cabinet makers are called on to finish the grooves at the corners and that this method makes shary or square corners, necessitating the fillets which are pressed down on top of the cane, to be accurately mitered and fitted. These operations consume considerable time.

Some of the more progressive furniture factories, where possible, assemble the parts first and run a continuous groove, rounded at the corners, on the shaper. This requires a little fitting up, but where the volume of work warrants the change, the saving in time will more than repay for the labor and material expended. First, a large sub-table is made and clamped to the top of the shaper. A hole in this wooden table permits the spindle, with router screwed in the end, to project up through. Next, a wooden block with groove and hole is fastened to the centre of the wooden table. The hole, which is near one end of the block, fits down over the projecting spindle. The depth of the groove is regulated by raising or lowering the spindle until the router projects through the block the required distance. A small moveable block with guide-pin attached is fitted in the groove in the larger block. The guide-pin should be higher than the routing tool so that the work may be started without running the risk of spoiling it. This small block with guide-pin is adjusted so that the pin is the proper distance from the cutter and regulates the distance of the groove from the edge of the piece. The inside edge of the open piece is run over the cutter, using the pin as a guide. The work should be moved at right angles to a line adjoining the pin and cutter. Where a corner is reached, the work is swung aroung, using the pin as a pivot, thus making a nice round corner. This block should be sufficiently high for the work to rest firmly on it at all times, even when working to the centre of a curved top rail for a chair. A continuous groove, such as this makes, is ready for caning without further cleaning.

Fear Has No Place in Business

Fear is a timidity grown up. It is a paralyzing force which enchains us. If we are constantly afraid of some evil befalling us, it is almost sure to overtake us in time. Our very attitude of mind courts the coming of that disaster, says the "Paper Trade Journal."

The man who is afraid of taking any responsibility, will always be an underling. There is an old saying that "He that fears leaves, must not come into a wood." And the man who is gunshy of obligating himself of any regular duties, or the meeting of definite financial obligations will never adventure very far and never grow very rich.

A certain amount of fear is given to us for our protection, but that fear is only in the nature of caution. It is to prevent impulsive and over-hasty action. It is always undesirable that we should have about us anyone who fears us, for again the old maxim speaks truly when it says, "He that fears you present, will hate you absent." Hatred is to be avoided, for thoughts are things. It is much better to have people work for us because they want to, than because they have to.

As a rule, it is much wiser for us to stop and examine the thing which awakens fear within us. The ghost with the up-pointing finger by the woodshed door, proves to be nothing but an old tree with a bare limb. The mysterious footsteps on the porch outside, are the night noises in the maple which oerhangs the porch. The terrible financial disaster which we see approaching, and which causes us to tremble, is likely to prove a mere scare head, if we walk right out and meet it. Certainly nothing is gained by running to cover.

The man in business to-day has to have his nerve right along with him. He cannot be ready to back water at everything, or to shrink into himself at the approach of the first obstacle. What appears to be a big difficulty, may prove to be a very small one or none at all.

One of the surest ways to overcome fear or a natural tendency to fear, is to associate with strong, successful, aggressive people; to read biographies of those who had achieved surprising things in the face of many handicaps; and to cultivate the habit of overcoming our own mental confusion.

Have you ever stopped to think that the reason we are afraid, is because we suffer from idea-rout? That is why we become frightened. Our calmness, our poise, our clarity of thought are dissipated by something which disturbs us, but once we get right hold of ourselves and realize the truth, we cease to be frightened. The big man of whom we have stood in awe, is likely to be the simplest, the most human and the kindliest of fellows. Fear of a financial panic which perhaps has kept us awake nights, is just what lots of people have been waiting for, knowing that it will give them opportunities to get rich, for a single dollar then may develop the purchasing power of two dollars.

The big deal into which we have been afraid to go, loses its terrifying aspects when we consult a banker and perhaps our lawyer, and realize where we can safeguard ourselves completely against loss.

Have a little faith in yourself. If you do not believe in your own powers and ability, you must not blame other people if they doubt them, too. Live a life of such uprightness, industry, square dealing and the prompt meeting of your obligations, that you can look every man in the face without being afraid of any of them. Then you can go blithely out, knowing that you have as good a chance in the world as any man.

Attractive List of Equipment

An attractive list of bargains in reliable woodworking machines is to be found in the advertisement of The Osborne & Sexton Machinery Co., which appears on the inside back cover of this journal. This list, which consists of both new and rebuilt equipment, contains items of interest to all branches of the woodworking industry. Among the machines offered are moulders, boring machines, tenoners, window frame machines, sanders, planers, mortisers, nailers, saws, glue spreaders, shapers, etc., in well known makes. A special bargain is being offered in the shape of a number of, new, Yates automatic knife grinders, 36″ and 66″, at one-half the regular price. This should prove particularly attractive to anyone in the market for a machine of this type. If you are considering adding to your plant it might be to your advantage to consult this firm.

What's Going to Happen to Wages?

Everybody is asking if wages are going to go down. No general answer can be given to this question, covering the next four months. In the building trades a trimming of the peaks is likely. Men who are getting $1.25 per hour, as they do in a few cities, may go to work for $1.00 or for $1.10 rather than stay idle. The same may happen in textile and knitting shops. In short, the place to look for wage drops are the places where wages have shot up the most. In the face of what is likely to be a level living cost, we cannot look for general reductions in the wage rate. During the past three years there has been a very general tendency to relate wages to living costs. Labor and employers, alike, have accepted this idea. If, as seems likely, the present slackening in business and falling price level is really the beginning of readjustment, then by next spring we should be able to hold new agreements to the levels of the old ones or to effect reductions in some lines.—Babson.

Does Accident Prevention Pay?

If a laborer earns $1,000 per annum in a city, he spends the same amount in caring for his family. Fifty thousand laborers at $1,000 per annum means $50,000,000 circulating in the channels of trade and commerce, and the banker, the butcher, baker, the candlestick maker, the insurance man, the preacher, the teacher, and every man not engaged in labor for wages, are dependent upon this circulation of money in order to ply their respective trades and professions. If by lack of systematic accident prevention, a community causes or contributes to the death of a wage earner, that community does not only lose the amount of his earnings, but the community as a whole goes into its pockets to provide housing, sustenance and education for the family of the man lost by accident. It seems perfectly logical to spend at least part of the moneys now used in keeping up the eleemosynary institutions, on systematic accident prevention in a community, and we should place safety education work upon the same plane as the work of the public health and other educational activities.

Requirements of Box for Export Service

Many Commodities Difficult to Pack — Faults Encountered in Boxes— Best Workmanship Required—Choosing Suitable Material

By Malcolm W. Hill*

Exporters who ship peculiarly shaped containers which have by long association with their product a certain trade value will probably continue to retain the same shape bottles or other containers, but they will at the same time have to put up with a certain loss due to the unsuitability of this container for the hard usage common to export shipments and the added cost and difficulty of packing that commodity safely. Through habit and carelessness many very inefficient packages are thus made up by the million each year and it would be very well worth the time and money if through publicity this bad practice could be discarded.

Mr. E. H. Bell, of Philadelphia, suggested a different package for canned goods which are now packed 24 and 48 in a case; by his method 50 and 25 cans could be placed in the same cases with a great saving of space and material. He states that if a somewhat larger box than the regular export No. 3 box were used, which has a cubage of 1.6, the larger box with 1.86 cubic feet would reduce the number of cases over 53 per cent. and the space saving would be some 160,000 ship tons, with a saving of $4,000,0000 in costs, involving some 40,000,000 feet of box lumber.

Using Suitable Lumber.

In connection with the shipment of condiments in glass bottles if the manufacturers would use a bottle that would nest better when in the cases an enormous saving in cost of packing and very large reduction in damage would be effected. I have noted that a very large proportion of United States specifications for boxes require white pine, and it seems that as many of these boxes are of a type which are used for storage purposes that other and harder woods would not only make more durable boxes but release the white pine lumber for other purposes that are more suitable.

With regard to the relative strengths of plain and tongue and groove lumber for export boxes, the latter will have a considerable additional strength in service if glued but not so much unless the lumber is well dried as the joints will split open. With the Linderman jointing done properly there is no reason why narrower lumber cannot be used to advantage; the New England box material is exceptionally narrow and knotty but with proper handling there is no reason why this material should not make a very satisfactory box.

A good deal of comment was made as to box lumber being made of timber cut at the wrong time of the year, but the time it is cut is not very important if the timber is cared for properly. Of course in hot weather there are more insect enemies but the sap content except for certain uses such as posts and poles that are set in the ground should have small influence. The real danger in hot weather is the checking from too rapid drying.

In lining export boxes, great care must be taken that the paper is not punctured or torn and so the box maker must see to it that his made up export boxes are as smooth and clean as possible on the inside. Every package may have to fight rain, sleet, dirt, oil, damp, moths, rats, etc., so any added protection against one or more of these things is worth while in export boxes.

Consider Package as a Whole.

Consider your package as a whole; if the contents are valuable place more care and money in a suitable shipping case, it may be that other poorly prepared shipments may burst and leak over yours, acids, syrups, glues, etc., are only a few of the many things that may play havoc with your package if it is not well cased and protected—so a tight box is always a good investment unless of course the contents are of a nature that must at all times have ventilation — then special precautions have to be taken. The customer always likes to have his shipment come out of the case clean and fresh and if they do not you are sure to hear from it and perhaps lose the repeat order.

I believe that with education as to the hazards of overseas shipments, exporters will use fewer crates and more boxes as the added cost of the boxes will in many cases be overcome by the reduction in claims for losses in handling and transfer.

The pilfering of shipments is a most vital consideration and the well made export case properly strapped offers the best and most reliable solution to this very serious problem of the seeker after foreign trade.

Faults Commonly Encountered.

To give an approximate idea of the common faults observed in boxing by our inspectors in the packing service I will read the percentages of same derived from study and tabulation of a large number of inspection reports

Improper design of box or crate to get best results, 56 per cent.

Waste space in same due to improper design, 43 per cent.

Strapping unsuitable or improperly applied, 43 per cent.

Marking incomplete or improperly done, 51 per cent.

Nailing bad, too few nails, improperly placed, etc., 32 per cent.

Lumber trashy, wormy, unsuitable for the purpose, 34 per cent.

The subject of the use of wormy or beetle shot lumber is one that must be given study, there is no question that in some countries the wood with worm holes is looked upon askance, as it may introduce insect pests. This matter has been studied by experts and they say that under most conditions this danger is very remote. Be this as it may, the effect upon foreign buyers must be studied and with valuable packages it is most sure that the cases should be of absolutely sound lumber and well appearing from all standpoints. The question really rests with the purchaser in many instances and it will do no harm to raise the point when the type of packing and size of packages is discussed to bring up the matter of very common wormy and pecky lumber for use in cases and let a frank statement of prices be thrashed out. The export box stands alone

*Extracts, address before N. C. Pine & Shook Manufacturers' Association.

for best workmanship and materials and it should never be placed on the same plane for costs as those containers that serve for local shipments and which are not expected to have the hazardous experience that the average export case receives.

Certain Woods Not Appropriate.

Our diminishing lumber supply demands that we conserve those woods best suitable for building construction for that purpose, but there are a great many woods that are entirely appropriate for box-making that are not used often enough and this matter is one that should be given our best thought and study.

It is only a matter of time when the collapsible container will be used, as the rising cost of boxes will before very long make the re-use of shipping cases an economic matter of no mean importance, and in this field the combination of wood and steel for containers will receive more attention.

The great value of the tests that have been made by the Forest Products Laboratories in determining the different physical properties of many common American woods will be realized in the coming studies of box substitutes for the most needed structural varieties.

I will conclude my paper with some notes taken from reports of officers and inspectors at ports both on this side and in France.

The following is from Norfolk during October, 1918:

Boxes—Hardly any box is according to specifications. Nearly all boxes do not have a sufficient number of nails. Many do not have the right size nails. A great many nails are overdriven one-third to one-half the thickness of the material. Brash wood, rot, knots too large, etc., have been observed in too great abundance.

Many shippers still try to mark their packages on undressed lumber. Common fault is too much weight for the thickness of the material, sides bulge and break out. Much cheap binding is done. Straps in many cases too soft. Marking many times poorly printed on straps on long boxes not spaced right as a rule. Skids not used often enough on heavy boxes, neither are internal braces used often enough. Sides of packages crushing when handled by cargo hooks. Many cases of boxes with useles outside battens.

The following should appeal to boxmakers:

Objection to Fibre Containers.

Canned or preserved fruit in glass should be shipped in wood containers with packing between each jar and on the sides, ends, top and bottom of inside of box with an extra thickness as a cushion on the bottom. Fibre containers are very objectionable and should not be used. If one jar is broken the fibre becomes wet and the bottom usually drops out and the package is beyond repair.

Aside from unavoidable accidents which will happen—there are three real causes for the greater part of our egg losses and these are easily avoidable—they are: Poor marking, poor packing and rough handling.

Fresh fruit or vegetables should be packed in wooden containers made of material of strength sufficient to stand at least seven times the gross weight of package, for the reason that with car shortage it is often necessary to stack fruit up in the cars seven to nine feet high.

Crushing frequent in heavy cases due to use of single slings used in cargo hoisting—to prevent slip the sling is shortened as much as possible—with the result the upper members of the package are crushed at the point of sling suspension.

Heavy freights are spotted or skidded to final locations in hold or on deck by the easiest means always, frequently fastening lines or cables to individual member of crates and cases and often causing great injury to packages.

Long cases often piled in holds with too great overhang of parts of their length, leading to permanent distortion of the case and probable collapse later.

Boxes of considerable weight and piled in tiers too often upset tiers at a time and allowed to tumble from considerable heights to stone or concrete floors with much damage to many cases.

Many wire-bound cases seriously injured by the feet of workmen walking over the piled cases and crushing members.

A Few Cost Suggestions

By A. J. Redemski

In the box industry, cost work should be called upon to serve two distinct functions. First: it should provide a basis for estimating so that every item of product, irrespective of its shape, size or quantity, may be marketed at a profit. Second: these estimates should be so controlled that their effect may be reflected in the books of account and their accuracy made a matter of periodical revision. In this analysis the material, waste, cost of every factory operation and overhead should be included.

Material constitutes the largest single item of cost. Stock records should be kept to reflect its cost per unit, as well as the quantity of the several items on hand from time to time.

The principle of costing lumber into box factory production at its replacement value rather than at original cost is generally conceded as good practice. In fact it has only been disputed by some on a rising market, but in a declining market competition usually forces the issue. The loss or gain resulting from this treatment of lumber should be separated from the box factory operation. Under rising market conditions a very satisfactory profit may be shown, but strict analysis might disclose the fact that this was due entirely to the enhancement of lumber values and that the manufacturing processes have been conducted at a loss. In times less prosperous than these losses might be more promptly traced by this means than would otherwise be the case.

The item of waste is a factor which has given every box manufacturer a great deal of concern. Its analysis and possible reduction may mean added profits in more directions than one. A casual glance at the refuse box on its way to the boiler room may not cause concern, but a rising percentage reflected in the accounts from month to month will attract attention. Reduced waste means increased production, which, in turn, has greater value than firewood. Under certain conditions the utility of one grade of lumber over another, or certain lines of product over other may be demonstrated.

Manufacturing costs do not rise and fall in the same ratio with the footage of material in a box, hence the board foot basis of estimating does the box manufacturer an injustice in many instances. Size, quantity and details of construction all contribute to a state of confusion in this respect. Each process is worthy of careful analysis and classification so that proper charge may be made as each individual contract or specification warrants. When these process

costs are linked with the estimates made, losses will be averted before they occur.

When material and labor have been properly accounted for in the estimates only a part of the cost of production will have been allocated. There yet remains the overhead or burden. Means should be devised which will permit the spreading of this element against the product at a standard rate. Extraordinary expenses arise from time to time, which, if allocated against the current product, throw those costs out of proportion.

Were a programme along these lines adopted by the industry as a whole, great strides would be taken toward freeing the trade from unfair competition, in so far as such competition is brought about by the lack of proper cost knowledge.

Boxing and Crating Courses

Our readers are reminded that the practical training courses in boxing and crating at the Forest Products Laboratory, Madison, Wisconsin, will continue throughout the year on the following dates:

First course November 1-6.

Sixth course December 6-11.

Manufacturers and shippers are taking advantage of this opportunity to train their men. Priority of application governs admission, and applications should be made well in advance.

Purely Educational

Even the daily papers are looking to the education of the common people and as a part of their efforts have a daily "Quiz" on Historical, Geographical, etc., subjects. The Editor of the "Wood Box" is determined to be up to date, hence the following:

Question—What kind of lumber is produced from the hemlock tree? Answer—Spruce, pine, and a few other species, including an occasional piece of hemlock.

Question—What are the most common methods of figuring manufacturing costs? Answer—(1) By estimating how much cheaper you can operate than a competitor who has quoted a customer, perhaps. (2) By use of the Ouoja Board. Either method is equally accurate.

Question—What is a corrugated fastener? Answer—A crinkled piece of metal driven into boards so as to interfere with printing—sometimes inadvertently driven so as to fasten two boards together.

Question—What is a saw kerf? Answer—The place where the sawdust used to be.

Question—What is a competitor? Answer—An unspeakable person who is continually selling boxes at less than cost, and who, though headed for ruin, seems to be able to buy a new car each year.

Question—What is a salesman? Answer—A misused human being who could keep the factory operating overtime, if allowed to meet competitors' prices, and if business wasn't always rotten.

Question—What is a lumber buggy? Answer—An insect which eats holes in lumber. Some holes are knot holes and some are not.

Question—What is a nailer? Answer—One who spends part of the day driving nails and the balance driving an oil chariot.

Question—What is a profit? Answer—A rare thing which box makers hope is hidden in prices but which is rarely found there.

Question—Who was the first box-maker? Answer—History doesn't tell but it might have been Nebuchadnezzar—something drove him crazy.

Corrugated Joint Fasteners

Although corrugated fasteners are being used more and more extensively in woodworking industries, and are indispensable where a tight, strong joint is necessary, it is astonishing to note the number of woodworkers who ignore them and their numerous advantages. These fasteners are made of bright steel with sharp penetrating edge. They can be readily driven into hard or soft wood irrespective of the grain, the corrugations interlocking with the wood and holding it firmly together.

Corrugated fasteners are made in two styles, plain edge and saw edge. The sharp cutting edges make them easier to start and drive and the clean throat between the points prevents the crushing or breaking down of the wood. They are sold not only to lengths but are furnished in coils for use on automatic driving machines, which can be obtained from different makers of woodworking machines.

The following table illustrates the size of fastener to be used in various thickness of wood:

		Fasteners.
1/4	Lumber	1/8 Plain Edge
5/16	"	1/4 Saw Edge
3/8	"	5/16 " "
7/16	"	5/16 " "
1/2	"	3/8 " "
9/16	"	7/16 " "
5/8	"	3/8 or 1/2 " "
11/16	"	9/16 " "
3/4	"	5/8 " "
7/8	"	5/8 " "
1 in.	"	5/8 " "

Of course corrugated fasteners must be made of the right kind of steel not too soft nor too brittle, otherwise they will break when applied to wood. Therefore, it is important that the user secures a good quality of fasteners.

The following is a list showing some of the uses for the fasteners: Boxes, trunks, built columns, bee hives, irrigating pipe, all kinds of furnitures, panels for portable houses, bath room fixtures, cooperage heading, picture frames, screens, toys, fruit packages, coat hangers, piano boxes, pattern working and cores, kiddie kars, washing machines, phonographs, refrigerators, signs, incubators, gun stocks, show cases, shooks.

It is advisable that the box makers use and adopt these corrugated fasteners to make their product pilferproof, and it is to be hoped that all woodworkers adopt, without hesitation, the use of corrugated fasteners for their respective works, thus making a higher quality product to their own benefit.

Drawer That Will Not Jam

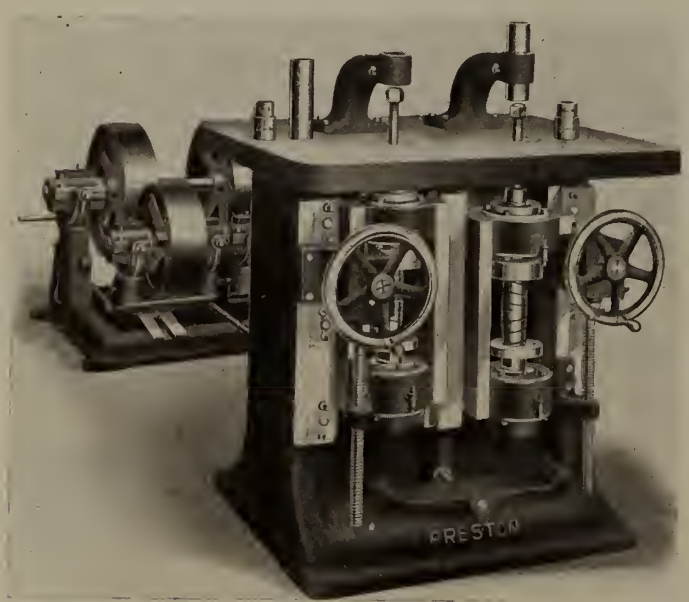
A new anti-friction roller for furniture that has sliding parts, is described by the Scientific American as a simple contrivance with a cylindrical steel roller which sets in a circular frame that fits perfectly into a five-eighth inch auger hole, and has a flange that holds the roller one-sixteenth inch above the surface. The device is designed for use as a bearing for dresser drawers, extension tables and other articles of furniture that frequently cause trouble and give annoyance because of a tendency to stick.

When hurry interferes with safety, cut out the hurry, says the Safety League.

Machinery & Equipment

New 11,000 R.P.M. Shaper

One of the newer products of the Preston Woodworking Machinery Co., of Preston, Ont., is the shaper shown in the accompanying illustration. This machine is designed primarily for the quantity production of small pieces such as brush handles and other small work. It is designed to run at the unusually high speed of 11,000 R.P.M. This speed not only materially increases the productive capacity of the machine, but enables it to turn out very smooth work, so smooth that little or no sanding is required. The high speed is made possible through a new application of ball bearings, something similar to the one shown in figure 3, on page 71, of the September "Canadian Woodworker." The cut used in that article is reproduced here, to give an idea of the type of ball bearing application used. The chief difference lies in the fact that the thrust is carried on a single ball instead of on a radial ball bearing, as has been customary. Another feature is that the pulley is held in place against shoulder, on the shaft, by a large nut at the bottom. This tends to reduce vibration as a key will cause a

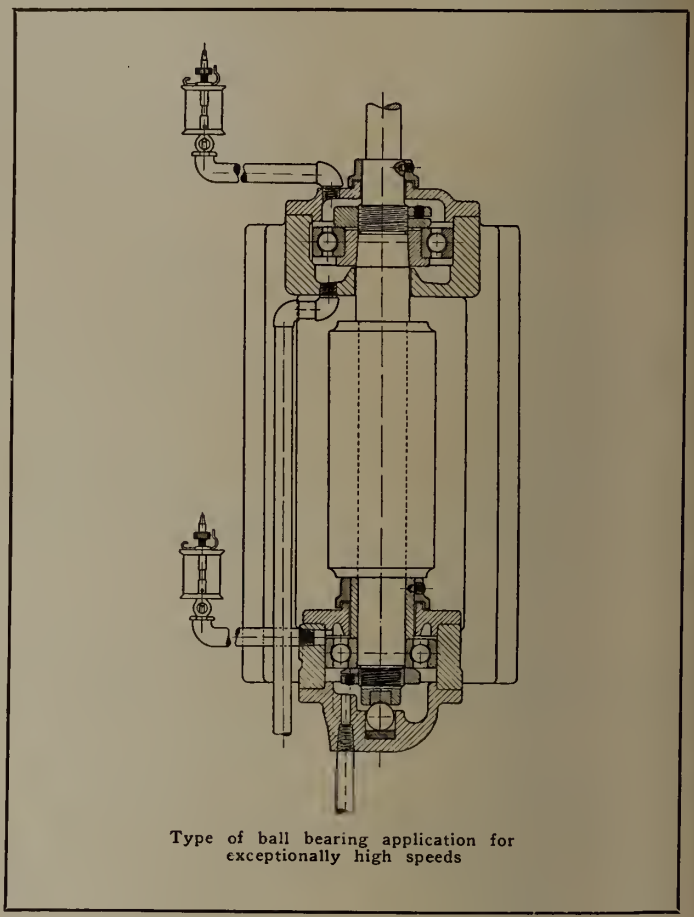


Preston high speed shaper for quantity production

certain amount at high speeds. The bearings in this machine are all S.K.F., including ball bearings in the loose pulley on the countershaft.

This shaper is made with 12, 14 or 19 in. spindle centres or may be had with centres to suit the requirements of the user. The brackets shown behind the spindles carry form guide collars. The ordinary form is used and is worked against these guide collars which do not revolve. This eliminates the necessity of working the form against the spindle and also does away with all friction, thus tending for better work.

In connection with the ball bearing application, it might be well to mention that nothing is gained by running the bearing at a speed lower than that at which it was designed to run. A ball bearing application will give better satisfaction and last longer if run at the R.P.M. for whch it was designed. Full particulars of this machine may be had by writing the Preston Woodworking Machinery Co., of Preston, Ont.



Type of ball bearing application for exceptionally high speeds

Grinder for Cutter Heads

To secure the best results from Shimer cutter heads, the bits must be ground and set with great accuracy. The grinder illustrated herewith has been designed by the Shimer Cutter Head Co. of Canada, Limited, for grinding the Shimer cutter heads. It is mounted on a pedestal for convenience and accessibility. The machine is provided with a vertical screw operated with a hand wheel for raising and lowering the main carriage. On the vertically adjustable carriage there is another carriage having a lateral adjustment at right angles, operated by means of lever and rack and pinion. The stub for holding head is attached to the latter carriage. The stub is turned to obtain the angle for grinding the cutter and is locked at any angle desired. To obtain adjustment for hook a movable frame is provided, which carries the arbor and emery. This is adjusted by a hand wheel operating a screw. The adjustments provided are so complete that the wheel may be placed where desired. At the rear of the machine will be found a tracking device by means of which each bit is placed in proper

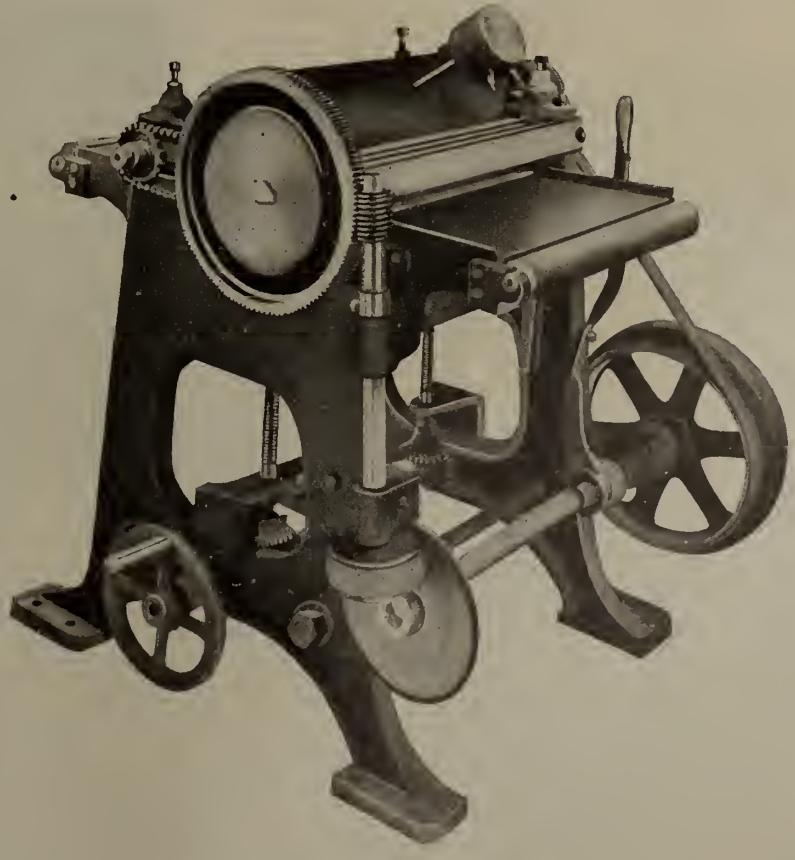
Pedestal grinder and tracker for Shimer cutter heads

cutting position from the centre. A disked emery wheel is commonly used, the wheel running at 2,000 r.p.m. Full particulars may be secured from the Shimer Cutter Head Co., of Canada, Limited, Galt, Ont.

Small Pony Planer

The small pony planer, shown in the accompanying illustration, has recently been placed on the market by the Elliot Machinery Co., Limited, of Belleville, Ont. It was designed for use with their well-known combination woodworker, but can be used separately. It should be found very handy for patternmakers, cabinetmakers and small woodworkers. The capacity is 16 in. by 6 in. with a feed varying from 18 to 22 feet a minute. The machine is very sturdy in construction and while not designed for heavy work, will do most of the dressing required by contractors in building homes and interior fittings. Little power is required to operate, from 1½ to 2 h.p. The cylinder is driven 3,400 r.p.m. It can be run from the motor ordinarily furnished with the Elliot woodworker but if desisred for belt drive a counter-shaft may be secured. Both the top rolls are driven and a novel feed drive has been worked out. Instead of the train of gears usual to such machines the rolls are driven by worm gear and friction drive. The reduction is secured by means of the worm. A clutch, operated by lever conveniently located, controls the feed. Full particulars may be secured from the makers.

A London Daily Mail reporter has located the whereabouts of Dr. Rendell Harris' alleged discovery of part of the hull of the original Mayflower. It is in a barn attached to the old Jordan Hotel in the Parish of Chalfront, St. Giles, Buckinhamshire. Beams in the barn are believed to have formed part of the hull and back of the Mayflower, and have been sold to the original Jordan by a shipbreaker in the seventeenth century.



The new Elliot Bull Dog pony planer

Upholstering and Trimming

Ford Plan Adapted to Upholstering

Strike Assisted Manufacturers in Putting Scheme into Effect—How System Was Carried Out

By E. S. Blanchard

Few strikes benefit anybody. Manufacturers lose in production, strikers lose in wages, and the public suffers from lack of goods. However, the strike of upholsterers in Chicago last fall has turned out to be a blessing in disguise. In its broader aspect, this strike was an absolute defeat for the closed shop. It completely shattered the upholsterers' union in Chicago, and it paved the way for the defeat of the unions in other furniture centres.

This story concerns the method of fighting adopted by the Valentine-Seaver Company, and the wonderful work accomplished. During the past six months, with an entire force of apprentices to start with, as much work is now being turned out as in the past with its experienced upholsterers, and better work is resulting, as will be explained later.

Few Experienced Hands

When the forty-odd upholsterers walked out last August, it left the company with a force of cutters, shipping room help, office force, and three men who knew upholstering. The foreman had had long experience, the foreman of the cutting room knew the trade, as well as the assistant shipping clerk. These three men were the principal assets of the company at that time.

For a month or so, while things were developing, they kept up a small part of the output assisted by a few loyal workers. Then they laid plans to settle the thing. They advertised from time to time for young men who desired to learn the trade, and about 300 responded. Most of these were impossible, but the group was finally weeded to about fifty-five, and the wisdom of the seletcion made has been shown by the results attained.

Work Divided Into Units

The processes were next divided into units—"webbing," "springing up," "stitching burlap," "arm, seat and backs," and "trimming." As the plan has worked out, one man is webbing for the entire force, seven do the springing up, three stitch burlap, four do the trimming, and the balance make seats, arms and backs. It is the "Ford" plan adapted to the upholstery business, and meeting with the success that plan has demonstrated in so many industries. Of course it would have been impossible under union domination as union rules require that one man complete his job from start to finish, and that no piece work be done.

Although the foreman was kept pretty busy teaching all these men the trade, his work was greatly simplified by the unit plan. If he had been forced to teach every man every step in the craft, it would have resulted in confusion and a great waste of time. But by specializing, and a careful choice of prospects, practical results were obtained in short order.

The apprentices were started at a uniform minimum of 37½ cents an hour, but were allowed to increase their pay as rapidly as possible on the piece work basis. Some are already making from 85 cents to 95 cents per hour. The company gets what it pays for, and the men retain their self-respect by earning what they receive. This would have been impossible had the union demands been complied with.

When a visitor passes through the factory, two things impress him: First, the intense interest shown by the men in their work, and second, by the youthful appearance of the workers. The average age is about 23—young blood full of life and "pep," ready and anxious to work like "the old Nick"—not through any altruistic motives, but for what the pay envelope contains. It was very refreshing for the writer to visit this factory and see a real old-time "American sweat"—he has seen so few of them in recent years.

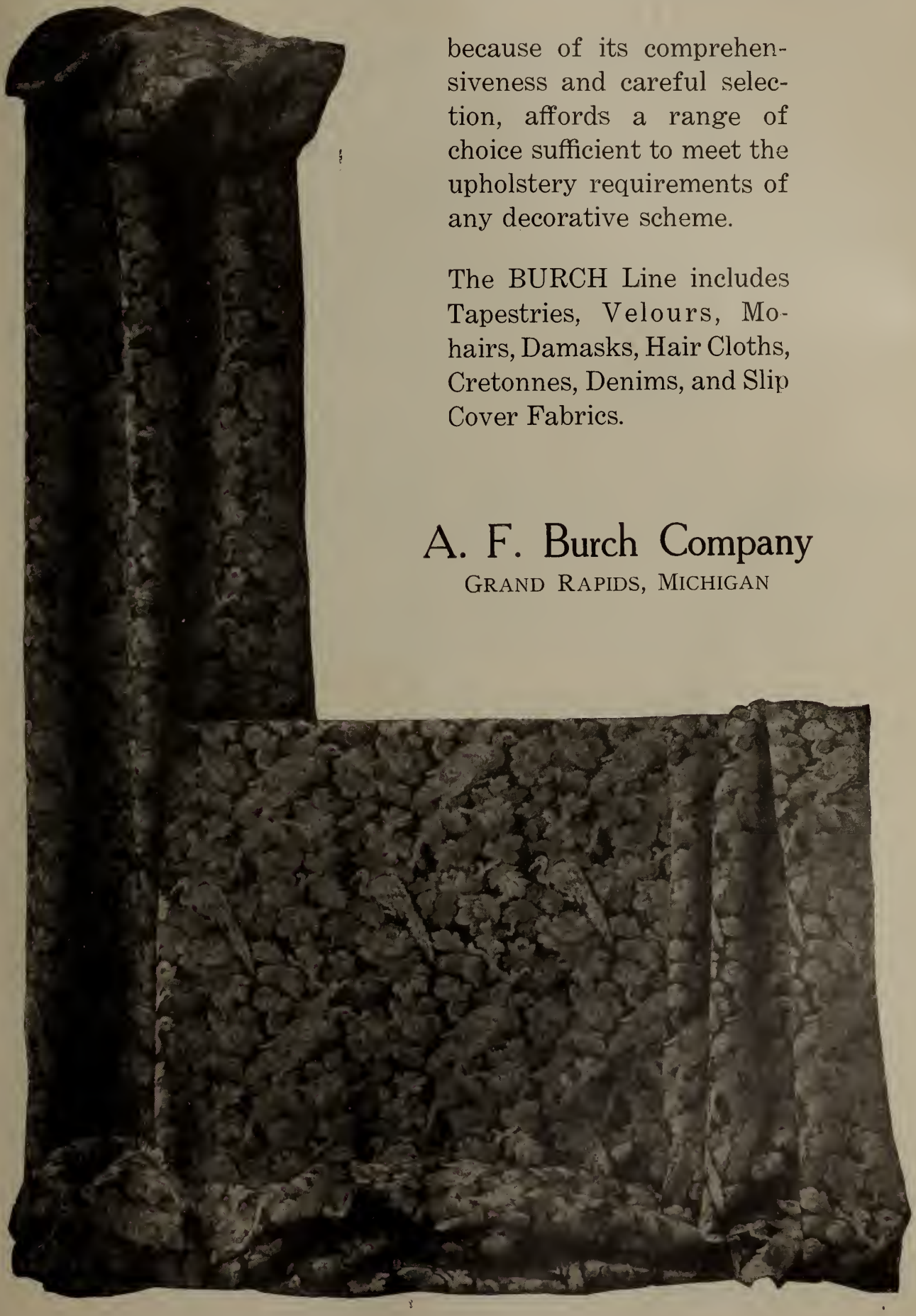
The Valentine-Seaver Company is working on the forty-eight hour basis, but putting in fifty-two hours a week, with time and one-half for overtime. Some of the men are so interested in their work they put in an hour or so overtime each day—voluntarily.

As was intimated at the beginning, the advantages accruing to the company from the action of the strikers are many. In the first place, it gave them a chance

Suggestions for speeding-up webbing operation

to introduce the unit system, which is the only system possible for rapid production. It put new life and new blood into the enterprise, which is certainly a good thing in any business. It made for better furniture, as the pieces are inspected as they progress, and no half-tacked or half-tied jobs can get by. And finally, it demonstrated once and for all that the only plan is the American plan. It showed the closed shop advocates that they cannot tie down a progressive institution, and if the present crew was to be affected by the union virus, the same system could be repeated and the business kept going.—"Furniture Manufacturer and Artisan."

THE BURCH LINE



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GRAND RAPIDS, MICHIGAN

12 Principles of Industrial Relations

Referendum Vote Taken by the United States Chamber of Commerce

Overwhelming approval of a platform setting up twelve principles of industrial relations has been given by the membership of the Chamber of Commerce of the United States in a referendum vote.

The vote was on the report of a special committee of the Chamber's board of directors. This report went deeply into the subject of the employment relation, and recommended among other things recognition of the right of open shop operation and the right of employers and employees to deal directly with each other without participation by outside interests.

At the same time the Chamber's membership in another referendum vote has approved a report of its Committee on Public Utilities recommending that strikes by public utility employees should be explicitly prohibited, and that tribunals should be created by law to adjudicate in decisions between public utilities corporations and their employees.

The vote on the two referenda was the largest ever recorded by the Chamber on any subject.

The twelve principles of industrial relations advanced by the committee are given as follows:

1. Every person possesses a right to engage in any lawful business or occupation and to enter, individually or collectively, into any lawful contract of employment, either as employer or employee. These rights are subject to limitation only through a valid exercise of public authority.

2. The right of open-shop operation, that is, the right of employer and employee to enter into and determine the conditions of employment relations with each other, is an essential part of the individual right of contract possessed by each of the parties.

3. All men possess the equal right to associate voluntarily for the accomplishment of lawful purposes by lawful means. The association of men, whether of employers, employees or others, for collective action or dealing, confers no authority over, and must not deny any right of, those who do not desire to act or deal with them.

4. The public welfare, the protection of the individual, and sound associations or combinations of employers or employees, or both, must equally be guards for his health and safety and legally responsible to others for their conduct and that of their agents.

5. To develop, with due regard for the health, safety and well-being of the individual, the required output of industry is the common social obligation of all engaged therein. The restriction of productive effort or of output by either employer or employee for the purpose of creating an artificial scarcity of the product or of labor is an injury to society.

6. The wage of labor must come out of the product of industry and must be earned and measured by its contribution thereto. In order that the worker, in his own and the general interest, may develop his full productive capacity, and may thereby earn at least a wage sufficient to sustain him upon a proper standard of living, it is the duty of management to co-operate with him to secure continuous employment suited to his abilities, to furnish incentive and opportunity for improvement, to provide proper safeguards for his health and safety and to encourage him in all practicable and reasonable ways to increase the value of his productive effort.

7. The number of hours in the work day or week in which the maximum output, consistent with the health and well-being of the individual, can be maintained in a given industry should be ascertained by careful study and never should be exceeded except in case of emergency, and one day of rest in seven, or its equivalent, should be provided. The reduction in working hours below such economic limit, in order to secure greater leisure for the individual, should be made only with full understanding and acceptance of the fact that it involves a commensurate loss in the earning power of the workers, a limitation and a shortage of the output of the industry and an increase in the cost of the product, with all the necessary effect of these things upon the interests of the community and the nation.

8. Adequate means satisfactory both to the employer and his employees, and voluntarily agreed to by them, should be provided for the discussion and adjustment of employment relations and the just and prompt settlement of all disputes that arise in the course of industrial operation.

9. When, in the establishment or adjustment of employment relations, the employer and his employees do not deal individually, but by mutual consent such dealing is conducted by either party through representatives, it is proper for the other party to ask that these representatives shall not be chosen or controlled by, or in such dealing in any degree represent, any outside group or interest in the questions at issue.

10. The greatest measure of reward and well-being for both employer and employee and the full social value of their service must be sought in the successful conduct and full development of the particular industrial establishment in which they are associated. Intelligent and practical co-operation based upon a mutual recognition of this community of interest constitutes the true basis of sound industrial relations.

11. The State is sovereign and cannot tolerate a divided allegiance on the part of its servants. While the right of government employees, national, state or municipal, to be heard and to secure consideration and just treatment must be amply safeguarded, the community welfare demands that no combination to prevent or impair the operation of government or of any government function shall be permitted.

12. In public-service activities the public interest and well-being must be paramount and controlling consideration. The power of regulation and protection exercised by the State over the corporation should properly extend to the employees insofar as may be necessary to assure the adequate, continuous and unimpaired operation of public-utility service.

Good Time to Purchase Burlap

An American contemporary publishes the following tip to upholsterers: Long-headed manufacturers will take advantage before it is too late of the tip which has gone out to purchase burlap now. From every indication the lowest point has been struck, and the tendency of the commodity from now on will be an upward one, the usual increase in demand which comes along about this season of the year being in part responsible. There seems to be no question but that burlap will be much higher in price in four or six weeks than it is at the present.

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Fumed Oak Growing in Popularity

How This Effect is Secured—Stain and Fume-box Methods Described—Finishing Pollard Oak

By John N. Moore

There are fashions in furniture and fads in wood finishes. This fall the popular taste seems to be leaning toward the fumed oak finish. There are several methods of producing this finish. The advantages of fuming are that a more natural color is obtained than by staining, the wood is not made rough by operation, and there is also a great saving in labor.

There are materials on the market which will give the fumed oak effect without the expensive process of building or using the fuming cabinet. There are especially prepared fuming liquids offered, which equal in practicability every respect the effects obtained by the old fuming box method. It is a liquid which acts with the acids in the wood and produces on red and white oak that particularly beautiful brownish effect which has become so popular. These practical fuming liquids strike into the wood, but do not change the color in the pores. All high lights are retained in rich, dark shades.

New Fuming Stain

There is at least one material, called New Process Fuming Liquid, which has no disagreeable odor and is harmless. Nothing seems to affect the finish. You may even thoroughly sandpaper it without cutting through. A great variety of shades are procurable by varying the quantity of water or alcohol, either of which may be used in thinning. All that is necessary is to apply a thin coat, sandpaper and shellac, after which a finishing wax should be used for best results.

Back in forty-nine they came out west in prairie schooners,—now we have the twentieth-century limited. We used to do all our work with a quill pen,—now we have the typewriter, and even an adding, subtracting and dividing is done by machine. Just so, there are new methods in finishing furniture, and this New Process Fuming Liquid forms a quick, easy method which contributes to profit in the sale of the finished product. It also enables the furniture manufacturer to sell at a lower price.

Fume-box Method Popular

There are many, however, who are using the old fuming box in preparing the best grades of furniture. The best method perhaps, is to construct an air-tight chamber lined with wood, and the joints of the wood made air tight by pasting strips of paper over them. A chamber, say 9 x 4 x 6 is large enough for most purposes. Portable inter-frames may be made with shutters so that the sides of the chamber may be made smaller if necessary. Doors of these chambers should have glass panels to permit of the work being carefully watched. Article to be fumed should have all brass removed and then be placed in the chamber in such a position as to allow a free passage for the fumes to get to all parts of the wood. A half-dozen saucers should be placed on the floor at equal distances and pour into each 1/4 lb. spirits of ammonia —the strength of the ammonia should be about 880.

Wood will darken much quicker in hot weather than in cold, and if a very dark color is required it may be necessary to recharge the chamber after twenty-four hours. A good color for all practical purposes, however, is generally produced in about five hours. You will note that the wood will always become a little lighter after being taken from the fumigating chamber, consequently, work should be proceeded with as soon as taken out. If parts are too dark do not oil them—all other parts should be oiled at once and given a coat of wax. When dry sandpaper well with about No. 1 grade, and wax or French polish with the grain open as in the case of stained dark oak.

Special Box for Small Articles

Smaller articles may be fumed by simply making a much smaller air-tight compartment, and place a piece of felt on the level floor surface. Stand articles to be fumed on the felt and fill a saucer with about 1/4 lb. spirits of ammonia, then cover the whole box tightly and place weight on top to keep the fumes from escaping.

What is known as Pollard oak may best be treated by first oiling it and then applying a coat of polish, then rub down with No. 1 sand paper and wax and polish. Sometimes Pollard oak has large cracks on the surface, these must be filled and stained to match the wood. You see the ammonia does not touch the wood, but the fumes act on the tannic acid which the wood contains, and browns it so deeply that a shaving or two may be taken off without removing the color. The ammonia, therefore, you will note, has great penetrating power. The depth of the shade depends upon the quantity of ammonia used, the time the wood is exposed and the condition of the atmosphere, whether hot or cold. The wood will present no noticeable change until oiled or brought in contact with certain substances, such as shellac.

White and black ash, also chestnut, treated in the above manner, will also give a fair imitation of fumed oak. The material also should be hard wood with as open a grain as possible.

Variations of Fumed Finish

Another process producing a fumed oak effect is as follows: The work in hand should be sandpapered and the surface perfectly clean. Give the piece a priming coat of one part japan, one part raw linseed oil and one part rubbing varnish. Then add to a half gallon of this combination one pound of commercial cornstarch. To this add one pound good dry Turkish umber. When this combination is thoroughly mixed, apply a good flowing coat which acts as a sort of a primer. This should be allowed to stand until set and penetrated well into the grain of the wood. After this has been accomplished scrape off any surplus, crosswise of the grain, let the piece stand, and later wipe off with a rag. After this operation has been completed it will be found that the open grain has

absorbed the starch and umber, and these portions show a dark shade suggestive of age, while the rest of the surface is slightly darker. After the job has become thoroughly dry you can give a coat of rubbing varnish which is prepared by adding 1/2 lb. of starch to each gallon of varnish. This will completely fill the wood. After it is dry proceed to varnish, rub and finish the work in the usual manner. If you want to produce a natural oak finish follow the same method as outlined above, but omit the umber. This leaves the wood in the natural color.

Another method which produces an attractive fumed finish is effected by simply spreading on the surface of the work a concentrated solution of permanganate of potash, this being allowed to act until the desired shade is obtained. Five minutes is usually all that is necessary to give a good color. When action is terminated the wood should be carefully washed with water, dried and waxed, or polished.

You will find in the above several methods, but we would recommend the use of either the old-time fuming box system or some of the fuming liquids which are supplied by the better known paint and varnish manufacturers.

Securing Satisfactory Results With Walnut

Many Different Shades Produced—Formulas for Water Stains—Suggestions for Standardized Finish—Touching Up Sap Streaks

By W. W. Wilman

When looking at the walnut furniture offered for sale at the different retail stores, one is confronted by a wide range of shades and finishes, varying from a light brown to almost a black shade. Some of these finishes are attractive but in some respects it is unfortunate that some effort has not been made to work out a standard shade for this beautiful wood.

In the opinion of the writer a nice rich brown makes the most attractive finish for walnut. Some of the darker finishes give a pleasing effect but tend to obscure the grain. A finish to fulfill its real purpose should bring out and emphasize the beauties of the grain of the wood to which it is applied. This cannot be done by applying a very dark stain and filler. Some pleasing effects are secured through some of the lighter shades, the slightest of these usually being secured by bleaching the wood, but for general all-around attractiveness it is hard to surpass a rich brown shade.

How Walnut is Finished

The method in vogue in many of our woodworking plants is to first apply a coat of suitable walnut stain, usually by brushing, then a wash coat of thin shellac, to fix the grain that has been raised by the water stain. The surface is then sanded and filled. After filling a coat of shellac or lacquer of some kind and two or three coats of varnish are applied. Each coat of varnish and shellac is well sanded before the next one is applied.

There are many different formulas for walnut stain and it is not so much a question of the stain that is used as the result that is secured. One of the stains in common use is made up as follows: Walnut crystals 12 ozs., carbonate of soda (dried) ½ oz., and water 1 gal. Use hot water in mixing this solution and strain or draw off the clear liquid. If this stain is to be used on soft wood, it will probably be found advisable to vary it as follows: Walnut crystals 10 ozs., bicromate of potash ¼ oz., and water 1 gal. A stain for softwood should have a good penetrating power.

Suggestion for Standard Shade.

A well-known American authority on finishing has worked out a formula for a stain which he suggests might be adopted as standard for walnut. It is, loutre 1 oz., mahogany brown ½ oz., yellow 9803 1 oz., sulphur brown 12 ozs., lye ½ oz., and water 6½ gallons. In this stain the yellow is used to kill the blue that is so often encountered in walnut, specially on veneered work. The loutre is well known to finishers, being dark brown in color. Mahogany brown is about the same shade but must not be confused with brown mahogany, which is a mixed mahogany stain. The sulphur brown is much the same shade as walnut crystals so that simplifies the mixing of a stain to where a suitable shade of brown and a suitable shade of yellow, when mixed in certain proportions will give the desired result.

A good filler may be made from powdered silex as described elsewhere in this issue. It should be colored as near the shade of the wood as possible, taking care not to make it too light. Van Dyke brown is a good color for mixing with the filler. Sometimes the work will be found to be too light after being filled. When that occurs, another coat of the stain will correct the shade.

Each Coat Must Be Watched.

The subsequent coats of shellac and varnish may vary the shade, so that even though the correct color was obtained in the filling and staining the finished shade may be off slightly. This may be corrected by carefully choosing the varnish and shellac and perhaps mixing light and dark material to secure a proper effect.

In the finishing of walnut, sap streaks are often encountered and at times give considerable trouble. There are many different methods employed in overcoming these streaks from applying a thin glue size, to the use of a solution of ordinary common salt. Some advocate the use of a thinner or lighter stain on the streaks, but that is not entirely satisfactory owing to the difficulty experienced in working two stains on the one surface. It is an operation requiring considerable skill, as it is hard to blend two stains on one surface so that difference in shade and overlapping will not be noticeable.

A simpler way is to moisten the sap streak just before staining and then work the regular stain out lightly over the streaked portion with a damp brush. The success of the whole operation depends largely on the skill and experience of the finisher. A little experimenting along this line will soon develop good judgment and skill.

The white lead in the keg should be covered with water, but the water should be changed occasionally, as rust occurs in the sheet-iron containers now used. Zinc white should not be covered with water, which hardens it, but with oil.

Demand is for High Class Finish

Important Points to Consider—Application of Stains and Filler—Spray Machine Efficient Tool—Poor Machining Reponsible

By D. Johnson

The readers who have been in the furniture manufacturing business for twenty, thirty or forty years will remember the old time ways of constructing and finishing furniture. You remember the old time finishing room foreman who would mix his stains by the rule of thumb method, a little of this, a little of that and a little of the other. If the combination did not make the shade of stain desired, another batch would be made and hours of valuable time as well as expensive material wasted. It is to be regretted that one will to this day find many finishing rooms of the type mentioned. However, it cannot be denied that considerable progress toward improved methods of finishing has been made during the time mentioned in our successful and progressive furniture factories.

The quality of finishing demanded by the buying public today should prove to every furniture manufacturer the importance of "perfect finish." Of course, in order to apply a perfect finish the finishing room must be modern, the material used the very best that money can buy and the wood on which the finish is applied absolutely dry.

Conditions Have Changed Considerably.

I cannot understand why some manufacturers will buy any and every modern wood-working machine that will cut the cost of their production, have modern factories, efficient cost systems and good mechanics to manufacture their furniture but they very much neglect one of the most important processes of furniture making, i.e., the dry kiln and the proper condition of the lumber before it is cut up for the purpose of making furniture. Those of you who have had actual experience in manufacturing furniture or pianos all know what green or partly dried lumber will do in the way of a joint. Imagine therefore what will happen to wood exposed to a temperature in the varnish drying room of 120 degrees Fahrenheit. Some of you wonder why your pieces check after varnished; why joints do not hold up, and you may have claimed that the wood is fairly possessed. You declare that the varnish drying system you are using is no good and, as I know some of you have wone, decide to do without it. This does not, however, solve your problem.

When your and my grandfather were boys, houses were not heated with furnaces, water heating systems or steam plants. The good old mother had a small stove in the kitchen and when company came on a Sunday the best room would be heated. Today nearly all houses are heated to from 70 to 85 or 90 degrees, so you can imagine how partly dried wood is going to stand up under those conditions. The importance of this should be appreciated by every furniture manufacturer, regardless of the size of his plant.

Suggestions for the Finshing Room.

One will find many original kinks in finishing rooms for the purpose of reducing the cost of labor. One of these is to apply water stain with a sponge instead of a brush. There is no doubt that stain can be applied by this method more quickly than with a brush. However, is it not a fact that the quality of the finish is likely to suffer? Do a little experimenting. Stain a pretty fair-sized board with a polar bear hair brush. Stain another board with a sponge. You will find the sponge-stained board to be streaky. Not so, however the one stained with the brush. Of course, if you manufacture very, very cheap furniture where low price is the object, and you can get away with sponge-stained work, that is up to you. Why not dip your furniture?

Where water stains are applied a sufficient amount of time should be allowed for drying. We know that water stain expands the fibre of the wood. This proves that all moisture must be thrown off and the pores resume their natural condition. Unless this is done, the shrinkage will continue long after the goods are finished.

Sanding Requires Consideration.

It is to be regretted that so little attention is given to the sanding of the wood before it is finished. Of course, modern sanding machines have been installed in most up-to-date plants, but sometimes work will need a little touching-up. Again, this sanding must be done with, not against the grain. Some of the woods used in furniture making are hard to sand. In some woods the structure is tough, hard and pithy. In others, short and stock fibres. Attention must be directed to the planer and sander. A few minutes' time spent frequently in sharpening planer knives is a good investment. Again, if you expect good work from your sander you must keep it properly adjusted. Care in handling the work and doing it properly will save your finishing department an enormous amount of work as well as unnecessary annoyance and expense.

As to fillers, some finishers have the mistaken idea the thicker the filler the better. Of course, thick filler may be necessary on very coarse woods, but there is such a thing as being too thick. Every expert finisher will tell you that two thin coats are better than one thick coat of filler. The wood should be filled completely so that it will not be easily affected by moisture or any atmospheric influences.

Equipment for Preparing Water Stain.

As to the water stain solution, we know that all solvents are more effective when heated. So many finishers make the mistake of dissolving stains in cold water. In most finishing rooms they have no equipment at all, so to speak, to prepare stains. Water as well as oil stains should be dissolved over a hot water bath. Your stain material must be in a state of solution, free from suspended matter. By all means stir your stains before using. Where oil stains are used, liberal quantities of such solvents as benzole, acetone, wood alcohol, etc., should be carried in stock.

Sprayers for applying varnish are now found in nearly every modern finishing room. The use of the sprayer, as every manufacturer will tell you who has used them in his finishing rooms, is without question economical. Some may argue that the sprayer wastes varnish, this may or may not be true, depending upon the class of work varnished. But one thing I believe

is certain, and that is that the amount of material wasted does not anywhere near amount to the saving in labor cost. This is especially true on irregular work. A charge against brush work is: Too much brushing out impairs the lustre of the finish coat. Again, some varnishers do not exercise care in keeping brushes and pots clean and as a result the job to which the varnish coming from such cans or applied with such brushes is compelled to suffer.

Allow sufficient time between coats for drying. We have stated in former articles that so many finishers seem to suppose that the last two coats should dry a long time and they will frequently apply the first two coats within ten or twenty-four hours. Every coat must be hard before the next one is applied.—American Furniture Manufacturer.

Canadian Paint and Varnish Industry

According to figures recently issued by the Dominion Bureau of Statistics, for the year 1918, the paints and varnishes manufactured in Canada during that period had a value of $17,678,049, while the raw materials used totalled $9,203,530. With regard to varnish the production increased from 1,577,009 gallons in 1917 to 3,317,069 gallons in 1918, with a selling value of $3,764,555.

Satisfactory statistics relating to the prices asked for paints and varnishes are only objectionable by reference to the trade journals, in which quotations are given for the many grades. Cheap rosin furniture varnishes sold at about $1.10 a gallon in October, 1918, while the finest long oil spar varnishes commanded prices ranging up to $5 a gallon. Mixed paints at that time averaged about $4 on one-gallon can basis.

Products of Industry.

Kind.	Quantity.	Value.
Linseed oil, boiled and refined (sold), gals.	$ 113,256	$ 211,336
Paints in oil (ready for use), gals.	7,483,893	8,613,973
Paste paints, lbs.	33,500	3,460
Colors, in oil and Japan, lbs.	27,800	5,142
Varnishes, all kinds, gals.	3,317,069	3,764,555
Japans and lacquers, gals.	209,249	251,856
Shellac, gals.	81,704	309,975
Stains, gals.	216,274	275,665
Dryers, gals.	105,868	105.401
White lead, dry, lbs.	4,030,367	473,922
White lead, in oil, lbs.	11,874,260	1,545,918
Lampblack and other carbon, black, lbs.	62,939	6,878
Oxides of lead (litharge, red lead, etc., lbs.	2,432,936	268,624
Iron oxides, lbs.	748,750	44,925
Dry colors, lbs.	335,000	404,770
All other pigments, lbs.	3,535,813	404,770
Barytes, lbs.	1,236,000	12,400
Putty and other fillers, lbs.	5,178,405	280,581
Asphaltic, pitch and tar products, lbs.		38,463
All other miscellaneous products, lbs.		982,280

Amount of Exports.

Exports from Canada of paints, varnishes and materials used in the paint and varnish industry, are given in detail below:

Articles exported.	Quantity.	Value.
Cobalt oxide and Cobalt salts, lbs.	588,229	$ 853,737
Mineral pigments, iron oxides, ochres, cwt.	15,389	18,377
Paints and varnishes of all kinds		1,239,999
Total value		$2,122,113

A survey of this industry covering the year 1919 is now in course of compilation. It is anticipated that the figures for 1919 will show a very satisfactory improvement of those given above.

Safety is sound sense and good business, says the Safety League.

Speed and System in Staining

"Know the stain you are using" is a word of advice which every finisher should heed. Different stains have different characteristics, and the best results can be obtained only when the finisher adapts himself to the requirements of the stain he is using.

Speed is essential in applying stains, whether oil, acid, spirit, or water stain; otherwise a uniform depth of color cannot be expected throughout the surface. On veneer work, unless the surface is covered in the least possible time, the brush may work up the glue that has been squeezed through to the outer edge of the pores.

Staining should be done systematically. By staining the unimportant parts first, such as the back, bottom and inside first, any stain that runs over an edge and gets on the important parts while they are yet in the white, will be lifted and worked out when the regular coat is applied. If the prominent parts were stained first, stain which might get on them would be liable to show up after the goods were varnished.

Have a place to begin staining and a place to finish staining. To illustrate, take a side board. As most finishers work to the right, the place to start is at the top of the left hand gable. As you stain the gable, also stain the edge of the top, wiping it off immediately to prevent it from becoming daubed and spotted. The edge and inside of the pilaster should be stained next, then the front edge of the top, wiping it off immediately and proceeding downward to the drawers and drawer divisions, up the truss and pilaster on the other side, around to, and down the right hand on the edges of the top which have already been stained and wiped off to give them the same depth of color as the case.

While we have taken sideboards for the sake of illustration, there is a logical sequence in which the parts of every other article of furniture should be stained. This order can be determined by a little study. The best method is to stain first the parts on which there is the least chance of stain running down from other parts. It is also obvious that the unimportant parts which do not show should be stained first, because if any surplus stain from other parts runs on them, it will not matter. By determining the quickest and best way of handling every article of furniture to be finished, better results will be obtained and more work accomplished.—"Finishing Facts."

Gasoline Fumes High Explosive

A man is quite interested in building before he takes the trouble to have an estimate figured and in the great majority of cases he is a "live" prospect. This being the case, are we not falling down on our salesmanship when we are unable to close with nearly half of our customers? We would like to know the exact reason why we failed to sell every estimate that was cancelled. This information would enable us to find the weak spot in our selling methods. We have sent out a letter to a number of our yards asking for full information on these estimates that were cancelled. If you received these, we hope you will take great care to answer them as fully as possible. If you are in doubt about any of them, ask the man for whom you figured the estimate, just why he did not go ahead with the building, and report the facts to us.

A very fast-running spindle needs a light and pliable belt.

THE PRICE OUTLOOK

In Paint and Wood-Finishing Materials

MARIETTA WOOD FINISH SPECIALISTS

Linseed oil is not as high as it was. Some people think this should mean an immediate drop in prices of paints and wood finishing materials. It is only necessary to look at the facts to see that there is no ground for such a conclusion.

How Linseed Oil Affects Paint Cost

Paint is two-thirds pigment and one-third vehicle. This one-third is made up partly of linseed oil and partly of the necessary dryers. So that less than one-third, even of the highest grade paint, is linseed oil.

The other two-thirds consist of pigments and coloring materials. These were never known to be so high.

Lead never was so high and there is talk of another advance. There is not enough available to supply the demand, at any price.

Dry colors are scarce and advancing.

Turpentine is 300% higher than during the war.

Stains and Fillers

When it comes to stains and fillers, such materials as benzol, toluol, alcohol, dyes, etc., are abnormally high with no reason to expect a downward movement.

As to wood filler, it takes a twenty-five cent drop in linseed oil to justify a quarter of a cent drop in filler with other things normal, which they are not.

Containers are higher than ever and harder to get. Packing cases ditto, with prices advancing.

Labor—well, you know about that.

Freight Advance Gets Us Going and Coming

Then there's transportation. The rate increase recently allowed by the government gets manufacturers going and coming. They must pay it once on their raw materials and again to get their finished products to the consumer. To say nothing of the increased cost of traveling men to visit the trade.

Order Early to Get Service

There is no reason whatever to put off buying at present prices, and with present day embargoes on shipments, the earlier you can order, the better your chances of service.

So far as we are concerned, we shall welcome the first opportunity to reduce our prices if it can be done on the logical basis of lower costs of production and distribution.

The Marietta Paint and Color Co.

Marietta, Ohio

Southern Factory, High Point, N.C.

How Filler Should be Handled and Applied

Trouble Encountered from Light Pores—What Makes Best Fillers—Should Work Easily and Freely—Advantage of Shellac Wash

By Harold Sutton

In applying filler to a wood it is usually desirable to have the pores show as dark, if not darker, than the wood itself when the article is finished. Sometimes, seemingly in spite of careful, painstaking work, the pores show up light and many finishers are at a loss to account for this fault, as they do not see where they slipped-up.

This trouble is not peculiar to any one wood, but is as likely to occur when finishing oak as when finishing mahogany, so that the suggestion made in this article may be applied in a broad way to all woods.

A finisher recently stated that the pores in some mahogany pieces he had just finished were showing up light and after the pieces were finished. He said he had proceeded in the usual manner, viz., stain, wash shellac, filler, shellac, varnish, etc., and did not quite see why, in this particular instance, he should be troubled with light pores. An examination of the finishing material showed that the stain used was just a trifle darker than the filler which was applied. It was a newly-mixed lot of stain and the slight difference in shade between it and the filler escaped notice. One would naturally think that this trouble would have been remedied readily, as anyone should know that a light filler would result in light pores.

Should Be Shade Darker

It is advisable to use a filler that is darker than the stain. When this is done, there need be little or no worry on the score of light pores. There is another reason why the filler should be made darker than the stain and that is as the oil is evaporated or absorbed into the wood, the filler turns lighter, thus though in the first instance it might have been the same shade as the stain, when thoroughly dry it is likely to show up a trifle lighter. This is more noticeable when a wash coat of shellac is not used on top of the stain. The shellac has a tendency to seal the walls of the pores and thus prevent the oil of the filler being absorbed into the wood. In this way the filler is preserved so that when dry it retains its original color. If the filler is to be used on a surface that has been stained but not given a coat of wash shellac, a slightly larger proportion of oil should be used. This extra oil will take care of a certain amount of absorption and evaporation.

Another important item to watch when using filler is to see that the material is kept well stirred. If this is not done, the first of the filler used will contain too much oil and the latter part too little. This often accounts for the grey, cloudy effect sometimes noticed on mahogany. The heavy material in the bottom of the can was too thick and did not contain sufficient oil. A filler should be so prepared that it will harmonize in color with the general scheme of finish.

When Filler is Too Thin

Every finisher knows that the filler should be rubbed across the grain. If this is not done, the material is worked out of, instead of into, the pores. If it settles into the pores, as it dries, leaving a slight depression, it usually indicates that the filler was too thin. On the other hand, if it lifts out when being rubbed off, it means that the filler lacked sufficient binding. The addition of some japan, say, a pint of japan to a gallon of filler, should stop this lifting out.

It might not be out of place to make a few remarks regarding the ingredients of a good filler. While certain vegetable compounds, such as starch or flour, are often used for this purpose, the best filler is that which is made from some substance which does not shrink or swell, will not absorb any of the vehicle used to bind and thin, should be impervious to moisture and water, and should not be affected by changes in temperature. Another very desirable quality is weight. The filler should be heavy enough to settle into the pores of the wood and heavy enough that it will not carry any air into the pores. These desirable features are found to a greater extent in powdered silex than in any other material. Whiting, china clay, resins and lime are commonly used, but it is extremely doubtful if a filler compounded from any one of these ingredients, can compare with that made of silex.

Mixing Filler From Silex

In making a filler from silex, the material is usually stirred into a mixture of boiled oil and turpentine (mineral turps may be used) until a homogenous mass, of the consistency of heavy paint, is formed. The color, which is preferably ground in oil, is thinned down so that it will pour readily and then thoroughly stirred into the paste. This may then be thinned with naphtha to the desired consistency.

Filler should be thinned so that it will work easily when applied. Some maintain that it should not work easily, but a filler cannot do this work satisfactorily unless it does work easily. If it is too thick and stiff, it will work or roll out of the pores while being rubbed off. When properly mixed, it will clean off easily, and cut clean, leaving smooth, level pores. A good filler may be cleaned easily between thirty minutes and three hours after it is applied, should dry in twenty-four hours and harden thoroughly in forty-eight hours.

If you should have trouble in staining yellow pine with a water stain, the wood not staining evenly, take a rag or sponge and damp it with water and rub those parts that do not take the stain well. A little denatured alcohol in the stain will help it to penetrate better.

When priming wood, use the paint liberally and rub it well into the wood, especially the sappy places, where the paint naturally sinks in. Better touch up such places, when the priming coat is dry, with paint or shellac. This will give a more uniform or solid surface.

In preparing a lead and zinc paint, mix the two pigments separately, after which mix well together, adding the zinc to the white lead slowly, and stirring well. The lead being heavier than the zinc, the tendency is for the lead to separate from the zinc; hence the paint must be mixed in the pot now and then.

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Mr. Paul Weaver sanding one of the corners of a heavy hard wood picture frame. Eight hundred corners like this each week!

Too Good is Good Enough!

Kafka, Speed-grits salesman, was worried.

This was the fourth time he had called on his good customer Paul Weaver, of the Weaver Art Shop, Allentown, Pa., makers of fine picture frames. And this was the fourth time he had received the cool and distant message "Mr. Weaver doesn't need any more Speed-grits discs."

"Something wrong," thought Kafka. "I'll camp on this job until I get the answer straight from Weaver."

An hour passed. Two hours. Then—in from the shop sauntered Mr. Weaver. "Hello Kafka, still here? What's up?" "Just what I want to know," queried the salesman. "What's wrong with our goods? Why don't I get any more orders?" "Wrong?" said Weaver, "Wrong? Come out here—"

"See that disc?" Weaver pointed to a Manning Speed-grits Garnet Combination Disc which was whirring busily. "Six weeks service from that fellow and it's still good. I make more than a hundred frames a week from moulding running from ½ inch to 4 inches in width—some hardwood, some soft, some composition harder than any wood. Each frame has eight corners that must be sanded. That's 800 pieces a week and yet I run one Speed-grits disc six weeks without a change. Reason enough why you aren't getting orders. Speed-grits is too good."

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Don't say sandpaper—say Speed-grits

The above photograph shows the Nichols Equipment installed in the works of the Votey Organ Company, Garwood, N.J. These dryers may be used to turn out automobile bodies, furniture, pianos, talking machines, etc., in as many days as it formerly took weeks, and the finish is better, for it is dried scientifically, from the inside out.

If not already Nichols equipped, you owe it to yourself at least to investigate, because:—

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2—It will decrease congestion in your factory.

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We will analyze your particular conditions and then make you a proposition on an equipment that we know, from our extended experience, will save you time and money, as well as improve your product.

We guarantee fully the efficiency of the equipment as well as its mechanical construction. Every installation has been successful. There are hundreds of concerns to whom we can refer you.

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A cleaner and more uniform coating of every material is applied—there are no brush marks, thin spots or fatty edges.
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Equipment is kept in the best working condition at practically no cost.
The Aeron System is sold on a strictly guaranteed basis, and every installation followed up by a competent service organization.

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Veneers and Panels

Can Warping of Panels be Prevented?

Equalization of Strains Cause of Warping—Elimination or Absorption of Moisture Starts Movement—How Warping May be Overcome

By S. H. Johnstone

One of the most persistent troubles encountered in the manufacture of veneered products is warping and twisting. This is especially true where thin ply wood panels are being produced. Before an intelligent attempt can be made to prevent warping, one must have a clear idea of what causes wood to move and twist or particularly what causes built up stock to exhibit such a strong tendency to buckle and give trouble.

Warping, cupping, twisting and other similar troubles are caused by unequal strains and stresses in the wood itsef. These forces tend to release or equalize themselves, with the result that the piece warps or moves in one way or another. These stresses are set up or released, primarily, through the absorption or elimination of moisture, so that moisture may be taken as the prime cause of all warping or twisting.

Latent Stress in Flat Panel

Take the case of a panel that has been held true and flat until it is thoroughly dry. Someone might say that certain parts of that panel are under tension and yet it stays perfectly straight. Subject that piece to a change in atmospheric conditions so that moisture will either be absorbed or eliminated and see what happens. When the piece was dried flat the fibres became set in that shape and consequently did not move. As long as conditions did not change they were able to resist all internal strains, but as soon as the slightest movement took place certain tensions were released that would result in bucking.

The reason why warping takes pace when any strains or stresses are set up or released is that the different forces which exist in the piece of wood or panel tend or strive to reach a state of stabilization or equalization. That is, the stronger forces act on the weaker parts until an average pull is attained. Naturally the piece is pulled and twisted until these forces reach a state of equilibrium. The solution of the trouble would be to build a panel that would be flat when all strains are equalized or stabilized. If this were possible such a piece of plywood might start out warped and buckled and straighten itself as the moisture was removed.

Texture and Strength of Plies

This is why so many veneer men pay so much attention to the texture and general characteristics of the stock they lay on either side of a core. If two pieces of oak of even texture and strength are glued on either side of a piece of thin core, it is logical to assume that the strain or pull would be about equal on each side. That is provided ordinary care was exercised in the laying and drying operations. Take another panel and glue on two pieces of oak, but put them on so that the grains on either side do not run exactly parallel. Now what happens? While the strain on each face may be equal the two pieces are not pulling in the same direction. Therefore the pull of one side does not counteract that of the other so naturally, warping and twisting will result.

Two preventative measures that will suggest themselves are to use materials, on opposite sides, that are practically the same in texture and strength and to see that the grain of opposing layers are running parallel to each other. These remedies may seem simple, yet a large percentage of warped panels may be traced directly to the fact that one or both of the above suggestions has been overloked or neglected.

Different Woods May be Used

In selecting stock to be applied to opposite sides of a panel it is not absolutely necessary that the same wood be selected. The strength and texture of the material is the important factor. The accompanying table shows the relative strength of the ordinary commercial woods. By using wood of different species, but of the same relative strength, on opposing sides of a panel, satisfactory results should be secured. Thus Douglas fir could be employed for the back of a panel having oak on the face or white ash and black walnut could be used. Emphasis should be placed on the strength of the wood applied to each face rather than on using the same wood. Two pieces of oak might vary in density and strength and if used in opposition to each other would likely cause trouble. It is the comparative strength and density that counts.

Relative Strength of Woods

Birch is used as a standard and given a value of 100.

Wood	Strength	Wood	Strength
Yellow birch	100	Cotton gum	85
Basswood	58	Red oak	90
Cottonwood	62	Douglas fir	91
White pine	62	Cherry	93
Yellow poplar	65	Beech	94
Chestnut	65	White oak	97
Red spruce	66	Longleaf pine	101
Sycamore	76	Sugar maple	106
Hemlock	70	White ash	106
White elm	80	Black walnut	110
Red gum	80	Cork elm	110
Black gum	81	Shelbark hickory	120
Cypress	80	Black locust	160

Symmetrical Construction Desirable

Much is heard of the symmetrical construction of panels so as to secure an even balance. This is usually secured by using an odd number of plies. Not only that, but these plies should be arranged so that the grain of any two opposing plies should be parallel. This is a point to which little attention is given, yet it is a most important one.

Numerous experiments have been made to determine the result of not keeping the grain of two cor-

responding layers parallel. It was found that a deviation from the parallel as small as five degrees may account for considerable twisting. A test panel was glued up in which the grain of each face ran at 45 degrees to the core and at 90 degrees to each other. The resultant panel twisted so badly that two of the corners nearly came together. This demonstrated, beyond the shadow of a doubt, the necessity for building plywood as symmetrically as possible.

Next month, if permitted, the writer will cover another phase of the warping question, dealing with the core, application of glue and the drying of panels.

Are Western Woods Suitable for Cores?

Choice of Core Stock Important Question—Character of Wood and Percentage of Clear Cutting—Result of Experiments with Western Species

By Philip Coye

In discussing the high prices being asked for the woods most suitable for core work, a writer in the "Furniture Manufacturer & Artisan" has this to say:

The prevailing high prices of woods commonly used for core stock, together with the fact that they are becoming scarcer, emphasizes the necessity of securing suitable substitutes. At the present time, three possible solutions of this problem present themselves: First, the use of some material other than wood, and, of course, less expensive. Second, the use of other and cheaper species than are now being used, and third, the use of other species which although their first cost is about the same, will give clearer cuttings per M feet.

As but one substitute other than wood has been brought to public attention, — a wooden wallboard which has not demonstrated its suitability to any great extent, we can pass over this possibility without further comment. The second suggestion is practically worthless, as there is no lumber now on the market cheaper than the species being used, which will furnish satisfactory cuttings for core stock. The third suggestion seems to embody the only logical means of relieving the situation.

Comparative Ratio of Shrinkage.

Eastern Hardwoods.

	Shrinkage from green to oven dry		Specific gravity based on oven dry volume
	Radial	Tangential	
Chestnut	3.4	6.7	.46
Gum	5.2	9.9	.53
Poplar	4.1	6.9	.42
Basswood	6.6	9.3	.40
Maple	4.8	9.2	.66
Birch	7.4	9.0	.66
Average for all eastern hardwoods	5.2	8.5	.52
Total average shrinkage, both radial and tangential		13.7	

Western Conifers.

Western hemlock	4.5	7.9	.43
Douglas fir	5.0	7.9	.52
White fir	3.4	7.0	44
Redwood	2.7	4.2	.43
Sitka spruce	4.5	7.4	.37
Western yellow pine	3.9	6.4	.42
Average for all western conifers	4.0	6.8	.44
Total average shrinkage, both radial and tangential		10.8	

There are several woods growing in abundance in the west, which meet the requirements of panel core stock. They are in the main low density woods having a low ratio of expansion and contraction. A study of the accompanying table, which is taken from the United States Forest Service Bulletin No. 556, forms a basis of comparison between eastern hardwoods and western conifers. The table demonstrates an average specific gravity based on oven-dry volume and a shrinkage from green to oven-dry ways of commonly-used eastern hardwoods and of several western species of conifers.

Some experiments as to the suitability of western woods for panel core stock were conducted recently by the writer. The following species were prepared for cores,—13/16" by 12 x 12 and contained an average moisture content of about 9% when glued. Western hemlock, Douglas fir, white fir, redwood, sitka spruce and western yellow pine. Panels were made in three and five plies, using largely 1/20 yellow poplar for crossbanding and 1/20 birch for face stock. A common casing glue was used, as some of the tests were made in moist air conditions, and it was desirable that there be no open glue joints from that cause. After glueing and being allowed to stand twenty-four hours in the retaining clamps, the panels were dried in a Tieman kiln under the following conditions: Temperatpre 120 degrees F., humidity 46%.

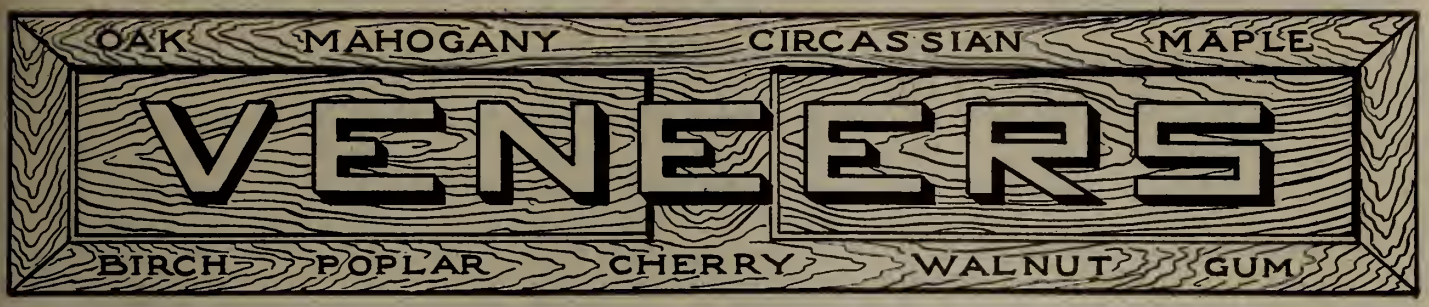
Satisfactory Results Secured.

After twenty-four hours under these conditions, the panels were removed, tested for moisture contents and examined for defects. There seemed to be no warping checks or other faults present, and all the joints were tight; in fact, each panel was in excellent condition and has remained so under ordinary atmospheric conditions. The cost of most of the conifers, delivered in Chicago, is at the present not any lower than that of eastern hardwoods. However, a 66% clear cut is all that can be obtained from a No. 1 common grade, and 50% from a No. 2 common of the latter woods, while, according to the best advices No. 1 common, Douglas fir, will cut 95% clear and No. 2 common between 60% and 70%.

From the standpoint of efficiency, there seems to be no reason why the western woods cannot be used for panel cores. They glue well, dry easily and have a low density and shinkage ratio. What remains to be done is for the eastern manufacturers to do a little experimenting and satisfy themselves as to the economy and suitability of western woods for panel work.

Data on Design of Plywood for Aircraft

This report gives the results of investigations made by the Forest Products Laboratory of the U. S. Forest Service at Madison, Wisconsin, for the War and Navy Departments. Sufficient discussion on the mechanical and physical properties of plywood is included so that the data may be intelligently used. The data, although primarily intended for aircraft design, have a broader field of application. A copy of Report No. 84 may be obtained from the National Advisory Committee for Aeronautics, Washington, D.C., upon request.



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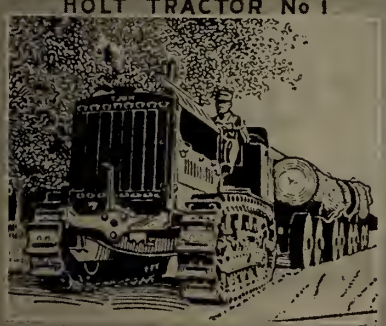
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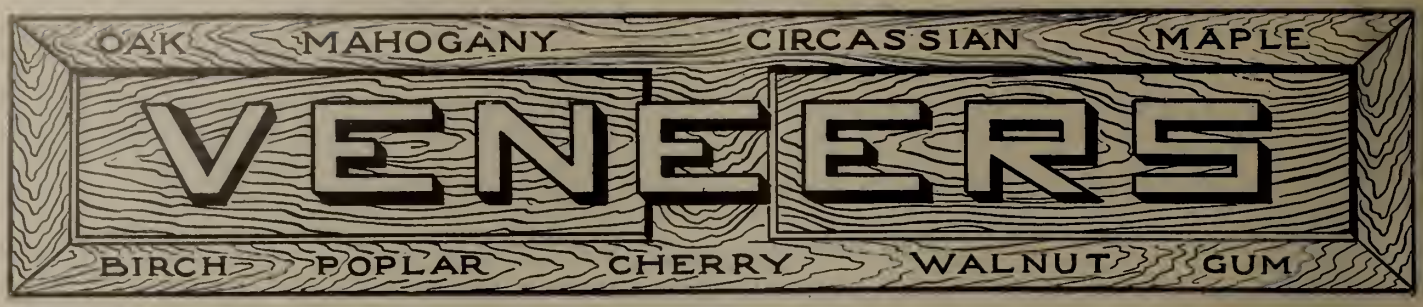

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W. M. Ritter on Lumber Situation

Mr. W. M. Ritter, of the W. M. Ritter Lumber Co., Columbus, Ohio, accompanied by Mr. F. B. Pryor, his sales manager, spent a few days in Toronto recently on business. Mr. Ritter is one of the best known hardwood lumber manufacturers in the United States, and this was his first visit to Canada. He served during the war on the War Industries Board at Washington and rendered valuable service. His company operate thirteen band mills, six planing mills and eleven flooring units, and the annual capacity is 130,000,000 feet. About 1,000,000 logs each year are cut into hardwood at the various sawmills of his company.

Speaking of the general business situation in the United States, he stated that not only in lumber but in all other commodities values had gone too high, and there was bound to be a halt in the ascension. The inflation of prices could not go on forever without some set-back Such a condition of affairs was not a healthy one and the great danger was that when a recession set in it would, no doubt, swing too far the other way.

A little over a year ago Mr. Ritter, in conference with several lumbermen and other representatives of building materials, sought to check the constant inflation of quotations, not only in lumber but in glass, hardware, cement and other lines. At that time the demand was very keen and the interests affected seemed to believe that there was little or no danger of a turning of the tide. This had now come and the peak had been reached.

"I am, continued Mr. Ritter, "strongly in favor of stabilization of prices. I would not like to see them go back to the pre-war levels for many reasons. One is that our American dollar to-day has only about 50 per cent. of the purchasing power that it had before the war, and we have a heavy war debt to meet. If too low values are established it will take too many years to liquidate our financial obligations, I am of the opinion that if an advance could be made of, say, 100 per cent. on the prices which prevailed before 1914, this would create a normal and stable condition. I do not only mean 100 per cent. so far as lumber is concerned, but 100 per cent. advance in wages and every other line. You know, however, that the percentage in many cases is much heavier than that, and I am apprehensive that if a strong demand develops in the spring for all kinds of building and other materials, that the same state of affairs will prevail as we witnessed a few months ago. It would be a case of muddying the water a second time, and the result would be equally disastrous.

"There is a great shortage of building in my own and every other city, and thousands of houses must be erected. If market conditions should revive suddenly, we do not want a repetition of the artificial state of affairs which obtained some time ago, with prices running riot. It is too much like a dog chasing his tail and moving around in a circle. The present slow-up is, I believe, tending to help along readjustment in a most effective and substantial way, and once having gone through an unsound and artificial state, there is no reason, with the experience and insight which we gained during the past few months, why we should invite such conditions again.

"We are doing a moderate amount of business at the present time and naturally have curtailed production at a number of our plants, owing to decreased requisitions for forest products. The transportation situation is steadily improving and I look for business to revive rapidly next spring. With values more normal, construction should proceed on a scale that will in a measure relieve the present demand for houses. So far as our own plants are concerned, we have found our men generally more efficient than they were before the war. This has been brought about by co-operation with our superintendents and foremen and through them with the rank and file of our employees. We have sought to work with them to the fullest extent and see that they received a return commensurate with their industry. Our employees are contented and, the unit or standard of production, which we established in 1914, has been considerably increased by their united and individual effort."

Progressive Nova Scotia Organization

The up-to-date mill and woodworking plant being erected by the Miller & Gordon Mfg. Co., at Carleton, N.S., is rapidly nearing completion. The buildings consist of a three-storey sawmill, planing mill and woodworking plant, 125 ft. by 50 ft., having concrete foundations, together with separate boiler-house, engine room and dry kiln. In addition, a warehouse 90 ft. by 50 ft. is being erected at Brazil Lake Station, about five miles from the factory.

The products of this modern plant will consist of hardwood flooring, boxes, dowels, clothespins and toys of different kinds, together with lumber and building material, including mouldings, gutters, gutter-leaders, laths, shingles, etc. Most of the raw material will be secured from the company's own timber limits, which consist of about 10,000 acres of fine timber. These limits are situated near the mill so that hauling and lumbering expenses should be very low.

The equipment in the mill consists of a Waterous band mill, log haul-up, live rolls, trim saws, Oxford edger and other items which go to make up the modern sawmill. In the woodworking plant six clothespin lathes and slotters, revolving tumbler and drier, dowel planer, two W. S. Hawker adjustable head dowel machines, broom handle machine. Two Weymouth and three variety lathes go to make up the installation. The heating system for the clothespin drier was installed by the B. F. Sturtevant of Canada, Limitied, Galt, Ont.

The planing mill equipment consists of a band resaw, Cowan tenoner, Cowan surface planer, buzz planer, a number of trim and rip saws, box-making equipment, 10 in. American outside sticker supplied by the Garlock-Walker Machinery Co. of Toronto, and other smaller machines. The belting used in this plant is the well-known "Klingtite" brand manufactured by the Goodyear Tire & Rubber Co., with the exception of a leather belt for the main drive which was supplied by D. K. McLaren, Limited, of Montreal. A machine and blacksmith shop will be maintained to take care of all repairs.

Steam power is used, three 75 h.p. boilers having been installed. The engine is a 225 horse power Laurie engine, manufactured by the Laurie Engine Co. of Montreal.

The personnel of this progressive organization is as follows: W. E. Miller, president and treasurer; Winfield Gordon, vice-president, and Roy D. Miller, manager and secretary.

A miss is as good as a mile, but remember that you are not always missed, says the Safety League.

How Much Pressure Would You Apply?

Checks and Other Troubles Blamed on Wrong Pressure—How Pressure May Be Calculated—Proper Attention to This Subject Should Overcome Many Veneer Troubles

By C. J. Pratt

How much pressure would you apply to a batch of panels, 18 x 36, so as to obtain a calculated pressure of 100 lbs. per square inch. Endless trouble results when too much or too little pressure is applied, yet how many workmen know how to calculate the amount of pressure being used. It is doubtful if sufficient attention is being given to this phase of veneer work.

Some of the evils resulting from an improper application of pressure (too much or too little) are lack of contact between veneer and core, blisters and loose veneers, starved glue joints, short-lived and uneven cauls, excessive power consumption, if a power press is being operated, and other similar faults. To obtain uniform, satisfactory results the correct pressure per square inch for each wood and each size of panel should be known and some method worked out for applying just that amount. In a great many cases where trouble is encountered, the trouble lies with the pressure applied, yet as a rule anything else is blamed.

Causes Many Troubles.

The list of troubles resulting from applying the wrong amount of pressure would, therefore, seem to embrace nearly all the worries encountered in the manufacture of veneered products. This merely goes to show the importance that should be attached to ascertaining the correct pressure to use and to seeing that that amount of pressure is applied. An old veneer man recently made the statement that a large percentage of the checks common to veneered work was caused by using excessive pressure. It is not hard to understand how the fibre of a thin face veneer might be crushed and ruptured by heavy pressure, particularly if the core were hard or coarse-grained. There may be a lot of truth in the remark of this practical veneer man.

With the screw type of press, either hand or power, the amount of pressure applied depends largely upon the experience and judgment of the operator. In the hand type he has the feel of the lever or wrench to guide him, but at best it is largely guess-work. The operator of the power press, other than hydraulic, seems to go largely by the power delivered by the belt, keeping the press in operation until the belt slips, regardless of the size of panel that is being glued. The same amount of pressure applied to stock 10 x 20 and stock 30 x 60 would mean that the smaller pieces were receiving nine times as great a pressure per square inch as the larger pieces. Either the small surface was getting far too much pressure, which is probable, or the larger surface was not receiving enough. What is more than likely is that neither one was getting the correct amount.

This should not be hard to understand, as a certain amount of pressure applied evenly to a surface containing 500 square inches might amount to 50 lbs. per square inch. If this same amount of pressure were evenly distributed over a surface containing 1000 square inches, it would work out at 25 lbs. per square inch. This shows why the total amount of pressure applied should be governed entirely by the area or size of the panel being glued.

Pressure Under Complete Control.

The hydraulic press is found in many plants, and with such an installation, the pressure applied to any panel may be readily worked out. This is done by multiplying the area of the ram by the reading of the pressure gauge, and dividing by the area of the panels. This gives the pressure on panel per square inch. To find the gauge reading for a given per square inch

CUT OUT AND HANG NEAR PRESS

Gauge Pressure for 10"Ram.

Sizes	20	25	30	35	40	45	50	55	60	65	70
10	255	318	382	446	509	573	637	700	764	828	891
15	382	477	573	668	764	859	955	1050	1146	1241	1337
20	509	637	764	891	1018	1146	1273	1400	1528	1655	1782
25	637	796	955	1114	1273	1432	1591	1751	1910	2069	2228
30	764	955	1146	1337	1528	1719	1910	2106	2292	2483	2674
35	891	1114	1337	1560	1782	2205	2228	2541	2674	2896	3119
40	1018	1273	1528	1782	2037	2292	2546	2801	3055	3310	3565

Gauge Pressure for 12" Ram.

Sizes	20	25	30	35	40	45	50	55	60	65	70
10	177	121	266	310	354	399	443	487	531	576	620
15	266	332	399	465	531	598	664	731	797	863	930
20	354	443	531	620	708	797	8886	974	1063	1151	1240
25	443	555	664	775	886	996	1107	1218	1328	1439	1550
30	530	662	795	927	1060	1192	1325	1457	1590	1722	1860
35	620	775	930	1085	1240	1395	1550	1705	1860	2015	2170
40	708	886	1065	1240	1417	1594	1771	1948	2125	2303	2480

Guage readings for different sized panels to give pressure of 100 lbs. per square inch

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pressure on a panel of a given size, multiply the pressure required per square inch on the panel by the area of the panel and divide by the area of the ram. If exact figures are desired, the weight of the platen should be taken into consideration, but the above method is near enough for all practical purposes. In order to make this method of calculating pressures perfectly clear, the following formulas are reproduced:

$$(1)\quad G = \frac{P \times A}{R} \text{ or}$$

$$(2)\quad P = \frac{G \times R}{A}$$

where G —gauge pressure in pounds per square inch.
P —pressure on panels in pounds per sq. inch.
R —area of piston or ram in square inches.
A —area of panel in square inches.

This shows how the calculating is done. Simply replace the symbols by the figures which apply and work out to a conclusion. Using this system, a table could be worked out, giving the pressure for the different sizes of panels.

The accompanying table is worked out to 100 lb. per square inch and would have to be varied for different working pressures. Using this as a basis, a table could be readily tabulated, showing the gauge reading for the pressure used in any particular shop. Thus, if 125 lbs. per square inch is required, multiply the figures given by 1.25 or merely add ¼. Other pressures may be secured in a similar manner. A good suggestion would be to cut this table out and paste it up near the press where it would be convenient to the operator, or, better still, work out a table, showing the correct gauge readings for the pressure used in your shop, and attach it on or near the press.

Room for Experiments.

It would, certainly, be well worth while for the foreman in charge of the veneer department or the man operating the press to do a little experimenting so as to ascertain the most suitable pressures for the glue and woods used in that factory. In doing this, it would be necessary to separate a few of the test pieces so as to get an idea of the glue line, or, in other words, the amount of glue remaining between the layers. If owing to high pressure, the glue had either been forced out at the sides or into the wood, giving what is known as a "starved joint," this could readily be detected upon examination. The separation of a few plys would also enable one to make sure that sufficient pressure had been applied to give a perfect contact. When once a suitable amount of pressure per square inch has been established, it need not be varied very much except that some of the softer, thinner face veneers cannot withstand the same amount of pressure that heavier and, perhaps, denser veneer will. It might be well to bear this point in mind and not go the limit where some of the more delicate woods are used.

Judging and Selecting Most Economical Glue

Upon Glue Used Depends Quality of Product — Points That Should Be Considered—Buyer Should Study This Important Product—Cheapest or Most Expensive Not Necessarily Most Economical

By William Stetter

This article shall deal with the lack of knowledge of the consumer. In considering this, it must be understood that glue is a material which is not standardized, and therefore an allowance must be made where knowledge is lacking. Men who are selling glue daily know very little about the subject, leaving the consumer in a position where he is compelled to make his own experiments to obtain the knowledge necessary to assure intelligent buying, or obtain his information from commercial glue experts. Existing conditions can only be overcome when the men who are supplying glue to the consumer will give the subject more careful study and furnish the consumer with the knowledge thus obtained.

The study of glue and its practical working qualities is a very interesting one, and the more it is studied the nearer it will bring about a more intimate relation between the supplier and consumer. While it is important that the men who represent the supplier should obtain more practical knowledge of glue, it is much more important that the consumer give it very careful study, particularly when the product of his factory, and sometimes his reputation, depends upon the quality of the glue which he uses.

Difficult Material to Judge

Most other materials which he purchases are standardized or can be tested for quality—veneer, hardware, lumber, glass, paper, etc.—but not glue. Standardization of glue can only be accomplished in continued study, tests and comparison. On other material he can become expert in determining quality in a very short time and can detect almost immediately any difference in quality from the grade or kind originally purchased. Glue is a different proposition. It takes a long time to be able to distinguish a difference in grades. Probably this is the reason why the consumer does not give the glue question more careful attention. The buying of glue should be handled just as systematically as any other branch of the consumer's business; he should be in a position to detect any change in quality of shipments or in the practical working.

When you consider that hundreds of thousands of dollars are wasted annually by the glue consumers of the United States you must agree that something is materially wrong. This something is nothing more nor less than the consumer's lack of knowledge; it is the cause of this tremendous waste, and should be stopped.

Buyer Should Have Knowledge

By the consumer we mean the actual buyer or purchasing agent, not the men in the work-room. The buyer should go into the study personally; he should make tests of all samples submitted, study the difference in grades and working qualities. He should be able to determine body strength or viscosity, foam, grease, acid, jelly strength, or Cooper grade, proportions, spreading capacity, etc. Why should he go to the workmen for any information on the subject? It doesn't make a bit of difference to them what price

(Continued on page 122)

OOD-MOSAIC COMPANY — WOOD-MOSAIC COMPANY — WOOD-MOSAIC COMPAN

LUMBER DEPARTMENT — VENEER DEPARTMENT

At left Lumber log yard showing large traveling derrick. Seventy-five per cent. of logs are white oak. At right Veneer log yard derrick and modern thermostatically controlled steam vats insuring perfect preparation of flitches and logs for slicing or rotary cutting

Announcing Our New Million Dollar Plant

A million dollar investment in a veneer and hardwood sawmill plant is evidence of an operation of unusual scope. In this announcement is pictured the completed million dollar unit, the latest addition to the manufacturing facilities of the Wood-Mosaic Company, Inc., which, established in 1883, has since been building and perfecting its organization.

W. A. MacLean, as president, has been the inspiring genius of the company during all these years of greatest progress. The definite objective of our entire organization has been the perfecting of an operation and personnel capable of maintaining and expanding a many years' precedent of perfect output.

Expert service can be temporarily employed for the purchase of one big tract of hardwoods. However, to bring to our log yards only the very cream of all the best offerings of timber, we have built up a timber department which today is steadily employing twenty field men, all of

WOOD-MOSAIC COMPANY
INCORPORATED
LOUISVILLE, KENTUCKY, U. S. A.

Two views of our large lumber yards showing care with which 7,000,000 feet of hardwood is handled.

LUMBER DEPARTMENT

OOD-MOSAIC COMPANY — WOOD-MOSAIC COMPANY — WOOD-MOSAIC COMPAN

WOOD-MOSAIC COMPANY — WOOD-MOSAIC COMPANY — WOOD-MOSAIC COMPANY

VENEER DEPARTMENT—Panorama of million-dollar veneer and core plants at Louisville, Ky., completed in 1920, all most modern brick and

VENEER DEPARTMENT—General view showing inspection, drying and storage of walnut and poplar veneers. Drying equipment consists of two eighty-foot Philadelphia textile dryers, 9 feet and 13 feet wide respectively. Building a model for light and ventilation.

whom have been carefully trained for our requirements. Thus our many millions of feet of timber reserve include only timber picked expressly so that our reputation as ranking specialists in quality quartered white oak and walnut might never be even slightly impaired.

Today seventy-five per cent of our timber is of the famous Kentucky growth. The balance stands in Indiana and Ohio with a more limited amount in Tennessee.

The product of these rigidly selected logs is directed to one or the other of our operating units according to its best adaptability. Thus our single band mill at Cincinnati cuts nothing but the highest grade of quartered white oak and walnut, while the band mill at Jackson, Tenn., produces a general line of hardwoods. The third single band mill operation at New Albany, Ind., is devoted to the careful production of plain and quartered oak. In conjunction with the New Albany plant is our large parquetry flooring factory which has achieved an international reputation. The eastern flooring sales office and warehouse are in the Bush

WOOD-MOSAIC COMPANY
INCORPORATED

LUMBER DEPARTMENT—General view of sawmill, dry kilns and lumber yards, Louisville plant. Sawmill of steel and concrete. One eight foot

WOOD-MOSAIC COMPANY — WOOD-MOSAIC COMPANY — WOOD-MOSAIC COMPANY

OOD-MOSAIC COMPANY — WOOD-MOSAIC COMPANY — WOOD-MOSAIC COMPANY

steel construction throughout. Total floor space four acres. Every machine individually motor-driven. Glimpse of big sawmill at extreme left.

Terminal building, Brooklyn, N. Y. The flooring department is under the supervision of H. H. Barclay.

The keystone to the lumber department is the great, modern double band mill at Louisville, which is pictured on the centre page of this announcement. The modernness, capacity and equipment are well described in the caption under the illustration. The special feature at the Louisville plant is the battery of dry kilns with a capacity of 500,000 feet per month. These Emerson moist air kilns are now open for a considerable volume of commercial kiln drying. The entire lumber department is under the management of W. H. Day.

The veneer department also is divided into several units so that proper manufacturing facilities may be provided for each type of log. The veneer plant at Huntington, W. Va., with its full modern equipment cuts nothing but high grade rotary cut yellow poplar cross-banding. The veneer plant at New Albany, Ind., has six modern veneer saws all operating continuously on strictly high grade quartered white oak veneers.

LOUISVILLE, KENTUCKY,
U. S. A.

VENEER DEPARTMENT—A corner of the cutting room showing 16-foot Capitol slicer and one 125-inch Capitol lathe, both devoted to the manufacture of sliced- half-round and rotary walnut veneers. The cutting equipment also includes one 88 inch Capitol lathe and a 64-inch Coe lathe, cutting thin poplar cross-banding. All of this machinery is new and individually motor-driven.

and one six foot band mill producing 35,000 feet of high-grade quartered white oak. Emerson moist air dry kilns, capacity 500,000 feet per month.

OOD-MOSAIC COMPANY — WOOD-MOSAIC COMPANY — WOOD-MOSAIC COMPANY

WOOD-MOSAIC COMPANY — WOOD-MOSAIC COMPANY — WOOD-MOSAIC COMPA

VENEER DEPARTMENT—A part of our large stock of sliced American walnut veneers at Louisville plant. Note particularly the careful method of bundling and tagging the individual flitches. Note also the results of perfect "Philadelphia drying" as the stock shows no broken ends and lays PERFECTLY FLAT.

The ace of the veneer department is the big plant just completed at Louisville, Ky. It is the last word in efficiency of equipment and layout. A full quota of slicers and rotary machines, specializes in cutting into veneers the best black walnut logs and burls that twenty experienced log buyers can locate and is under the management of J. J. Egan and H. C. Hobbs. In addition, two special lathes are devoted entirely to rotary-cutting thin yellow poplar cross-banding.

Every purchasing agent knows the value of having a consistently dependable shipper of uniform goods. This advertisement announces to such buyers the final completion of a carefully built organization, equipped with a skillfully planned operating department, and schooled by forty years' quality training to unfailingly offer a quality product.

The best obtainable quartered white oak, poplar, ash and other hardwood lumber, sawed quartered oak veneer, walnut lumber and sliced and rotary cut walnut veneers, rotary cut yellow poplar cross-banding are now offered to the trade. Remember each product is made on a separate manufacturing unit equipped for the particular service which it must perform. The tremendous investment is the best possible insurance of unceasing integrity of motives and methods.

This completed organization offers its services to all users of the high grade products listed above.

WOOD-MOSAIC COMPANY
INCORPORATED
LOUISVILLE, KENTUCKY, U. S. A.

LUMBER DEPARTMENT—One of the large loading docks. Can load or unload twelve cars daily at this plant.

WOOD-MOSAIC COMPANY — WOOD-MOSAIC COMPANY — WOOD-MOSAIC COMPAN

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

Evansville

QUARTERED WHITE OAK

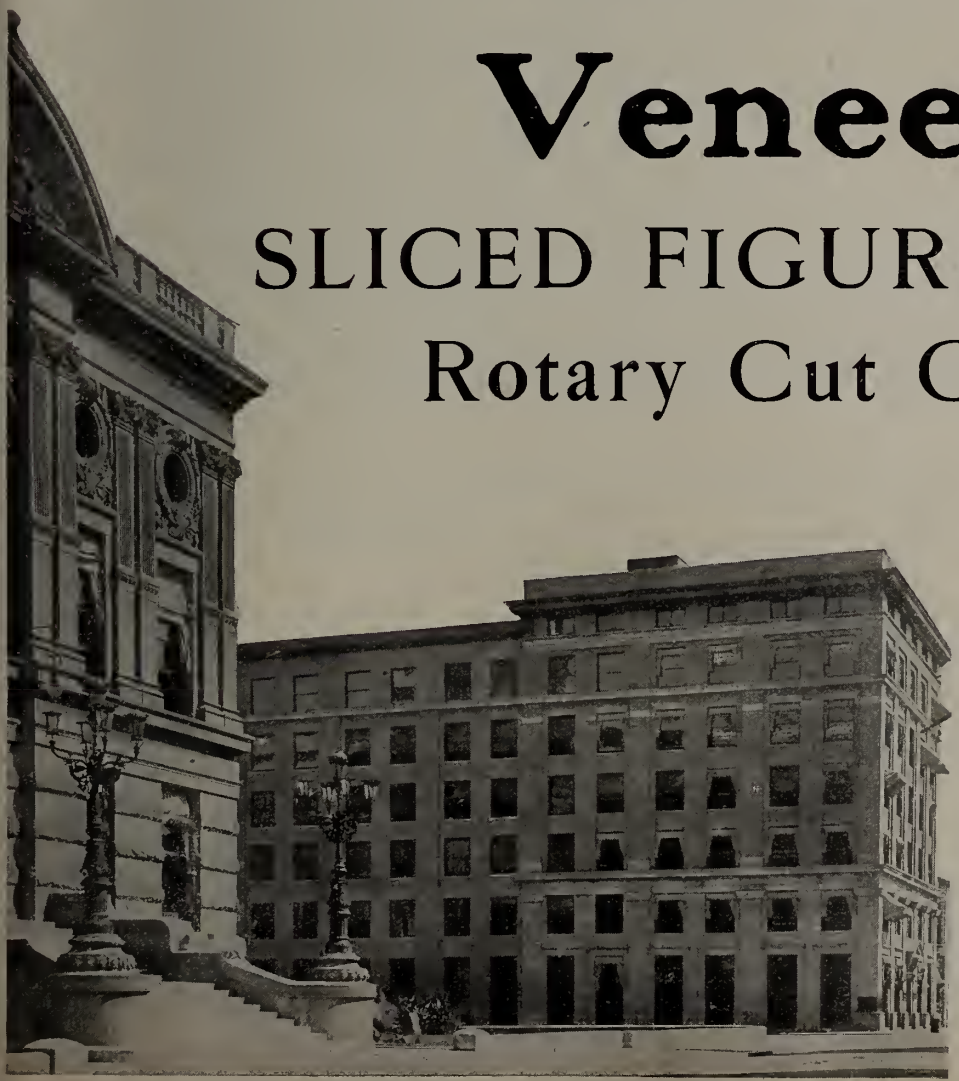
Indiana

SLICED BLACK WALNUT

Veneer

SLICED FIGURED GUM

Rotary Cut Gum



FURNITURE EXCHANGE EVANSVILLE, IND.

Prompt Delivery

Prices Right

THE Evansville Veneer Co.

MANUFACTURERS OF VENEERS.

EVANSVILLE, IND.

Judging and Selecting Most Economical Glue

(Continued from page 116)

he pays for his glue; they have no vital interest in the business. The glue that does their work with the least effort is the glue they want to use, regardless of whether other grades are best adapted for the purpose, or cheaper. Manufacturers spend large sums in sending out working samples; these samples are sent to the workroom for test and comparison. In most cases very little attention is given them by the actual users (the workmen); it takes up too much of their time testing samples; the result is, either they are never tested or else condemned as being inferior to the quality which they have been accustomed to use. This is an actual fact and an injustice to the supplier. In many cases I know where glues have been condemned by the workmen, which were far superior to the grades used and which would have meant a considerable saving to the consumer if he had personally supervised the tests.

How Information May be Secured

It is true that buyers are usually very busy men, but the very fact that they are purchasing an article which plays such an important part in their business is the one reason why they should give the subject more study and attention. If the buyer cannot find the time to give the subject the attention which it requires, he has the option of consulting experts who will make the necessary tests for him, giving a full report and an unbiased opinion on samples submitted for such tests; they will be able to help him in many ways. If experts were consulted more often the tremendous waste mentioned previously would be entirely avoided. Personal knowledge, however, should be one of the essential requirements of a successful glue buyer. When he has mastered the subject to an extent where he will be able to determine the slightest difference between grades, then, and not until then, will he be able to show a saving on his glue bills.

Regarding the consultation of experts, the consumer might ask: "Why cannot this information be had from the manufacturer?" Why, indeed! For many reasons, principally because most consumers do not wish to study the subject, and while the manufacturer has tried to enlighten the consumer regarding the difference in grades, it would be undiplomatic to show him where he could reduce his (the consumer's) glue bills when he seems satisfied to give the manufacturers the additional amount of money which he is wasting yearly. You cannot, on the other hand, expect men in the manufacturing line (who have made a careful study of the subject) to give the consumer the benefit of their knowledge unless they are compensated in some way. Their business is to supply you with a satisfactory glue. If you are paying a higher price than is necessary, through waste or initial cost, you cannot blame the supplier. It is your loss and his gain. Your supplier should be compelled, however, to give you the strength, water-taking qualities (proportion of glue and water) and the spreading capacity of the grades which he supplies. If he cannot do this, you should consult some one who can.

Who Pays the Bills?

A difference in price on a given Cooper grade varies as much as 1 to 3c per pound. Who pays the difference? The consumer who knows the least about the subject. Whether a consumer pays the maximum or the minimum price for his glue cannot be determined until he is in a position to make the necessary tests and comparisons.

Don't you think it would be worth your while to give this matter serious thought? Wouldn't you like to bring about a big saving on your yearly bills? Won't you, as a consumer, give more attention to the subject than you have heretofore? Wouldn't you like to be able to give your men better information regarding the subject than they are now giving you? There is only one way to overcome every obstacle and annoyance in the handling of glue—knowledge.—"Veneers," Indianapolis.

New Veneer Industry at Waterville, P.Q.

At last the demand for rotary cut veneers in Canada would appear to have been solved—at least in part—by the establishment of an important new industry at Waterville, Que., where the old factory of Geo. Gale & Sons, Limited, has been taken over by the Waterville Veneer & Panel Company, Limited, by whom it is now being rebuilt and equipped with the most up-to-date machinery and appliances known to the trade.

The daily cutting capacity of the new mill will be a carload of single veneer, and that of the plywood plant 20,000 feet.

The Company owns large stumpage rights and is assured of a plentiful supply of veneer logs for at least twenty years.

Operations are scheduled to commence early next year, and the company will shortly be in a position to take care of orders for forward delivery.

The new industry will be directed by Mr. H. Lefeber, formery of Montreal, but now in residence at Waterville. Mr. Lefeber, who is widely known to the trade, is the Vice-President and General Manager of the Waterville Veneer and Panel Company, Limited.

Moisture Content of Wood

Even after long exposure to the same atmospheric conditions, different pieces of wood do not have exactly the same moisture content. Variation of 2 per cent. were recently found in red oak blocks stored under carefully fixed humidity conditions at the Forest Products Laboratory.

These moisture differences, unlike variations in strength, are apparently independent of the density of the pieces. In the laboratory experiments, the variation proved to be as great in blocks of the same density as it was throughout the lot of specimens. Moreover, the range in moisture content was the same in wood of medium density or high density.

Data on a few representative specimens are given in the accompanying table.

Density of specimen	Average moisture content in percentage of weight oven dry. Relative humidity at 80° F. 38%	61%	88%
Low			
.519	7.6	11.2	19.4
.527	6.0	10.0	17.4
.536	6.5	11.0	18.2
Medium			
.630	7.7	11.3	18.9
.639	5.8	10.7	18.3
.643	6.8	11.3	19.5
High			
.720	6.4	11.2	19.3
.724	7.4	11.4	19.6
.753	6.1	10.8	18.8
Total average	6.7	11.0	18.8

Period furniture, so popular today, finds beautiful interpretation in N.B. Quality sliced figured gum.

NICKEY BROTHERS, INC.

MEMPHIS, TENN.

Adaptability of N. B. Quality Red Gum Veneer to Period Furniture

The apparent frail structured chairs of Sheraton or the more robust work of Chippendale, the rectangular tables of the Adam Brothers, or the stately creations of the Louis' periods are equally capable of beautiful reproduction in Figured Red Gum.

Replicas of the creations of the great cabinet makers of the past are certain of instant appreciation when the veneer employed is N. B. Quality.

Concentrate Your Purchases and Save Money

Through Buying

Sliced Figured Red Gum and Rotary Cut Gum Veneer
Sawed and Sliced Ash, Poplar and Gum Grand Piano Rims
Sawed and Sliced Quartered Oak

In Cars with Band Sawed Hardwood Lumber

Carload buyers get closer prices, save freight on local shipments and eliminate damaged goods.

NICKEY BROTHERS INC.

MEMPHIS, TENNESSEE

The Lumber Market

Domestic Woods

Business continues quiet, seems to sum up the situation with regard to native wood. Demand is very weak, with very little stock moving. Some price recessions have been made, but such reductions as have taken place have not resulted in increased sales. It does not seem to be a case of where lumber is not moving on account of the price being asked as much as the fact that the manufacturers of wood products and other wood users find they are catering to a stagnant market and therefore do not need the lumber. A certain amount of birch and maple is finding its way to the American market, some of this was ordered a few months ago while the balance represents business which has been placed recently. The cost of manufacturing lumber has never been as high as it is today, which coupled with the uncertainty which exists in the lumber field, has had a tendency to curtail production in the woods. Just what effect this will have on prices depends on the demand. An increased demand with low production can mean only one thing—stiffer values. The general opinion among lumbermen is that prices will not drop much lower and in all probability will go higher, though some do not expect to see quotations reach the high mark set last year. At the present moment certain manufacturers of southern pine are dumping some surplus stock on this market at prices averaging around $40. This is a very low figure and just what effect it will have on the softwood market depends upon the quantity of pine being offered.

The same quietness exists in the hardwood market. Prices have receded from 10 to 20 per cent. without bringing out any buyers. Certain American manufacturers are interested in F.A.S. birch, but very little is available. There is also a slight movement in maple. This is chiefly from the eastern states. The lumbermen themselves think that higher prices would be harmful, but cannot see how an increased demand could help but boost prices. Housing accommodation is needed badly and cannot be put off indefinitely, regardless of how values may go. Increased construction would mean increased business for furniture factories and all industries catering to the building field. Demand seems to be the crucial point upon which the whole situation hinges.

Imported Woods

The lumber situation is most difficult to size up. Why should prices drop? Production costs are high, probably never were higher, and while the cost of production on certain items did not warrant the peak prices of a few months ago, yet certain stocks are being offered below cost at the present time. Lower values have not stimulated buying as purchases are being made from hand to mouth. Lumber manufacturers finding that they cannot dispose of their product and not being possessed of unlimited capital are forced to curtail production if not cease operations altogether, until conditions right themselves. This is what has happened in a large number of instances. While a decreased production will not have much effect on the present market, yet the fact that logging and manufacturing is not being carried on to capacity will have a serious effect should the demand stiffen. One investigator who recently covered the Memphis district reports that fully fifteen per cent. of the mills there have closed down and in another three weeks or a month about fifty per cent. will have ceased operations, unless conditions right themselves. One large manufacturer who has just closed his plant writes the "Canadian Woodworker" to the effect that quotations on gum have declined about 35 per cent. from peak without stimulating sales. Many items are selling below cost of production. This cannot continue indefinitely. The opinion is ventured that gum stocks are below normal and that conditions will change inside the next sixty days, with stiffened prices prevailing. Another lumberman, when asked his opinion on the oak market, stated that conditions are very quiet. Very little stock is moving regardless of price recessions. Production being curtailed as manufacturers cannot carry large accumulations of lumber. Production in excess of demand but demand far below normal. This writer thinks that there are many fine bargains to be had if the wood users are in a position to take advantage of them. Regarding walnut, a writer offers the opinion that walnut stocks are plentiful and well assorted but that the log supply is 20 per cent. less than it was a year ago. Walnut stumpage is scattered and in the hands of prosperous farmers, who are holding for big prices. Slight recessions have been made on walnut. On the other hand, walnut did not advance as high or as rapidly as some of the other woods. The demand for walnut is stronger than that for other wood and in addition the export demand is increasing. This would all seem to indicate that lower prices on this wood are not likely to prevail.

As heretofore, demand, not manufacturing cost, will be the determining factor in the lumber market. We do not see anything that would indicate an increased demand in the immediate future. Building conditions are likely to remain quiescent until spring and the wood users are not exhibiting a tendency to stock up under present conditions. On the other hand, manufacturing costs on all woods were never higher. Most of the stock is in strong hands. Production is undoubtedly being curtailed, therefore it would appear as if a wood user would not go far wrong by buying some of the attractive lots that are being offered.

Demand for Caskets with Colored Covers

The evolution of caskets has been from painted and grained wood to the cloth covered product. Formerly the covering used was black broadcloths and other suitable materials. Recent years have shown a marked change. While the cloth covered caskets still holds first choice the sombre blacks are no longer in evidence, having been replaced by brighter hues, such as lavenders, pinks, blues, etc. A Toronto casket manufacturer recently held an exhibition at his plant. The display included caskets in aluminum, gray, plum color, purple, grey, striped material in various shades and conopied caskets and couches trimmed with brocades in delicate shades of pink, blue and green. Slate caskets in solid walnut, oak or mahogany are still in demand.

Automatic Control

versus

Hand Control

By W. P. Powers

The Powers Regulator Company of Chicago, recently moved into their new and up-to-date factory building which had been under construction for more than a year, the untoward conditions in building and material lines having greatly retarded its completion. This move prompted their president, Mr. W. P. Powers, who founded the business more than thirty years ago, to write a review of their progress, for publication in their house organ, "Tuesday Talks," from which we quote: "My thoughts go back to 1890, and the little room, 12 by 16 feet square, from which were turned out the first House Regulators made in Chicago, the space having been given us by the courtesy of the Union Wire Mattrass Co., of which my father, David J. Powers, was president. This limited space was,

W. P. Powers, Pres. Powers Regulator Co., Chicago

however, soon outgrown, and we moved to 90 Illinois Street. Here we had about eight hundred square feet in the machine shope of Crary & Son, and put in our first meagre mechanical equipment, with which to do our own machine work.

Healthy Growth Necessitated Larger Premises.

This space soon proved inadequate and the World's Fair in 1893 found us occupying about four thousand square feet, on the third floor of the same building, with an office on the floor below, where we engaged our first stenographer. Soon after we moved our office to 36 Dearborn Street, and began operations in school buildings. Our first Thermostat controlling with air pressure was brought out in 1895.

About fifteen years ago we purchased from the Union Wire Mattress Co. the building where we made our humble beginning with a floor space of less than 200 square feet, having developed the business by that time to a point that required about 8,000 feet. As the business grew year by year, we spread over the other floors, crowding out the tenants one after another, until, when we left, we were occupying about twenty-six thousand square feet of space.

New Lines Brought Out.

During the last seven or eight years our line of specialties has been developed, requiring more and more room, for which we are now well provided, having a space of about forty thousand square feet, all in a fireproof building. Here we have no haunting fears of burning, and have what we have long wished for: the office and factory under one roof."

While the business of the company was for many years confined almost entirely to the regulation of living room temperatures, it later became evident that there were a great many industrial processes involving the use of heat where automatic control would be desirable for many reasons. It was to meet this need that we developed the "Specialties" referred to in the last paragraph.

One of the first propositions which claimed attention was a battery of four dry kilns used by the Lyon & Healy Co. of Chicago for drying hardwood lumber. Under the system of hand temperature and humidity control, then in use, it was requiring approximatetly 30 days to dry a kiln of green oak lumber of certain dimensions.

Applying Automatic Control to Kiln.

We undertook to improve this condition, with the result that an automatic regulator which permitted heating the kiln to an exact schedule, was developed and applied. The amazing result of a kiln full of properly dried lumber in less than two-thirds of the time formerly required, with a considerable improvement in the quality also was secured. It was discovered that once the temperature in this kiln was properly established and maintained, the control of the humidity, which was accomplished by steam sprays, became very greatly simplified. Since then, in co-operation with the Humidity Control Co. of Indianapolis, Indiana, we have developed a wet and dry bulb humidity control for application to lumber kilns in connection with the temperature control.

In addition to the kilns there are varnish and paint drying rooms, glue treating processes, wood preserving operations, and many other processes incident to the wood-working industry which require automatic control to make them effective, and this company has developed a variety of regulators, especially adapted to them, which are meeting with much success.

SPOT

SERVICE IS AN ASSET *To any* LUMBER BUYER

CONSISTENTLY good service has for many years been one of the assets of our organization. This service is neither a myth nor a boast, but is based on real facts. In the first place the geographical location of our operation and timber, and our relation to trunk line railroads gives us the advantage in securing cars under all conditions. This was clearly demonstrated in the car shortage of this year.

In the second place, as the above map indicates, the flow of our product from the sawmills to all consuming points is smooth and uninterrupted. This holds good for export as well as for domestic shipment, and is an easily provable statement.

The third reason is that our entire organization was built about the one thought of offering unusual and unique facilities. Our product is diversified, offering a selection of about all southern hardwood forest products the average consuming factory requires.

This service should be especially helpful to buyers requiring quick shipment under present conditions.

OUR FOUR MILLS PRODUCE 200,000 ft. DAILY

ANDERSON-TULLY COMPANY
Memphis, Tennessee.

ATCo MEMPHIS
SOUTHERN HARDWOOD LUMBER & VENEERS

Information and Inquiries

You are cordially invited to make use of this department

How One Firm Overcame Checks in Walnut

Napanee, Ont., Sept. 30/20.

Editor "Canadian Woodworker":

The inquiry in the September Canadian Woodworker evidently refers to one of the troubles that, we think, all of us have, more or less, in veneering walnut.

Our company have bought panels from many panel manufacturers in the United States, and in practically all of these lots we have a few that show checks such as mentioned in the inquiry. In the solid we do not have any such trouble. One reason for checks in veneer work is the application of too much pressure in the veneer room. By regulating this carefully we have been able to do away with considerable of this difficulty.

Yours truly,
The Gibbard Furniture Co., Limited.

Checks and Their Cause

London, Ont., Oct. 9, 1920.

Editor "Canadian Woodworker":

The subscriber who is experiencing trouble from checks in walnut is not experiencing anything new. All wood-users are bothered more or less by checks. The basic cause for these cracks or checks is moisture in the wood. This may have been in the stock when it was brought into the factory or absorbed by the wood as it was being worked up. The lumber should be well kiln dried in a kiln where the humidity is under perfect control. Sometimes checks will show up, if the drying is pushed too much, and then close up again. Even though they closed up and are not visible, the broken fibers have not mended and the checks will open up again if placed in a warm dry place. The stock should be tested for moisture content before being removed from the kiln. If dry when taken into the factory and handled so that it does not have a chance to absorb any excess moisture, no trouble should be experienced from checking. Material piled near an open window during a wet spell, while not exposed to the rain, will take up enough moisture from the air to cause trouble. If the checks appear on veneered work, there may be several causes, such as damp face veneers, too long a period between gluing and the application of pressure, too much pressure, poor drying methods, not drying thoroughly, exposure to dampness after drying and careless handling. If this manufacturer will see that his stock is dry to start with, is kept dry and is not exposed to any hot, dry air while in the factory, varnish drying kilns or store-rooms, it is not likely that checks will be encountered.

Yours truly,
J. A. Wilson.

The Proper Drying of Walnut

Cowansville, P.Q., Sept. 28, 1920.

Editor, "Canadian Woodworker:"

Replying to the enquiry in the September issue in regard to walnut checking, there is only one reaason for these checks, viz., improper drying. If the material checks at the ends, either cracks in the solid wood or the joints opening up at the ends, it is not dry enough and if the cracks are in the surface of the material it was too green when put in the kiln and should have been well steamed. If the walnut is well air seasoned it does not require so much steaming, but should have about 80 hours drying at about 160 degrees in a well ventilated kiln, but if the lumber is not well air seasoned then it should be well steamed in the kiln to prevent the surface from cracking open by drying the outside of the wood faster than the middle. I judge that their trouble is caused by the material checking at the ends owing to their not drying it long enough.

Yours truly
George H. Hawley

Information on Grading Rules

Meaford, Ont., Oct. 5, 1920.

Editor, "Canadian Woodworker."

Will you be good enough to tell us where we can secure a copy of the grading rules applicable to southern pine, cedar and similar woods, aso for western woods, such as pine and cedar? Your kindness will be appreciated. Yours truly,

The Knight Mfg. & Lumber Co.

The rules required could probably be secured from the following sources: Mr. A. L. Clark, the Southern Pine Association, Live Oak, Fla.; T. A. McCann, Western Pine Manufacturers' Association, Buid, Ore., or E. G. Ames, Pacific Lumber Inspection Bureau, Seattle, Wash. The Forest Service branch of the U.S. Department of Agriculture, Washington, D.C., issue copies of the different grading which they will gladly furnish on request.

Books on Furniture Design

New Westminster, B.C., Sept. 27, 1920.

Editor, "Canadian Woodworker:"

Can you tell us where we can obtain books of design, giving measurements, working drawings, etc., of modern furniture, especially of mission style?

Yours truly,
Laminated Materials, Limited.

Books on the different period designs which are so popular to-day may be obtained from J. P. Lippincott & Co., Philadelphia, while the Popular Mechanics Publishing Co., Chicago, Ill., have several volumes on mission furniture. This latter style is not so popular as it was a few years ago, having been supplanted by the more attractive period furniture.

Chair and Table Legs Wanted

A subscriber wants to know where he can purchase a quantity of chair and table legs in different period designs. Anyone desirous of securing this business can secure further particulars by writing the publishers of this paper.

Maple Flooring Wanted

A firm in Scotland are in the market for a quantity of maple flooring in the following sizes: 3" x 1 1/16 or 3" x 1⅛. These are finished sizes. The flooring is to be tongue and grooved, hollowed and end matched ready for laying. The name of this inquirer may be secured by writing the publishers of the "Canadian Woodworker." Refer to inquiry No. 2004.

Hardwoods

When you need soft texture Northern Oak or Mountain Poplar in most any grade 1" to 4" thick, you will invariably find by writing or wiring me that I can furnish it.

My prices are no higher than you would pay elsewhere for the same quality of stock. Immediate loading is guaranteed, as my stocks are assembled at a point where empty cars are at all times plentiful.

Special Offers

4 cars	*4/4*	*No. 1 Common Walnut*
1 car	*5/4*	*No. 1 Common Walnut*
1 car	*5/4*	*No. 2 Common Walnut*
1 car	*6/4*	*No. 1 Common Walnut*
2 cars	*8/4*	*No. 1 Common Walnut*
4 car	*8/4*	*No. 1 C. & B. White Oak*
3 cars	*8/4*	*No. 1 C. & B. Red Oak*
2 cars	*10/4*	*No. 1 C. & B. White Oak*
5 cars	*10/4*	*No. 1 C. & B. Red Oak*
2 cars	*12/4*	*No. 1 C. & B. White Oak*
1 car	*12/4*	*No. 1 C. & B. Red Oak*
1 car	*16/4*	*No. 1 C. & B. White Oak*
1 car	*10/4*	*Log Run Beech*
1 car	*6/4*	*Log Run Hard Maple*
2 cars	*8/4*	*Log Run Hard Maple*
1 car	*8/4*	*Log Run Hard Maple*

Leland G. Banning
CINCINNATI, OHIO

Eastern Representative - -
A. E. Klippert
11 Laxton Ave. Toronto, Ont.

ESTABLISHED 1897

STOCK PANELS

Ready for Quick Shipment

Made in following veneers:

QUARTERED OAK—MAHOGANY—WALNUT—PLAIN OAK—BIRCH and MAPLE

— IN —

3 ply-1/4 inch and 5 ply-3/8 inch thick

SIZES:

72 x 24—60 x 30—60 x 24—60 x 20—60 x 18
48 x 18—56 x 25

HAY & CO., Ltd., Woodstock, Ont.

News of the Trade

John Deere Mfg. Co. Welland, Ont., have commenced work on their new dry kiln.

The Bolton last plant of George Willard & Sons, Mansonville, P.Q., was destroyed by fire recently.

DeGrandpre & Caron, Ville St. Mithel, P. Q., were recently registered as manufacturers of wood specialties.

The Western Broom Mfg. Co., Winnipeg, Man., recently equipped a factory for the manufacture of brooms.

The plant of the Doon Twines, Limited, Kitchener, Ont., was recently damaged by fire. The loss is fully covered by insurance.

Part of the shipbuilding plant of the Sovereign Salvage Co., Liverpool, N. S., was destroyed by fire. The loss amounts to $10,000.

Walter & Myers, Montreal, P.Q., with Chas. O. Walter and Leo Myers, as proprietors, were recently registered as manufacturers of furniture.

A. Bowser & Sons, Liverpool, N.S., sawmill operators, are installing machinery to manufacture boxes. A band resaw and a cut-off saw has been added.

A. Bellamy, Carleton Place, Ont., is erecting a small woodworking shop and has installed a jointed and a planer. Other machines may be put in at a later date.

Work has been started on the new auto body factory of the Tilbury Auto Body Co., Tilbury, Ont. This factory when completed is to cost in the neighborhood of $40,000.

The Preston Furniture Co., Limited, Preston, Ont., have been authorized by supplementary letters patent to increase their capital from $100,000 to the sum of $250,000.

John Davidson, Smith's Falls, Ont., contemplates enlarging his planing mill and adding some new equipment to engage in the manufacture of caskets and coffins.

The sash and door factory and sawmill being erected at Maniwaki, P. Q., by J. & H. Ramberg, is rapidly nearing completion. This plant will cost about $10,000.

Certain changes have taken place in the partnership known as the Canadian Pattern & Woodworking Co., Montreal. J. & E. Laurendeau are now the regihtered proprietors.

Owing to the demand for power made by the Canadian Edison Co., Limited, of St. Thomas, the Hydro-electric Commission reecntly issued an order prohibiting the use of all types of electrically-heated apparatus in that city.

Recent Montreal registrations include the Canadian Reed & Rattan Mfg. Co., the Globe Toy Mfg. Co., the Piano Lamp Co., the Imperial Upholstery Co. and the Wood Pipe Co., Limited.

Beatty Bros., Fergus, Ont., are considering plans for an addition to their London factory. It is expected that an announcement regarding this development will be made in the near future.

The sawmill and plant of the Joseph McGill Shipbuilding & Transportation Co., Shelburne, N. S., has been completely destroyed by fire. The loss is in the neighborhood of $10,000.

Don-o-Lac Co. of Canada, Limited , have leased suitable premises at 80 Murray St., Hamilton, Ont., and will commence the manufacture of their line of shellacs, enamel and finishing materials.

Millard Bros., lumber dealers, Liverpool, N. S., have recently equipped a box factory. The following machines have been installed: Cowan band resaw, Cowan boxboard matcher, C. M. C. moulder, C. M. C. surface planer, and a number of small saws.

The Ruggles Motor Truck Co., London, Ont., have commenced the construction of a large factory in that city, The new building will be two storeys, steel and concrete construction, 85 x 425 ft., and when complete will cost in the neighborhood of $200,000.

The Prince Rupert Drydocks & Engineering Co., Prince Rupert, B.C., is negotiating with the Mexican Government for the construction of a fleet of thirty-seven vessels. Should this contract be received the work will likely be divided up among the different shipyards on the Pacific Coast.

James Crow, Company, Limited, Toronto, Ont., have been granted a provincial charter to manufacture and deal in wagons, carriages, aeroplanes and other wood products. Capital, $40,000. H. L. Steele and G. M. Willowby, barristers, both of Toronto, are two of the incorporators.

Fulton Motors, Limited, Toronto, Ont., were recently granted a federal charter to manufacture and deal in motor trucks, boats, aeroplanes and other wooden vehicles. Capital, $2,000,000. A. W. Briggs and E. M. Dillon, barristers, both of Toronto, are two of the incorporators.

The Hydrola Phonograph Co., Limited, of Toronto, Ont., are reported to have taken over the plant of the Canadian Symphonola Co., Brock Ave., Toronto. This company contemplate manufacturing a line of electric phonographs.

A large truck-load of fruit baskets manufactured by the Port Hope Lumber & Veneer Co., Port Hope, Ont., recently took fire when in transit between Port Hope and Hamilton. The baskets were completely destroyed but fortunately were insured, so that the loss was fully covered.

The Continental Wood Products Co., Limited, Montreal, Que., were recently granted a provisional charter to carry on their business in Ontario, provided the capital employed does not exceed $1,700,000. W. J. McWhinney, of Toronto, has been appointed the company's attorney.

The woodworking plant of the St. Thomas Boxes, Limited, St. Thomas, Ont., has been purchased in bulk by the Clark Machinery Co. of London, Ont. The St. Thomas Boxes are confining their output entirely to paper and cardboard boxes.

The Davison Lumber & Mfg. Co. of Bridgewater, N.S., are installing in their box factory a 350 h.p. Waterous engine and a 56 x 16 Waterous R. T. boiler, making a battery of three in the plant. The capacity of the factory has recently been increased by about 30%.

The Lincoln Basket Co., Limited, St. Catharines, Ont., have been granted a provincial charter to manufacture and deal in baskets, boxes, and all kinds of wooden containers. Capital $40,000. H. H. Collier and J. G. Schiller, solicitors, both of St. Catharines, Ont., are two of the incorporators.

Russell & McAulay, Halifax, N.S., contractors and engineers, have recently installed a woodworking plant to manufacture their own sash, doors and interior trim. Among the equipment in operation is an Elliot combination woodworker.

Brasseur Lectere, Limitee, Montreal, P. Q., have been incorporated to manufacture and deal in carriages, furniture and all kinds of wood products. Capital $60,000. Two of the incorporators are S. Brasseur and E. Leclere, mechanics, both of Montreal.

Langslow, Limited, Cobourg, Ont., were recently granted a federal charter to manufacture and deal in all kinds of furniture. Capital $500,000. Two of the incorporators are H. R. Langslow, manufacturer, and J. W. Spragge, bank manager, both of Cobourg, Ont.

John Boshart, lumber retailer of Milverton, E. R. Nafziger of the B. & N. Planing Mills, Milverton, and others have formed the Milverton Furniture Co. with a capital stock of $200,000. The chief place of business of the company is Milverton, Ont.

The Anglo-American Auto Co., Royal Bank Bldg., Toronto, have had plans drawn for a motor car factory to be erected at New Toronto, Ont. The building is to be monitor type, one storey, steel and brick construction, 220 x 1100 ft., and will cost in the neighborhood of $500,000. This concern will manufacture the LaMarne motor car.

The McLagan Phonograph Corporation, Limited, Stratford, Ont., have been granted a federal charter to manufacture and deal in phonographs, furniture and all kinds of musical instruments. Capital, $300,000. D. M. Wright and W. J. Anderson, manufacturers, both of Stratford, are two of the incorporators.

Pyke Motor & Yacht Company, Limited, Montreal, Que., have been incorporated to manufacture and deal in automobiles, trucks, aeroplanes, boats and other water and land vehicles. Capital $200,000. Two of the incorporators are L. P. Crepeau, K.C., and M. Dugas, advocate, both of Montreal.

Geo. Gale & Sons, Limited, Waterville, P.Q., have, by letters patent, changed their name to the Waterville Veneer & Panel Co., Limited. The powers of the company were extended to allow them to manufacture and deal in glues and wood products of all kinds, including lumber, timber, veneers and panels, etc.

The will of the late Jacob Kaufman of Kitchener, which was recently filed for probate, shows that he left an estate

Master Clock

International Electric Time Systems

Need Be

Neither Expensive Nor Elaborate

With an International Electric Time Keeping System a small factory, without taxing its resources is enabled to keep pace with all the demands of modern business.

Here is a suggestion for a system

1 Master Clock **1 "In and Out" Recorder**
1 Secondary Clock **1 Cost Recorder**
1 Time Stamp for Manager's Desk

Make your appropriation modest if you will, we will supply you a system to meet your needs

Secondary Clock

Time Stamp

"In and Out" Recorder

Cost Recorder

A MASTER CLOCK in the Manager's office will control by electrical connections as many units as you desire to instal. Starting and stopping time may be announced by means of a bell-ringing system.

A SECONDARY CLOCK where the men can see it will keep them busy until the last minute without the loss of time resulting from frequent consulting of watches of "guesses" at the quitting hour.

THE ELECTRIC TIME STAMP is invaluable in any kind of manufacturing activity. Month, day, hour and minute may be indelibly stamped on letters, invoices, agreements or any other business document—establishing a record beyond dispute.

THE "IN AND OUT" RECORDER gives to the employer at any time a complete printed time record of his workmen, ready for pay-roll totaling.

THE COST RECORDER is the "First Aid" of the Manufacturer in classifying labor costs, both productive and non-productive.

Full information gladly sent on request

International Business Machines Co.

LIMITED

F. E. MUTTON, Vice-President and General Manager

Head Office and Factory: 300-350 Campbell Avenue, Toronto

HALIFAX, 44 Granville St. ST. JOHN, 18 Germain St. QUEBEC, 506 Merger Bldg. MONTREAL, 1 and 3 Notre Dame St. OTTAWA, 190 Queen St. TORONTO, 409½ Yonge St. HAMILTON, 228 King St. E. LONDON, 489 Richmond St. WALKERVILLE, 44 Lincoln Rd. WINNIPEG, 227 McDermott Ave. VANCOUVER, 110 Water St.

Also manufacturers of Dayton Scales and Hollerith Electric Tabulators

valued at $9,111,674. In this amount was included $150,000 in the stock of the Jacob Kaufman, Limited, planing mill, $150,000 in the Dominion Wood & Lumber Co., and $325,000 in the Kaufman Rubber Co.

Elgin Handle Co., Limited, of St. Thomas, Ont., are very busy at the present time. They have succeeded in making several overseas connections and are doing considerable export business. One of their largest customers is located in South Africa. Shipments are going forward to that locality on practically every boat.

Wm. Gunn & Co., Wingham, Ont., have purchased the plant of Walker & Clegg and will convert it to the manufacture of phonographs. Some new equipment is to be added. A by-law was recently carried granting a loan of $10,000 and a fixed asseshment, for a period of seven years, of $10,000. About 100 hands will be employed. Wm. Gunn of Saginaw, Mich., is promoting the new company.

The Lee Mattress Co., Owen Sound, Ont., have purchased what is known as the McKay-Rutherford property. This is a large factory building which has been used as a carriage factory for a number of years. During the past year the Lee Company have occupied one floor of the building, but have outgrown these quarters and contemplate using the whole factory.

The Shurly-Dietrich Co., Limited, of Galt, Ont., with branches at Vancouver and Ottawa, recently staged a very interesting competition at the Vancouver Exhibition. They took a large bottle and filled it with saw teeth and offered prizes for those guessing nearest to the correct number. The bottle contained 28,306 teeth and the lucky winner's guess was 28,304.

The Adams Waggon Co., Limited, Brantford, Ont., a subsidiary branch of the Cockshutt Plough Co., have taken over the plant of the Petrolea Waggon Works, Petrolea, Ont., and have organized this plant especially for the manufacture of sleighs and trucks, and are now working it to full capacity. The Brantford plant will be used to manufacture farm waggons, dump waggons and similar vehicles.

The Eastern Handle & Dowel Co. Ltd., Farm Point, Que., have installed the following equipment: automatic reversible threading and chucking machine, chucking and topping machine, rapid sanding machine, all manufactured by C. W. Smith, Grand Rapids, Mich., and two large and one small Hawker adjustable dowel machines, with trim saw attachment, manufactured by W. S. Hawker Mfg. Co., Dayton, Ohio.

The Goderich Mfg. Co., Goderich, Ont., through J. A. Baechler, the manager, recently purchased several tracts of timber. As this material lies outside the city, it was necessary to secure two large trucks to bring the logs in to the plant. This firm plan on going extensively into the manufacture of boxes and baskets and will remodel their factory in the spring if suitable arrangements can be made with the city council.

It is anticipated that the furniture factory which an English syndicate propose erecting at Marpole, B.C., will be gone ahead with soon. Adverse exchange rates have had a lot to do with the delay in commencing active construction work, for as a representative of the company stated, it would have cost 20% to transfer the capital from England. It is proposed to invest a quarter of a million dollars in the new enterprise.

The Simonds Mfg. Co., of Fitchburg, Mass., have just completed an addition to its Research Laboratory at Lockport, N.Y. The new building is 40 ft. by 50 ft. A considerable amount of new equipment has been installed to enable them to carry on development and research work on a much larger scale. It is expected that new formulas and methods for making special steels will be worked out in the new laboratory under the direction of their experts.

The Port Hope Lumber & Veneer Co., Port Hope, Ont., who recently fitted up to manufacture fruit baskets, are being literally swamped with orders. Among those recently received was one for 8,000 from the Niagara district, 4,000 from St. Davids Ont., 4,000 from Hamilton and many others of like size. The output of the plant is in the neighborhood of 3,200 baskets per day, while the price received is believed to be 15c per basket.

The Bridgewater Shipping Co., Limited, Bridgewater, N.S., have recently purchased from the estate of the late J. F. Beeler, Lequille, N.S., machinery for manufacturing spokes and bent rims. It is the intention to instal this equipment in the Bridgewater plant and turn out a line of waggon spokes and bent rims. The officals of the above company are R. Dawson, president; Dr. W. Trethewey, vice-president; E. Tupper, managing director, and H. S. Barnby, secretary-treasurer.

William Conklin, proprietor of the Conklin Planing Mills, Kingsville, Ont., has bought the lumber business and planing mill of John Fraser, Amherstburg, Ont., who is retiring from business. Charles Wellman, who for many years has been associated with the Windsor Lumber Co. at Windsor, Ont., has been appointed manager of the Amherstburg industry. Mr. Conklin now has four lumber yards at Kingsville, Woodslee, Cottam and Amherstburg.

The officials of the Office Specialty Co., Limited, Newmarket, Ont., manufacturers of desks and office fixtures, recently erected a memorial tablet in honor of the employees of the company who paid the supreme sacrifice in action. The tablet was unveiled by Miss Ruth Dolan, daughter of W. E. Dolan, supervisor of branches. H. C. Slemin, managing director of the company, delivered an appropriate address. Ninety-one employees of this company served under the colors and eight of this number were killed.

Hitch Bros. Co. of Canada, Limited, St. Thomas, Ont., recently installed a plant to manufacture a line of wooden toys. While not completely organized, they are turning out at the present time kiddie horses, kiddie sleighs, bobby horses, Kumfy Kosters, wheel barrows and bag trucks and other similar toys. One of their best sellers is a coaster waggon which is patterned after the common bob sleigh, having wheels instead of runners. They are experiencing a strong demand for their product and expect to work up a large business.

The box makers of B. C. recently made a plea for protection. J. H. McDonald, who represented the box manufacturers, explained that there are 24 box factories in British Columbia, giving employment to 1,500 hands, while 3,000 others are engaged in cutting lumber for this trade. The total value of the boxes produced runs about $7,000,000 annually, and of this amount from 75% to 85% is expended in wages. He asked for a continuation of the present tariff on behalf of the box makers' section of the B. C. branch of the Canadian Manufacturers' Association.

According to reports recently received the piano manufacturing industry has been hit very heavily by the sales tax and the recent increase in freight rates. The immediate future does not appear to be any too bright, although the piano manufacturers are not pessimistic. The commercial credit situation has also affected this industry adversely and will continue to do so until the financial situation is easier. Under present freight tariffs the rate from Calagary to Toronto on an ordinary upright piano is $30.25. This may tend to curtail the amount of business done in western Canada.

The Massey-Harris Co., Limited, Toronto, Ont., contemplate the erection of a large sawmill at Humphrey, Arkansas. This mill will be used to manufacture the timber from a tract of 23,000 acres recently acquired by this firm. In addition to the sawmill, other buildings will be constructed and a number of homes erected for the mill employees. This mill will have a daily capacity of over 75,000 feet and will give employment to about 400 men. The total investment is expected to run up to $500,000. The lumber will be shipped in the rough to Toronto, where it will be turned into their well-known line of agricultural implements.

The Elliott Machinery Co., Limited, Belleville, Ont., are moving their Toronto offices from 111 Adelaide St. East, to 168 King St. East. In the new premises they will have a large showroom and will display their line of combination woodworkers also such individual pieces as the Elliott jig saw, band saw and planer. In addition, a complete stock of spare parts will be carried. This firm is succeeding in working up a large export business. A shipment of 18 combination woodworkers was recently made to South Africa and a smaller shipment consisting of six woodworkers to South America.

The Brantford Pattern Works, 49 George St., Brantford, Ont., have recently branched out and are making a line of wood novelties along with wooden patterns. The novelties manufactured include piano lamps, table lamps, tool chests, forms for reed furniture and turnings of all kinds. They contemplate building a new addition to their factory in the near future. The present plant consists of planer, jointer, band saw, dowel machine, lathes, sanders, trim and combination saw, also a steaming and bending outfit. The proposed building is to be a three-storey factory. The following machines will probably be added:—

One reason why our Gum is Straight and Flat

It *IS* Different

One of our customers to whom we recently made an initial shipment of our KRAETZER-CURED Sap Gum said to us:

"This is different from any Gum lumber I have ever seen."

Of course it is; that's exactly what we have been trying to make everybody understand. It's like another wood. **Better, vastly better.**

Most everybody thinks the Sap part of Gum must be black or discolored. **Let us show you differently.** Our Plain Sap and Quarter Sawn Unselected Gum is as **bright as a dollar,** with a slight pinkish cast, about the color of light cherry.

Of course, the inspection rules say "Stain is no defect," but **what do you say Mr. Manufacturer,** you who have to **cut up, work** and **finish** the lumber?

We do not see how the usual run of Sap Gum, discolored, black and lacking uniformity in color, can be used for the manufacture of furniture, trim, finish, etc. **It is NOT used by manufacturers acquainted with our kind.**

And warp—another unnecessary evil; the result of antiquated methods of production and handling. **Ours is straight and flat—EVERY BOARD OF IT.**

The initial cost is a little more, the final cost very much less and oh! the **satisfaction** resulting from **dependability** and **freedom** from **trouble** and **worry.**

Unscrupulous dealers misrepresent. Do not be deceived. **Insist on the genuine.** Every board bears our trade mark; it stands for the acme of quality and dependability in Hardwoods.

Our protection THE KRAETZER-CURED LUMBER CO. *Your guarantee*

The Kraetzer-Cured Lumber Co.

GENERAL OFFICE: GREENWOOD, MISS.

Band Mills: Greenwood, Miss., Moorhead, Miss.

Why our Gum does not stain

Our Quartered and Plain Red and White Oak, Ash, Hickory, Red Gum and Tupelo is as fine as the highest quality of virgin timbers and thorough knowledge of production can produce. THERE IS NONE BETTER.

band saw, drum sander, shaper, and a number of other smaller pieces of equipment.

It is reported that the plant of the St. Thomas Cabinets, Limited, St. Thomas, Ont., has been taken over by the Canadian Edison Phonographs, Limited, a branch of the Edison Co. of Orange, N. J. This new company has purchased the entire plant and intend installing additional machinery in the near future. They will completely reorganize the plant for the manufacture of phonograph cabinets and the assembling of cabinets and phonograph parts. It is expected that the plant will be in shape to turn out the first Canadian-made Edison phonograph by June 1st, 1921. In connection with this deal, it may be of interest to note that at one time Thomas A. Edison, the head of this company, resided in St. Thomas.

Sir Alexander Maguire, chairman of the Amalagamation of British and Canadian match-making concerns, who intend to establish a five million dollar plant in the vicinity of Quebec, is expected to arrive from England in the course of the present month when the site will be chosen and the work of excavation for the foundations of the factories will be proceeded with. It is admitted that the plant will be located within a radius of ten miles of Quebec City, and the plans for the new industry will practically duplicate a plant recently erected near Liverpool, Eng., which is considered the most up-to-date in the world. The production capacity will be about 100,000 gross a week and the industry will give employment to between two and three thousand hands.

The exhibits made by the North American Furniture Co., Limited, and the Owen Sound Chair Co., Limited, at the Owen Sound Exhibition, attracted considerable attention. These firms succeeded in winning the cup presented to the firms making the best exhibits. One of the newer designs that created much favorable comment was an eight-piece dining-room suite, finished in chrome walnut. This is a new finish which has been placed on the market recently by the above firms. The wood used is birch but it is so treated that it can scarcely be distinguished from walnut even by experts. The attractive appearance of the suite only goes to show what can be done with Canadian woods when intelligently handled. If more Canadian furniture manufacturers were to give greater attention to local woods, it would go a long way to creating a strong demand for furniture made in Canada and from Canadian woods.

The Western Match Co., Limited, which was recently organized with a capital of $200,000, has secured a plant at Neepawa, Man., where they will manufacture matches for the western market. J. D. Mantion, formerly with the E. B. Eddy Co., and the Diamond Match Co., is superintendent of the new plant. Several special machines of his own design are to be operated in the new factory. The matches are to be manufactured under what is known as the "new square match system," the patent rights of which have been secured. Under this method three matches can be cut from a given dimension of lumber as against one match by machines now in use. The new special equipment also has an output three times as great as that of the ordinary type of machine. Another feature is that the matches can be made from green lumber, eliminating the necessity of tying up a large part of the capital in lumber that is being seasoned.

Personals

W. M. Ritter of the W. M. Ritter Lumber Co., Columbus, Ohio, together with F. B. Pryor, sales manager of the company, recently spent a few days in Toronto on business.

H. B. Smith, a well-known furniture manufacturer of Owen Sound, Ont., was recently appointed president of the Halifax Shipyards Limited. This organization is one of the links in the large British Empire Steel Coroporation merger.

Wm. F. Miller, on the staff of the inspectors of the National Hardwood Lumber Association, was recently transferred from Grand Rapids, Mich. to Toronto, Ont., to assist John E. Banks, chief inspector for the Toronto district. Frank Fravelle, assistant to Mr. Banks for some time, recently resigned.

Matthew Brown, of Toronto, Canadian representative of the Thomas Hall Lumber Co., Charleston, W. Va., recently joined the ranks of the benedicts and is receiving the congratulations of his friends in the industry. Mr. Brown was married at St. George's Church, Toronto, on October 2nd, to Mrs. Mary E. Foster, only daughter of the late Rev. Thos. & Mrs. Rixon. Mr. and Mrs. Brown have taken up their residence at 83 Neville Park Boulevard, Balmy Beach, Toronto.

W. R. Youmans, of Toronto, who represents Hunt, Washington & Smith, Nashville, Tenn., reports that his company recently launched a new sawmill at Blakley, Ga., with a cutting capacity of 75,000 feet a day. The principal product cut will be short and long leaf southern pine. The new mill has the latest dressing equipment, drying kilns, and other installations.

A. E. Clark, of Edward Clark & Sons, wholesale lumber dealers, Toronto, was one of a party of prominent business men, paper manufacturers and financiers who were the guests of the Riordon Pulp & Paper Co. and visited the large pulp development at Hawkesbury, N. S., and later spent a day at the Kipawa plant. This latter project represents the last word in equipment and organization.

Robert Bury, president of Robert Bury & Co., Liverpool, England, and Mrs. Bury, are spending a few weeks in Canada. Mr. Bury is visiting a number of the important lumber centres of Ontario and New York State, looking into sources of supply for the coming year. He recently returned to Toronto from spending several days across the border, accompanied by F. M. Thompson, manager of Robert Bury & Co. (Canada). Mr. Bury's many friends are pleased to meet him, as it is four or five years since his last visit to the Dominion.

W. A. Ransom, president of the Gayoso Lumber Co., Memphis, Tenn., whose family have been spending the summer at Port Colborne, Ont., spent a few days in Toronto recently with W. R. Youmans, 933 Queen Street West, Canadian representative of the firm. The Gayoso Lumber Co. are large producers of quarter sawn red gum, plain and quartered oak, poplar, chestnut, etc. Mr. Ransom reports that in the south stocks among the consumers are generally low, but that more inquiries have been coming in lately than for some months past, and many are looking for a stiffening in prices by the 1st of November. The Gayoso Lumber Co. also does a large business in various parts of eastern Canada through Mr. Youmans, who has been calling upon the trade for the past eight years.

Obituary

Arnold Green, of Green Bros., Toronto, interior woodworkers, recently passed away. Mr. Green was fatally injured in an automobile accident.

Harold Walton, superintendent of the Dominion Shipbuilding Co., Toronto, recently visited Port Arthur, Ont. Mr. Walton was at one time connected with the Port Arthur Shipbuilding Co.

The death recently occurred in Toronto of David Rogers, son of the late Chas. Rogers. Mr. Rogers was born in Toronto seventy-two years ago and for the greater part of his life was connected with the firm of Chas. Rogers & Sons, furniture manufacturers and dealers.

L. D. Shafner recently passed away at Annapolis Royal, N. S. Mr. Shafner was a well-known shipbuilder and having been engaged in that business both in Nova Scotia and in British Columbia. During the last few years he was connected with the Annapolis Shipbuilding Co., Annapolis, Royal, N. S.

L. D. Murrelle, president of the L. D. Murrelle Lumber Co., Memphis, Tenn., recently passed away at Denver, Col. Mr. Murrelle, who was only 32 years of age, had been identified with the hardwood lumber industry for a number of years, and, although quite young, he had achieved unusual success in the line he followed.

Wm. Yelland, of Peterboro, Ont., recently passed away. Mr. Yelland was born in England and came to Peterboro in 1850, when he established a carriage factory which he conducted until 1900, when it was taken over by his son, G. H. Yelland. He served in the city council for thirteen years and also one term as mayor. He is survived by three sons, Wm. G. Yelland, of Toronto, and Joseph and Benjamin Yelland of Peterboro.

J. S. Stephenson recently passed away in Peterboro, Ont. Mr. Stephenson was one of the pioneer residents of Peterboro, having been born in that city in 1831. He was a boat builder by trade and early gained an enviable reputation for the excellent boats which he turned out. He also has the unique distinction of having made the first canoe manufactured in Peterboro.

In the Olden Times

IN the olden times the furniture artisan with his square and dividers, first designed, then cut and assembled his creation. This man, who devoted his time to originating and putting together these wonderful pieces, could rightly be called an artist. The making of the beautiful specimens that grew under the hands of such a master, became the life work, into which he put his whole heart and soul. He was proud of the articles he had created, proud of their fine lines, proud of the workmanship that had entered into their production. His was the pride of achievement.

Today, conditions have changed greatly. The manufacture of a single piece of furniture involves the collective effort of many artisans.

The quality and appearance of the present day product, however, depends entirely upon the attention, interest, and workmanship of the individual, just as it did in the olden times, but a mistake to-day of one artisan may throw out the work of several others who are working on parts of that same piece of furniture.

Each operation, although apparently simple, is of the **utmost importance,** and when done perfectly, contributes to **make a perfect article when completed.**

The furniture you are working on to-day is destined to mould and elevate the taste of the Canadian people and to assist them towards Better Furnished Homes and Greater Happiness.

There is your incentive to take a pride in your work—to deserve the name of Craftsman.

TAKE PRIDE AND INTEREST
IN YOUR WORK

THE HOME FURNISHINGS BUREAU

Inaugurated to promote a greater interest
in the furnishing of Canadian Homes

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"Better Furnished Homes Mean Greater Happiness"

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We manufacture a complete line of nails and wire in every style and size. Your special needs can be supplied. Write us today. We manufacture special styles to order.
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Harry F. Moulden & Sons, Winnipeg, Man.
Mr. Norman Jessiman, 505 Hastings St. W., Vancouver, B.C.
Head Office and Works: HAMILTON, CANADA

Some Factory Dont's

A writer in the Textile World Journal presents the following as a list of don'ts regarding which he says that some of the men he has worked under might have fared better had they been more careful to observe:

Don't give orders direct to the men; tell the foreman; that is one reason you have him there.

Don't measure a man's ability by his talk; make his work count.

Don't build a machine if you can buy one as cheaply; there is likely to be a big difference in their performance.

Don't buy things on the basis of cheapness; they may be expensive in the end.

Don't imagine that two ten-dollar-a-week men are better than one twenty-a-week man.

Don't be unjust if the men have a grievance, adjust it, if possible.

Don't get your workmen all stirred up over trifles; it reduces their efficiency.

Don't take too many of your own or your wife's relations into your employ; the other workmen will not have confidence in them or in you.

Don't permit discord between departments; it retards the efficiency of the plant.

Don't call down your foremen in the presence of the work-people.

Don't discourage suggestions.

Don't forget that the surest way to kill a good suggestion is to make a joke of it.

Don't distrust your employees; if they are not reliable, discharge them.

Don't drive the men to get a job done quickly, and then let it lie around the shop when it is finished.

Don't surround yourself with incompetent people just because they are friends; their friendship may be worth having, but their incompetency may be detrimental to the working of the plant.

Don't have a man work too much overtime; his nervous system will not long be able to stand it.

Don't do away with a thing or a method unless you put something better in its place.

Don't have a poor system of artificial light or of ventilation; it is very poor economy.

Don't fail to supply good drinking water for the employees.

Don't have favorites; neither they nor the workmen will respect you for it.

Don't take credit that belongs to some one else.

Don't be content with cheap labor; the best is the cheapest in the end.

Don't forget that there is more than one side to a story.

Don't hesitate to throw a machine into the scrap heap when its usefulness is gone.

Don't be anything but a man if you want good, faithful, and loyal service from the workers.

Don't accept opinions when facts should be, and can be, shown.

Some cabinet-makers consider that the sanding machine has made more difference in output than any other machine.

Heat Regulation Reduces Accidents

Men and women in the office or shop always work faster and with fewer errors and accidents when the rooms are **automatically maintained at an even temperature.**

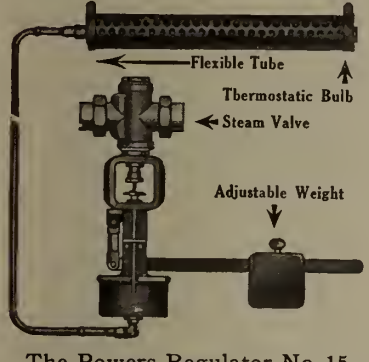
Automatic control on processes involving heat results in a more uniform production with saving of material, fuel, and man power.

This is a worth-while saving in every instance.

Powers Regulators insure that saving.

Let us show you how it is done.

Powers Regulator No. 15



The Powers Regulator No. 15

This regulator is designed for the control of air temperature in drying rooms of all kinds. Prevents use of more heat than is required. Easily installed. Entirely automatic, reliable, and accurate.

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Try One in Your Own Factory

Tell us where you have difficulty with uneven temperatures, and we will send you a suitable regulator for trial in your own factory. If you are not satisfied, send it back at our expense.

The
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Limited

Specialists in Automatic Heat Control

82 Chestnut Street - Toronto, Ont.

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1 Car	4/4"	No. 3	Com. & Btr.	Brown Ash
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2 cars	8/4"	No. 2	" "	Soft Elm
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2 "	8/4"	No. 2	" "	Soft Maple
1 "	4/4"	No. 3	" "	Soft Maple
5 "	4/4"	No. 2	" "	Hard Maple
4 "	8/4"	No. 2	" "	Hard Maple
2 "	12/4"	No. 1	" "	Hard Maple
3 "	6/4"	No. 2	" "	Birch
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Open for good steady position. 25 years' experience in United States and Canada. Phonograph work a specialty. Apply Box 102, Canadian Woodworker, Toronto, Ont. 10

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must be man capable of taking entire charge of all departments of finishing room; state salary. The Jacques Furniture Co., Ltd., Kitchener, Ont. 10

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Young man, age 30, fifteen years' practical experience in furniture making and selling, is ready for a serious proposition as representative of any good line of furniture or any line connected with the furniture industry. Present position does not offer further advancement. Box 97, Canadian Woodworker, Toronto, Ont.

Situation Wanted

Young man, at present engaged as Accountant and Office Manager of Sash & Door Factory with lumber yard in Western Ontario, desires change of locality. Thoroughly experienced in accountancy, costing, office systems, reading plans, estimating, and possessing executive ability. Will be glad to furnish full particulars and references. Box 101, Canadian Woodworker, Toronto, Ont. 10

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Excelsior Machine and Press. Can be seen running. Good reasons.

REID BROS.,
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1,000,000 feet Ready for Shipment.

Birch, Maple, Beech, Ash, Elm, Basswood from one to four inches. Low Prices. Quick Service. Boisse & Racicot, Sherbrooke, Que.

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For Sale, one set St. Paul Dovetail Box Machinery in excellent condition. Box 96, Canadian Woodworker, Toronto, Ont. 9-10

FOR SALE

One Jackson-Cochrane 36" 3 Drum Roll Feed Sander rebuilt.
One Berlin No. 87-7 x 4 Hardwood Flooring Machine complete.
One No. 94-15 x 6 Planer and Matcher with square bottom and side heads, fitted with new knives, jointers, countershaft, T. & L. drive. Machine in excellent condition. Apply P. B. Yates Machine Co., Limited, Hamilton, Ontario. 10

FOR SALE

No. 43 Berlin Triple Drum Sander (roll feed), 42 inch, with countershaft. Practically new. For further particulars, price, etc., write The Pacific Box Co., Limited, Vancouver, B. C.

Dry Merchantable Spruce FOR SALE

400,000 feet 1, 2 and 3 in. Widths separate in the 2 and 3 in. Also a few cars culls 2 and 3 in. Write

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Berlin Triple Drum Sander, 48".
Fay & Egan Drum Sander, 48".
Berlin Triple Drum Sander, 43".
McDonough 54" Band Resaw, Vertical
Diamond Horizontal Band Resaw.
American Timber Sizer.
70" Sheldon Fan.
400 H. P. Cross Compound Corliss.

Write Box 82, Canadian Woodworker, Toronto. t.f.

Toy Manufacturing Business

and plant, doing an increasing business from coast to coast; all machinery and equipment for making all kinds of toys; large brick factory and plenty of vacant land for extensions; C. P. R. and G. T. R. shipping; for sale as a going concern; the services of experts could probably be retained if desired; expect a profit of $10,000 on this year's business. Apply Pearson Bros., Ltd., 17 Adelaide St. East, Toronto. 10-11

For Sale

At reasonable price—Fireproof Planing Mill, fully equipped with machinery, gas engine and electric power. Mill building 42 x 75, with frame lumber sheds, barn, etc., large yard for piling lumber. Office building and superintendent's residence. Excellent location on brick highway, one half mile from Buffalo, in fast growing and thickly populated section; nearest competitor four miles. Excellent opportunity for parties with capital to run an up-to-date lumber and mill business. Business established 20 years. Box 100, Canadian Woodworker, Toronto, Ont. 10

FOR SALE

New and second hand machinery.
1 only Band Saw (34" wheel)
1 only Wooden Frame Tenoner Machine.
2 only 18" Sand Belt Machines.
1 only (Two head) Pettingell Rounder.
1 only 2" No. 10 Ober Lathe, suitable for hoe, rake, fork, broom handles, etc.

Apply Box 99, Canadian Woodworker, Toronto. 10

FOR SALE

Planer and matcher. One S. A. Woods No. 33 Planer and Matcher in very good order, $1200. Also one 4" Sticker, American Woodworking Machinery Co., new, $450.00. O. Chalifour, Inc., Quebec, P. Q. 8-11

FOR SALE

E. P. Allis 20 x 32 x 42 Heavy Duty, Cross Compound Corliss Engine, complete, located at Struthers, Ohio. We inspected this and purchased it for our clients, but due to changes and additional machinery, we were instructed to purchase a larger engine, consequently this is for sale, in good condition and immediate delivery.

The J. J. Wernette Engineering Co.,
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I Offer the following
Used Machines
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Sticker, Hermance Machine Co. 10" 4 Side.
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Scraper, Baxter D. Whitney 42".
Rubbing Machine, Moore Machine Co. Standard.
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Matcher, American No. 22 24" 4 Side.
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Rip Saw, Greenlee Bros. Power Feed.
Band Resaw, Mershon 44" and 54".
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Saw, Superior Jigg.
Jointer, Falls Machine Co. Undercut 24" Power Feed.
Buzz Planer 24" Buss Machine Works.
Buzz Planer, 12" Frank Machine Co.
Lathe, No. 3 Waymouth Turning.
Lathe, Back Knife Clement 36".
Lathe, No. 10 Ober Turning.
Planer, Buss Machine Works 30" Cabinet.
Dowel Rod Machine, E. B. Hayes
Dowell Gluer and Driver, E. B. Hayes.
Door Clamp, E. B. Hayes Standard Power.
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Lock Corner Machine, Morgan Machine Company.
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Glue Manufacturer wants a live salesman with good connection among furniture and woodworking trades. Apply Box 98, Canadian Woodworker, Toronto. 10

FOR SALE

Nailer 12 x 30, Morgan, Open back,
Box Board Matcher, Mereen-Johnston,
26" Heavy Single Surfacer, Preston,
24" Single Surfacer, Yates,
24" Jointer, round cylinder,
Double End Tenoner, Fay-Egan,
Single Tenoner,
3" Four Side Moulder,
Power Feed Rip Saw, Clark-Demill.
All in fine order.
Write or phone for particulars:; Toronto Representative, S. F. Barrons, 26 Charles St. E., Phone North 3121.

Cowan & Company of Galt Limited,
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Woodworking Plant to Rent

Manufacturers in good town north of Toronto, making products of wood and iron, are discontinuing the wood lines and are prepared to turn over their wood-working shop, with all machinery and equipment, rent free, with option of purchase at a low figure, to any reputable concern who will keep the same in operation and furnish what little power is required in the iron working shops; anyone with sufficient work to employ twenty to thirty men can make sufficient shavings and refuse to supply the fuel for the 200-h.p. steam plant, but a large quantity of coal is on hand if required; building is separate unit, modern concrete mill construction, 50 feet by 100 feet, two stories, complete with belting, shaving exhaust system, dry kiln, elevator, two railway sidings, shafting; large yard, etc. Box 95, Canadian Woodworker, Toronto, Ont.

For Sale

1 Iron Frame Gaining Machine, cutting up to 3" wide.
1 Witherby Rugg & Richardson Tenoning Machine, single heads and single cope, cut 3" wide, one cut.
1 Fay & Egan, 3 spindle, vertical car boring machine.
1 Fay & Egan, No. 3 automatic railway cut-off Saw, with 24" x 8' 6" roller top table.
1 Fay & Egan, Vertical Car tenoning machine, making single, double or triple tenons on both sides of sills without reversing.
1 John Bertram & Sons, Vertical Solid Chisel Mortising Machine, with drilling attachment, 2" cap.
1 Cant, Gourlay & Co. blind style Mortising and Boring Machine.
1 Bertram & Sons, 7", four-sided Moulder.
3 50-h.p. Electric Motors, 25 cycle, 3 phase, 550 volt, 720 to 750 R.P.M.
3 75-h.p. Electric Motors, 25 cycle, 3 phase, 550 volt, 720 to 750 R.P.M.

Apply L. S. TARSHIS & SONS,
7-10 400 Front Street East,
Phone Main 5338. Toronto, Ont.

Upwards of 10,000 Schemes to Provide Housing in Britain

Attempts to solve Great Britain's housing problem have already brought forward upards of 10,000 schemes, involving an annual capital expenditure of $600,000,000, according to a report by a representative of the foreign trade bureau of a Trust Company. After giving details as to various plans and the number of houses to be built in each of more than thirty cities visited, the report continues:

"The programme of the ministry of health—complete rehousing in three years—is about one year behind, and is costing more than double the original estimates.

"The ministry of health works in conjunction with the office of works. When a local authority defaults, the business is then intrusted to the office of works.

"What is keeping back housing at the present time is the fact that there are not enough skilled men to do even a quarter of the work wanted. The trades unions will not allow the number to be incrased from the outside. The government isusing a sort of indirect compulsion by prohibiting luxury and unessential building, so that if a man will not build cottages he is not alloed to build anything else. There arc various suggestions for speeding up the work, including a guarantee to the trade unions of employment for a term of years to men employed on housing work, to insure them against loss of time in bad weather by a minimum wage, wet or dry.' In return the trades unions will be asked to consent to dilution and the employment of unskilled labor, to give up their appreciceship rules, and to abandon all opposition to the employment of ex-service men, trained or untrained. There are 'luxury building' tribunals to hear appeals against decisions prohibiting buildings regarded as non-essential.

"There are housing bond campaigns all over the country. In London subscritions to the 6 per cent. bonds are coming in at about the rate of £100,000 a day. While the local governments are isuing 6 per cent. bonds, the British Government charges 7 per cent. Borrowing in the ordinary way for housing schemes not financed by bonds is usually 7 per cent.

"The total number of housing schemes in England and Wales numbers more than 10,000, covering in all land for 800,000 houses. Of these some 7,000 have been approved, with an area for 550,000 houses. In Scotland 103,000 houses have been authorized, the bids averaging £1,000 per house. This is roughly £100 to £150 more than it costs per house in England."

The Housing Problem in Bulgaria

In order to alleviate the congestion in Sofia, the committee in charge of the new projects has decided to convert all the big cafes and taverns into ordinary dwelling places or Government buildings. Rents have increased by between 150 and 200 per cent., according to the Near East. The compulsory construction of new houses is contemplated. All the banks, joint-stock companies, and rich people from the interior Provinces wishing to live in Sofia are obliged to build their own houses.

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LIST
of NEW and USED
WOOD TOOLS
FOR IMMEDIATE DELIVERY

Wood Planers
24" Pony planer.
24" Crescent, single surfacer.
12" Preston Buzz planer.
24" Dundas planer & matcher
Cowan, planer & matcher.

Band Saws
36" Tilting table pedestal.
30" Ideal, pedestal.
26" Metro, pedestal.
60" Fay & Egan, band re-saw.

Saw Tables
No. 5 Famous, combination (2).
No. 4 Famous, combination.
McKenzie, combination (3).
MacGregor Gourlay railway cut-off.
No. 1 Greenlee automatic cross-cut.
No. 642 C. M. C. cut-off.
Galt, iron frame, cut-off.
Goldie & McCullough, power feed rip.
Davis, power feed rip.
Dominion saw table (6).
No. 648 C.M.C., swing saw.
25" Westman's, jig saw.
7' Williams, swing saw.
Canadian, steel frame airmotor cut off.

Mortisers
Cowan, foot power.
No. 2 Smart, foot power.
No. 1 Defiance D handle mortiser (2)
Dominion, foot power.

Moulders
13" Clark-Demill four-side.
12" Woods four-side, inside
10" Goldie & McCulloch, three side.
10" Houston, four-side.
8" Dundas four-side.
6" Dundas sash sticker.

Boring Machines
Gear driven, post borer.
Fay, single spindle, horizontal.

Sanders
48" Berlin, three drum.
No. 176 Cowan, adjustable.
M. 155 Cowan, disc and drum.
Post radial, surface sander.
10" Wood frame, belt.
5" Belt sanders (2)

Sawmill Machinery
No. 1 Sawyer-Massey, portable sawmill.
Vaughan, gasoline driven, drag saw.
Champion, friction, drag saw.

Miscellaneous
Famous, portable woodworker.
No. 8 Beach, universal woodworker.
No. 5 Elliot, universal motor driven, woodworker.
No. 7 Superior, 26"-30" saw arbors.
No. 6 Superior, 24"-26" saw arbors.
McGregor-Gourlay 12 spindle dovetailer.
20" American, wood scraper.
Ballantine dowel machine.
Fay, iron frame, double head, tenon machine
Jackson-Cochrane, double head tenoner.
C.M.C. 4 head rounding machines (3).
No. 3 Defiance, tim & fellog rounder.
No. 3 Cowan two spindle shaper.
McGregor-Gourlay, double spindle shaper.
No. 1 Defiance, axle shaper.
No. 1 Defiance, spoke driver.
No. 21 Covel bandsaw filing clamp.
No. 104 Covel band saw roller.
Cowan veneer press screw.
Humphrey clothespin lathes (5).
Humphrey clothespin slotters (2).

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Works: GRAND RAPIDS, MICH.

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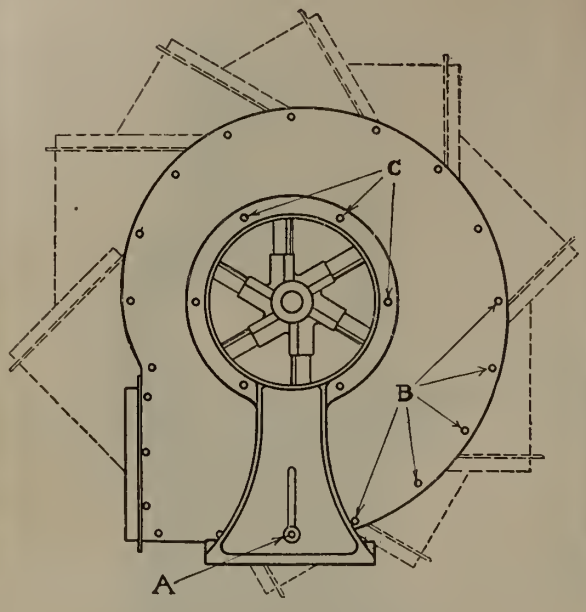
Reversible Housing



One of the features of the Canadian Planing Mill Exhauster is the reversible housing. It is easily adjustable to either hand and to any discharge.

By this arrangement one fan may be used to meet all requirements, thus eliminating crossed belts and sharp angles.

Let our engineering department help you plan your refuse exhauster system.

Write for catalogue 400-13.

Canadian Blower & Forge Co.
KITCHENER, ONT.

Colt's Clamps
for the
Woodworker

Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

For further information write for Catalogue No. 294.

Batavia Clamp Co.
235 Centre St. BATAVIA, N. Y.

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Plain, Straight and Spiral Grooved

"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co. Limited
ORILLIA ONTARIO
Sawmills at Zebra and Orillia, Ont.
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Immediate Delivery

Subject to Prior Sale

We have supplied the leading manufacturers with "YATES" fast feed machines, replacing the following other makes.

To be cleared at bargain prices. Inquire immediately for price and particulars.

1 "WOODS" Planer and Matcher 24 x 6", complete with extra heads. Knives for matching shiplap, novelty siding and dressing on edge.

1 "WOODS" Planer and Matcher 15 x 6", 4 side, square top and bottom heads.

1 "BAXTER WHITNEY" Double Surfacer 26 x 8", sectional rolls, square heads.

1 'MacGREGOR GOURLAY" 10" Four Side Moulder, complete with extra heads and cutters.

1 "MacGREGOR GOURLAY" 26 x 8" Double Surfacer, complete square heads and divided rolls, extra set of knives.

1 "COWAN" Band Resaw 42" wheels to take 4" blade, opens 8", 5" on one side and 3" on other side of saw line complete, including 4 saws nearly new.

1 "COWAN" Band Resaw 54" wheel to take 5" saw, takes stock 6", 3" on each side of saw.

1 "COWAN" Swing Saw about 5' centre with 18" saw, T. & L. pulley drive.

1 "JACKSON" Cochrane Three Drum Sander 36" rebuilt, tested and painted.

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THE SHAPER MAN'S DREAM

THE KNOUREK PATENT

Ball Bearing Shaper Guide Collars

A Decided Improvement Over the Revolving Solid Collars Now in Use

Patent applied for

Ball-bearing Shaper Guide Collars are made with grooves as shown, for flat knives, and without grooves for solid steel cutters.

ORDER A SET ON 30 DAYS FREE TRIAL

The friction set up by stock or patterns bearing against solid revolving collars is entirely eliminated when ball-bearing shaper collars are used. Every shaperman knows the effect of this friction on stock being run, and so will appreciate the real value of these new shaper collars.

In the operation of the ball-bearing collar, the outer shell is free from the slotted collar proper and ceases to revolve with the spindles when pattern or stock comes in contact with it. It does not stop entirely but simply rolls along with the feed of the work. In this way there is no friction whatever between the collar and the work, therefore the edge surface can neither be burned nor worn down.

To save your patterns, stop spoilage of stock and in an easy manner, enable your operator to do more work, you should try out these new ball-bearing shaper collars —note the results by actual operation in your own plant.

Dept. A **WOODWORKERS TOOL WORKS** **Chicago, Ill.**

No. 3 Self Contained
Scroll Saw

Colladay Machine Works
Successors to
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Manufacturers of a complete line of woodworking machinery
Since 1867 Philadelphia, Pa.

Empire Clamps Stay Put

THE strength of the "Empire" All Steel Retaining Clamp is most apparent when the test is greatest.

Made with a special thread, that defies hard tension, it means economy and dependability. We make them in all sizes.

Write for prices.

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The product of years of research and experiment, MONITE offers new and greater value—the best waterproof glue obtainable in America. It can be adopted with confidence in every branch of the woodworking industry.

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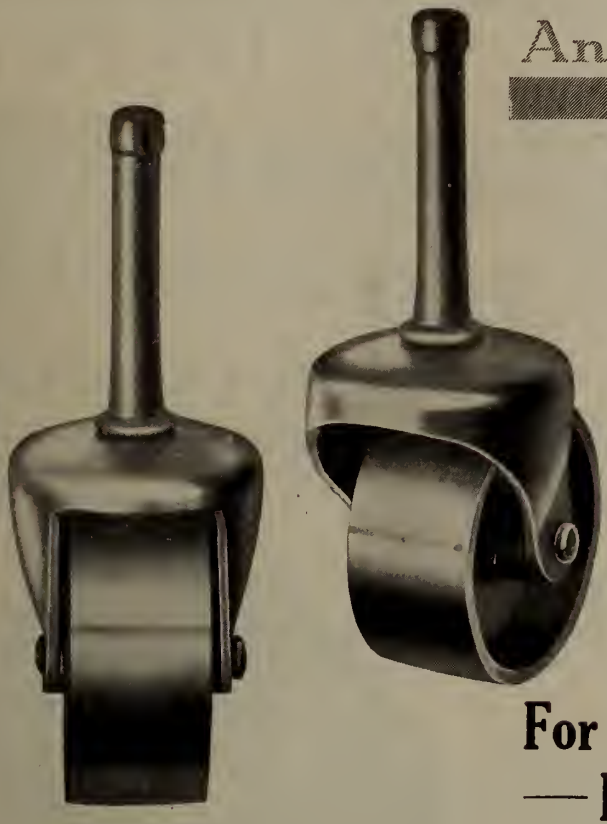

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Standardized by 85 years of service

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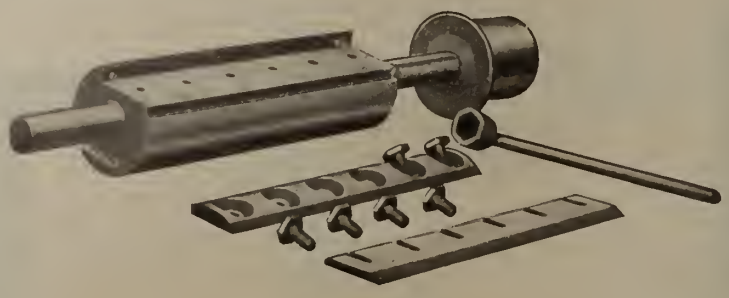

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Safety First! How often have we heard or seen this phrase, yet daily, yes, and oftener, accidents are occurring. Silver's Round Safety Cylinder will protect the operators of any of our new jointers from needless injury. They are greatly appreciated by the operators of these machines and they help wonderfully to increase production. Write us for descriptive matter regarding our complete line of machinery that will interest you.

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Beaver Brand SAWS

We specialize in helping factories to increase their output by supplying them with just the high quality saws they require.

Nothing but a selected grade of crucible steel is used in the manufacture of Beaver Brand Saws, and they come up to the requirements of sawmill or plant that manufactures furniture, phonograph cabinets or other products where the high grade saw is essential to the workmen.

Write us to-day for catalogue.

Radcliff Saw Manufacturing Company, Limited

1550 Dundas Street West **TORONTO, ONT.**

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GLASS PAPER, FLINT SAND PAPER AND GARNET PAPER

IN SHEETS AND ROLLS FOR ALL PURPOSES

Rolls 50 yards long, 18 in., 20 in., 24 in., 30 in., 36 in., 40 in , 42 in. and 48 in., wide

SHEETS, DISCS, STRIPS AND BANDS can be made to Special Sizes to suit the requirements of Purchasers

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Every quality argument is strengthened by the use of

NAPCO Waterproof Glue

The first impression in the woodworking plant, is decidedly in its favor.

Napco, is a powerful glue that holds---is impervious to water, and absolutely odorless.

No glue on the market is as economical. It is mixed cold, and applied cold, thereby saving much time and trouble in preparing.

Introduce Napco Waterproof Glue in your plant.

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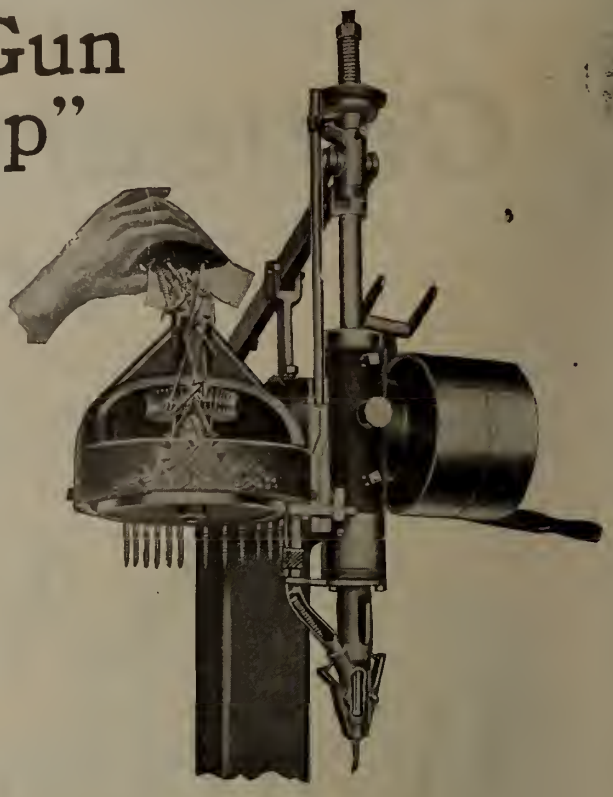

The MAGAZINE FEED of the Reynolds Automatic Screw Driving Machine is quite similar to the method of "feeding" the machine gun used in the war.

Any inexperienced workman can drive from 8000 to 12000 screws or bolts in a day with a "Reynolds."

Tell us the dimensions overall of work your plant is doing, also gauge and length of screws used, and we can quote on your requirements.

The Reynolds Machine Co.
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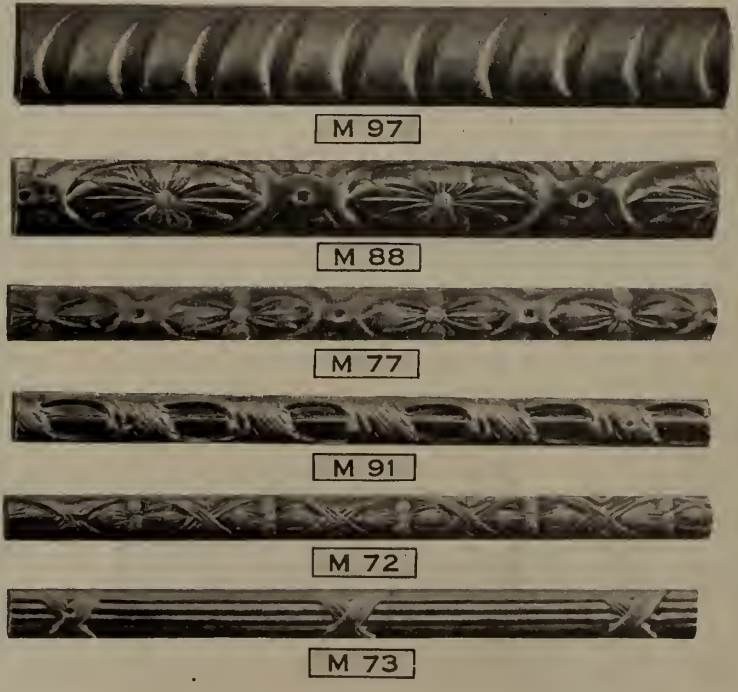
Massillon, Ohio, U. S. A.



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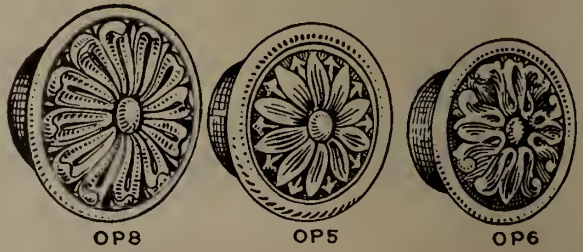

Waddell Manufacturing Company

Coldbrook and Taylor, N. W. **Grand Rapids, Mich.**

Some Wise Man said

"No mere spasm of goodness will make a right life, for we rise no higher than our habitual thinking."

—Anon.

This can be paraphrased to read

"No mere spasm of efficient manufacturing will make a first class product, and no business endures, except by habitual right methods."

We use the best skill possible in our manufacturing process, carried out under our exclusive formula. Our

PERKINS 183

TRADE MARK (Reg. U.S. Pat. Office).

is the result and this result is reflected in the factories of our customers and

THE PERKINS HABIT Insures Efficient Glue Room

Process and Product Patents covering Perkins Glue were granted July 2nd and March 19th, 1912, and have been held valid and infringed by the United States Circuit Court of Appeals. Patents have also been granted in Canada, Great Britain, Germany, France, Belgium, Italy and other foreign countries.

Perkins Glue Company

Factory and General Offices:
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To Do Small Work on Big Machines is as clumsy

and inefficient as trying to drive a ten penny nail with a sledge hammer. It can be done, of course, but how tediously a man must work and because it is tedious, it is therefore slow, hazardous and mighty costly for you.

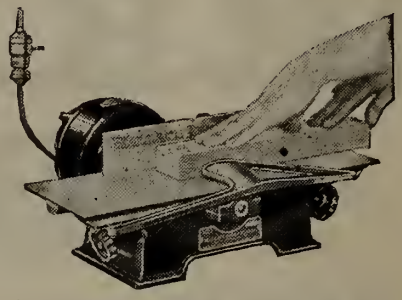
Think it over—it is a new thought and when one is accustomed to doing a thing one way, it is not very easy to see it another, But try sawing, trimming or jointing or any of the operations in cabinet, pattern or assembling work on big machines. You are very careful and always apprehensive.

If you had a smaller machine, the Wallace Bench Planer, or Jointer or Saw, you would run this stock over in a jiffy and be done in half the time.

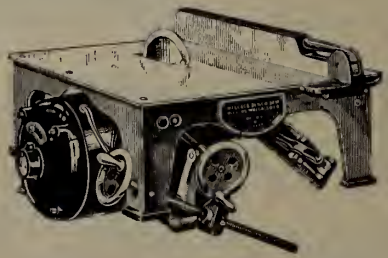
Then too, besides this decided time saving advantage of using Wallace Bench type machines for bench work, you profit by other advantages, i.e., you can take these Wallace Bench Machines to the work—they are portable. They set on the bench or along the side of it and at the elbow of the workmen, thus they save many time consuming trips to the big machines and so handy the men do little, if any, hand sawing or planing.

No wonder over 10,500 Wallace Bench Planers, Jointers and Saws are in daily use. You will find them at every bench in many pattern or cabinet and carpenter shops and in production work in plants.

Investigate the Wallace Idea for we know it will pay you. Ask any high class machinery dealer—phone or write us.



THE WALLACE BENCH PLANER or JOINTER (4 in. or 6 in.)



THE WALLACE BENCH SAW (Universal or Plain)

adopt the WALLACE IDEA at every bench

ASK YOUR MACHINERY DEALER

Wallace Bench Machines are sold by regular dealers who have anticipated your requirements — they are familiar with the performance of these machines now in use and their advice is therefore based on actual experience.

Our regular dealers have machines available to demonstrate the adaptability of the Wallace Idea to the various operations you have in mind and they are in a position to make prompt delivery from stock. They carry a full line of repair parts and instructions.

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that will dry your lumber ***right*** no matter what you make.

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The man who employs high-priced and more or less inefficient labor to perform a thing at will and convenience, which can be accomplished at a cost of fifteen cents per day
AUTOMATICALLY
by a small machine working one hundred sixty-eight hours per week,
QUALIFIES. Doesn't he?
Therefore,
Purchase

National Automatic Humidity Controlled Dry Kilns

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THE

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Is THE Satisfactory Kiln

Ask Any User

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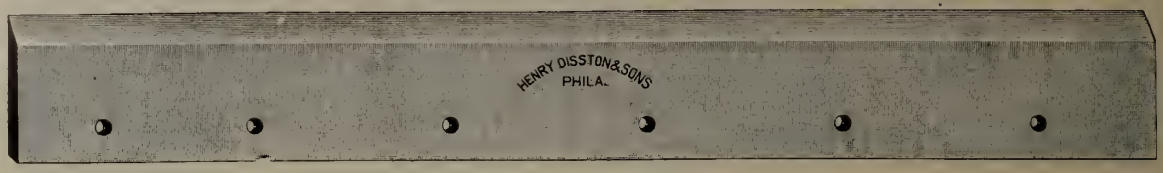
DISSTON

ALL STYLES OF KNIVES FOR WOODWORKERS



Are you getting the maximum production from your knife equipment? With the present necessity for greatly increased production, be sure your knives will give you the best possible results.

Disston knives cut fast and clean ,and hold their cutting edge.

Write for the Disston booklet on Machine Knives.

HENRY DISSTON & SONS LIMITED
TORONTO CANADA
Branch: Vancouver, B. C.

"MAPLE LEAF" SAWS

Inserted Tooth Saws
Solid Tooth Saws
Shingle Saws
Lath Saws
Special Grooving Saws
Dado Heads
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"Crowell" Swages and Shapers

Maple Leaf Saws are made by the largest All-Canadian Saw Manufacturers

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LIMITED
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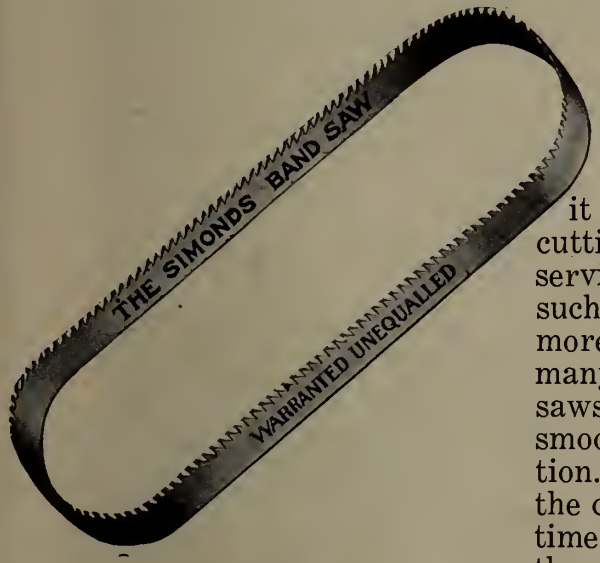
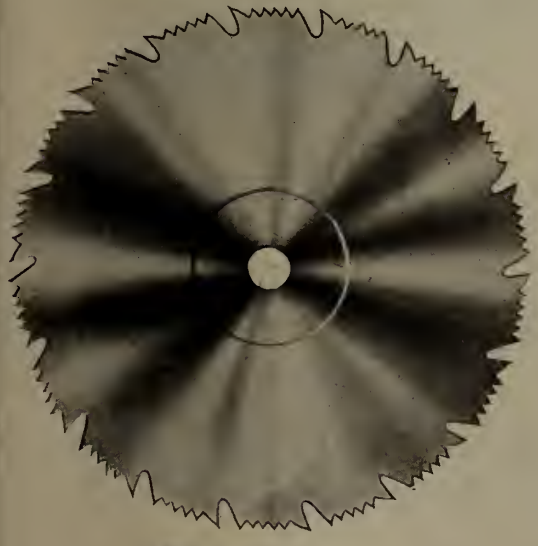
SIMONDS
SAWS AND KNIVES



For mill or woodworking shop it pays to use the better grade of cutting tools because of economy and service. The best saws and knives, such as Simonds, may cost a little more, but in the long run they are many times more serviceable. Good saws and knives mean better and smoother work and greater production. In other words, they reduce the cost of cutting and eliminate lost time for repairs which is too often the case when inferior grades of saws and knives are used.



If you want the best of the good saws write to us about any style or size. Remember we make Grooving Saws, Novelty Saws, Narrow and Wide Band Saws, Web and Scroll Saws, Swage Saw Sets and Machine Knives for all purposes. Let us send you a copy of our catalog describing the complete line we manufacture.

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CANADA SAW CO., LIMITED
"The Saw Makers"
Montreal, Que.
St. John, N.B. Vancouver, B.C.

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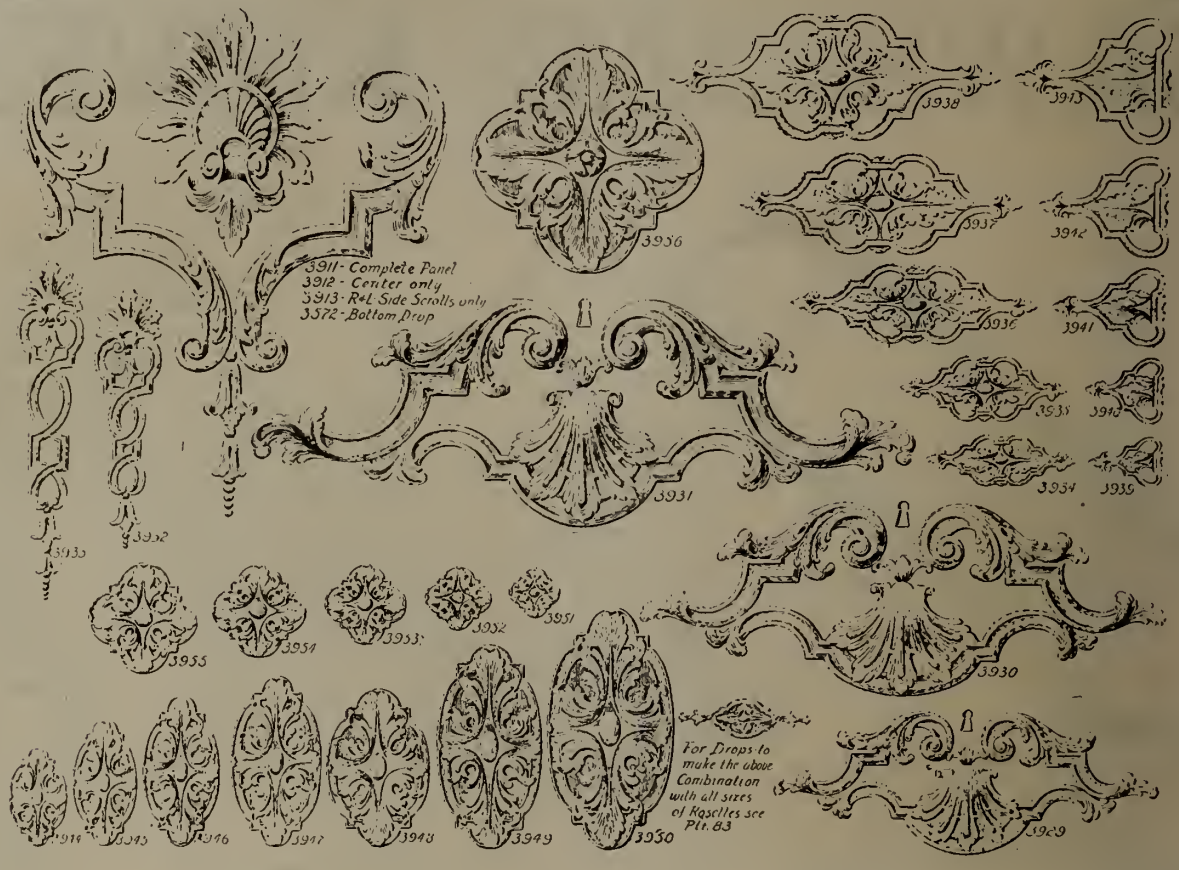
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3912 - Center only
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3572 - Bottom Drop
For Drops to make the above Combination with all sizes of Rosettes see Plt. 83

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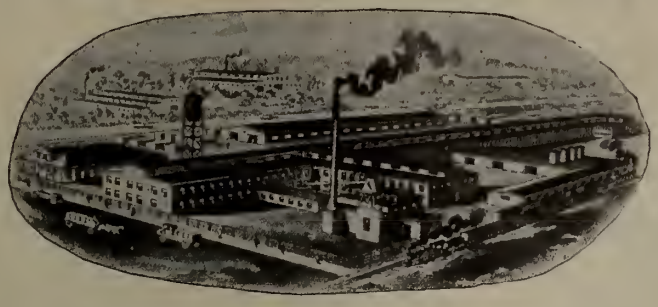

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WILLIAM & MARY
TABLE LEGS

THE JEFFERSON WOODWORKING CO., Inc. **Louisville, Ky.**

Greater Production with Less Experienced Help

The No. 370 Drum Sander is so simple and accident proof that any boy or girl can feed and take away with absolute safety.

Write for descriptive bulletin.

Patented May 6, 1919

The patented RUBBER PADS used for the bed of this sander are decidedly an improvement and are used in large quantities on every make of Endless Bed Sander. Ask for sample.

Solem Machine Company
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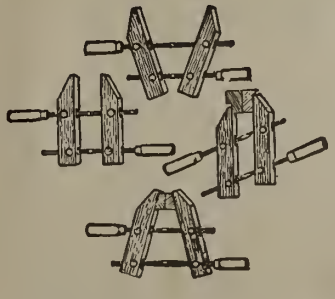

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the Efficiency Clamp

Adjustable Steel Spindle Clamps that hold better and are far superior. Their guarantee against breakage protects you. Write for further particulars.

If you cannot buy them from your Jobber write us direct.

Adjustable Clamp Company
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The Shaper You Have Always Wanted

There are two arguments for "CROWELL'S" Swages and Shapers—the tools themselves and the men who use them.
"The best they have ever used," simply repeating what Saw Filers everywhere say about this shaper.
The general construction, ease of operation, and uncomplicated working parts, will strike you as surprisingly complete and perfect.

The No. 3 Shaper illustrated is producing results for fitting Band Saws from 14 to 20 gauge. Write for Catalogue.

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If the Slide Does Not Work Properly Your Whole Table is Condemned

Wabash Slides insure Satisfied Customers

SLIDE MAKING is a SPECIALTY BUSINESS

We can Furnish Better Slides for Less Cost

Eliminate Slide Troubles by using WABASH SLIDES

MADE BY

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Cut Miles without Grinding

A Characteristic Experience

Richmond, Indiana.

G. M. Diehl Machine Works,
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Gentlemen:—

You may possibly be interested in an experience which we had recently in our factory with your Diehl Heads and Cutters.

Our Sticker man recently made a run of 10,000 stiles, each piece being 73 inches long, of hardwood, in which we cut a groove ¼ inch wide by 9/16 inch deep, and we made the entire run without taking the Heads or Bits off the machine and without resharpening, which makes a total run of a little more than 11½ miles. The Bits would, no doubt, have run quite an additional number of feet before it would have been absolutely necessary to sharpen them. We consider this a very good performance, especially in view of the fact that these stiles were all run from the rough wood and the Heads being used on a four-sided Sticker

Very truly yours,

RICHMOND FURNITURE MFG. CO.,
Per O. H. BRUBAKER, Manager.

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The G. M. Diehl Machine Works

WABASH, INDIANA - U. S. A.

On the Banks of the Wabash

Cary's SUPERIOR QUALITY Corrugated Fasteners

SAW EDGE

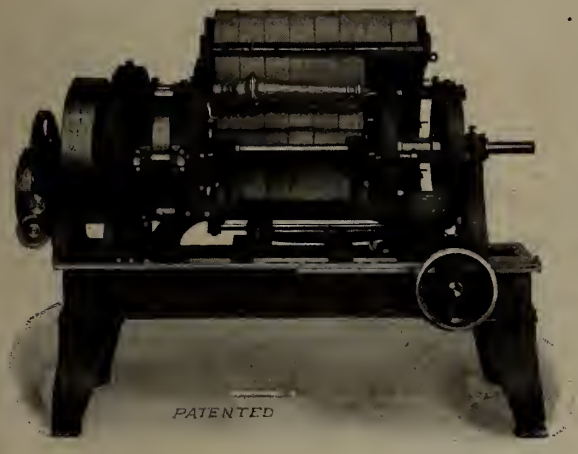
PLAIN EDGE

According to final decision, after long litigation, we have been granted the SOLE RIGHT to manufacture a Saw Tooth Corrugated Fastener with a continuous cutting edge. Our fastener is beveled evenly on both sides, which enables fasteners to be driven in straight, and much easier than any other fastener made. Our Corrugated Fastener is made in various widths and corrugations, also in coils wound right and left. Try our products and you will use no other.

Samples and prices on request.

CARY MFG. CO., Brooklyn, N.Y.

If Labor was Cheap



the Nash Sander for furniture turnings might not interest you so much. But at the present high cost of labor, the saving of time is a vital proposition.

Just ask me about the Sander

J. M. NASH, Milwaukee, Wis.

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to your products by maintaining and applying glue at correct temperature.

"INTERNATIONAL" Electric Glue Heaters

Fireless cooker principle conserves and utilizes every bit of heat generated. Holds glue at correct working temperatures without guesswork. Average cost of operation about one cent per day. Keeps glue at correct temperature for greatest tensile strength. Properly glued joints never fail. This heater has a place in every shop and factory. Sizes, one pint to fifty gallons. Heavy spun copper construction. No seams or soldered joints. Three heats. No water bath. Clean, safe, economical. Portable. Fits any lamp socket. Used by prominent concerns everywhere.

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First Quality Material for Fibre and Upholstered Furniture Manufacturers

Good Furniture is Only Made From Good Materials, Well Selected Carefully Handled and Inspected

In selecting your Fibre Cord and stakes for Fibre Furniture you can secure no better material than that which we produce. Our Cord is carefully watched throughout the entire process of manufacture and kept uniform in strength. It is giving perfect satisfaction.

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Our shop practice is above the average in facilities and experience.

Experience counts for a lot in Boiler making. We have had 35 years of it.

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Your inquiries will receive a quick response.

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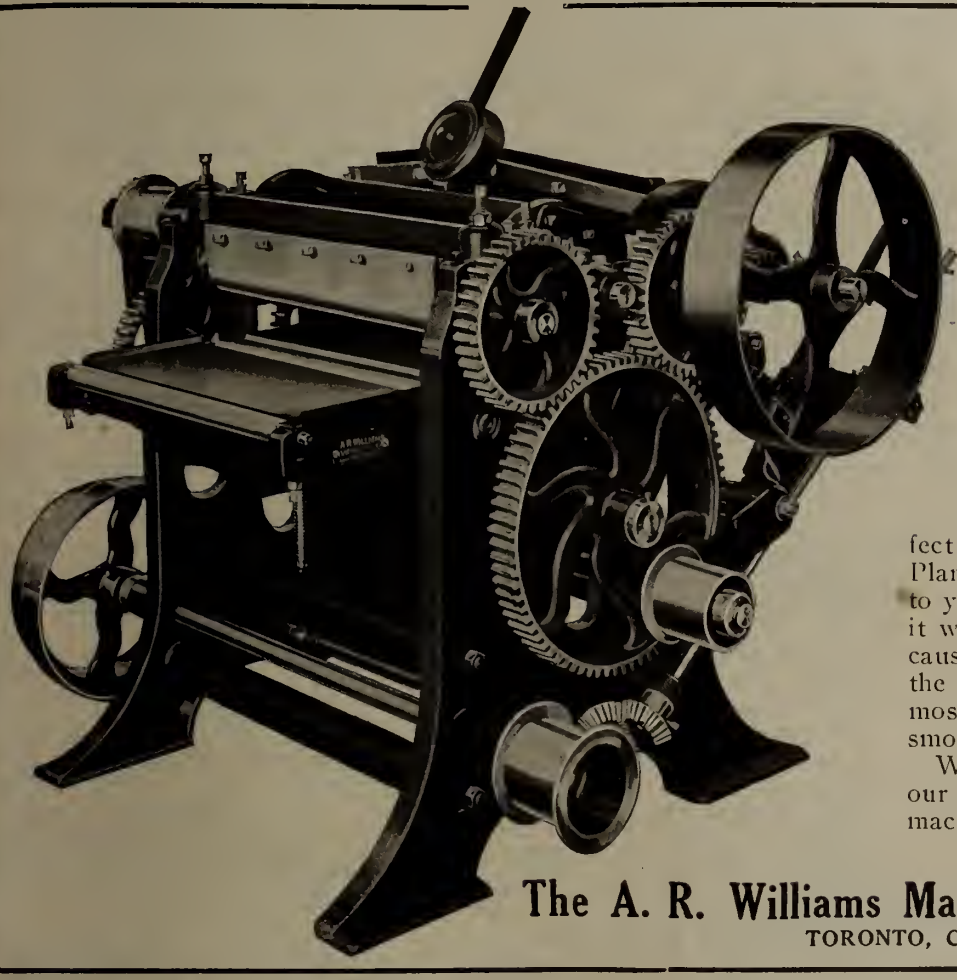

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Write us for full particulars on our entire line of woodworking machinery of all descriptions.

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The Wheel and Hole Cutting Machine has four automatic movements, all of which work in perfect unison, performing their functions in clock-like regularity.

The Hand-Hole Machine will cut hand holes in crate and box ends. It is worked by a carriage and levers, and will cut any size or length hole with either round or bevel edge in any kind of wood.

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BORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Elliot Machinery Co., Toronto, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Reynolds Machine Co., Massillon, Ohio.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

BOX BANDS
Cary Mfg. Company, Brooklyn, N.Y.
Laidlaw Bale-Tie Co., Hamilton, Ont.

BOX MAKERS' MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Morgan Machine Co., Rochester, N.Y.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

BUTTONS
Canadian Buttons Limited, Montreal

CABINET PLANERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CANE WEBBING
Overseas Reed and Cane Co., Ionia, Mich.

CARVING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.

CASTERS
Faultless Caster Co., Evansville, Ind.
Foster, Merriam Co., Merriden, Conn.

CIRCULAR SAWS
Wallace & Co., J. D., Chicago, Ill.

CLAMPS
Adjustable Clamp Co., Chicago, Ill.
Batavia Clamp Company, Batavia, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Empire Tool Co., Toronto, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

CLAMP CARRIERS
Taylor Mfg. Co., Poughkeepsie, N.Y.

CORRUGATED FASTENERS
Cary Mfg. Company, Brooklyn, N.Y.

CUT-OFF SAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

CUTTER HEADS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Diehl Machine Works, G. M., Wabash, Ind.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Shimer Cutter Head Co., Galt, Ont.
Yates Machine Co., P. B. Hamilton, Ont.

CYLINDER HEADS
Cowan & Company, Galt, Ont.

DOOR CARRIERS FOR DRY KILNS
Dry Kiln Door Carrier Co., Indianapolis, Ind.

DOVETAILING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

DOWEL MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Williams Machinery Co., A. R., Toronto, Ont.

DOWELS
Canada Wood Specialty Co., Ltd., Orillia, Ont.

DRY KILNS
Canadian Blower & Forge Co., Kitchener, Ont
Grand Rapids Veneer Works, Grand Rapids Mich.
National Dry Kiln Co., Indianapolis, Ind.
Sidmans, London, Ont.
Standard Dry Kiln Co., Indianapolis, Ind.

DUST COLLECTORS
Ankctell & Davies, Toronto, Ont.
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company.

DUST SEPARATORS
Canadian Blower & Forge Co., Kitchener, Ont.

EDGERS (Single Saw)
American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

EDGERS (Gang)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

END MATCHING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

EXHAUST FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.

EXHAUST SYSTEMS
Canadian Blower & Forge Co.

FIBRE CORD
Grand Rapids Fibre Cord Co., Grand Rapids.

FLOORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

FLUTING HEADS
Fay & Egan Co., J. A., Cincinnati, Ohio.

FURNITURE LEATHER
Eagle-Ottawa Leather Co., Grand Haven, Mich.

FURNITURE TRIMMINGS
Foster, Merriam Co., Meriden, Conn.

GARNET PAPER AND CLOTH
Carborundum Co., Niagara Falls, N.Y.
Macdonald, Norman, Toronto, Ont.
Oakey & Sons, Limited, John, London, S.E.I. (Wellington Emery & Black Lead Mills).

GRAINING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N.Y.

GLUE
Casein Mfg. Company, New York, N.Y.
Casein Glue Mfg. Co., Chicago, Ill.
Lefeber, H., Montreal, Que.
Perkins Glue Company, South Bend, Ind.

GLUE CLAMPS
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane, & Company, Kitchener.

GLUE HEATERS
Cincinnati Glue Heater Co., Cincinnati, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
International Electric Co., Indianapolis, Ind.
Jackson, Cochrane, & Company, Kitchener.
Pringle, R. E. T., Toronto, Ont.

GLUE JOINTERS
Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GLUE SPREADERS
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane, & Company, Kitchener.

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"Oliver" Quality Pattern Shop Equipment, Wood-working Machinery

"Canadian Woodworker" Buyers' Directory—Continued

GLUE ROOM EQUIPMENT
Perrin & Company, W. R., Toronto. Ont.
GRINDERS (Cutter)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
GRINDERS (Knife)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
GRINDERS (Tool)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane, & Company, Kitchener, Ont.
GRINDING WHEELS
Carborundum Co., Niagara Falls, N.Y.
GROOVING HEADS
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
GUM LUMBER
Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
Anderson-Tully Co., Memphis, Tenn.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Brown & Co., George C., Memphis, Tenn.
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Churchill-Milton Lumber Co., Louisville, Ky.
Cornelius Lumber Co., St. Louis, Mo
Darnell-Love Lumber Co., Leland, Miss.
Gum Lumber Association, Memphis, Tenn.
Hyde Lumber Company, South Bend, Ind.
Merceau-Hawkins Tie Co., Huntington, W.Va.
Nickey Bros, Memphis, Tenn.
Paepcke-Leicht Lumber Co., Chicago, Ill.
Prohst Lumber Co., Cincinnati, Ohio.
Sondheimer Co., E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Thomas & Proetz Lumber Co., St. Louis, Mo.
HAND SCREWS
Fay & Egan Co., J. A., Cincinnati, Ohio.
HANDLE & SPOKE MACHINERY
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.
HARDWARE
Laidlaw Bale-Tie Co., Hamilton, Ont.
HARDWOOD LUMBER
Aberdeen Lumber Co., Pittsburgh, Pa.
American Column & Lumber Co., Columbus, Ohio.
American Hardwood Lumber Co., St. Louis, Mo.
American Oak Mfrs.' Assn., Memphis, Tenn.
American Walnut Association, Washington, D.C.
Anderson-Tully Co., Memphis, Tenn.
Arrow Lumber Co., Parkersburg
Astoria Mahogany Co., New York, N.Y.
Atlantic Lumber Company, Toronto, Ont.
Baker-Matthews Lumber Co., Memphis, Tenn.
Banning, Leland G., Cincinnati, Ohio.
Barr- Holaday Lumber Co., Greenfield, Ohio.
Bartlett Lumber Co., W. C., Charleston, Va.
Bedna Young Lumber Co., Jackson, Tenn.
Biglow-Cooper Co., Bay City, Mich.
Boland Lumber Co., Grand Rapids, Mich.
Bonner & Sons, J. H., Memphis, Tenn.
Brown & Company, Geo. C.
Brown & Hackney, Inc., Memphis, Tenn.
Bury & Company, Robert, Toronto, Ont.
Buskirk Rutledge Lumber Co., Cincinnati, O.
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Conkling Lumber Co., Frank A., Memphis, Tenn.
Cornelius Lumber Co., St. Louis, Mo.
Canadian General Lumber Co., Toronto, Ont.
Churchill-Milton Lumber Co., Louisville, Ky.
Clark & Sons, Edward, Toronto.
Dacus-Richards Hardwood Co., Memphis, Tenn.
Darby Hardwood Lumber Co., Memphis, Tenn.
Darling Lumber Co., J. W., Cincinnati, Ohio
Darnell-Love Lumber Co., Leland, Miss.
DeHewit Lumber Co., Huntington, Va.
Des Moines Sawmill Co., Des Moines, Iowa.
Dooley Lumber Co., F. T., Memphis, Tenn.
Evansville Band Mill Co., Evansville, Ind.
Felger Lumber & Timber Co., Memphis, Tenn.
Gayoso Lumber Co., Memphis, Tenn.
Gill Lumber Co., Chas., Wausau, Wis.
Hall Lumber Co., Thos., Charleston, W.Va.
Hart & McDonagh, Toronto. Ont.
Heeney, Percy E., Kitchener, Ont.
Hunt, Wellington & Smith, Nashville, Tenn.
Hyde Lumber Co., South Bend, Ind.
Johnson Bros., Memphis, Tenn.
Kersley, Geo., Montreal, Que.
Korn-Conkling Co., Cincinnati, Ohio.
Kosse, Shoe & Schleyer Co., Cincinnati, O.
Kraetzer-Cured Lumber Co., Greenwood, Miss.
Lawrence & Co., P. J., St. Louis, Mo.
Leach & Co., J. D., Chicago, Ill.
Long-Knight Mfg. Co., Indianapolis, Ind.
May Bros., Memphis, Tenn.
McLennan Lumber Co., Montreal, Que.
Memphis Band Mill Co., Memphis, Tenn.
Merceau-Hawkins Tie Co., Huntington, W.Va.
Mowbray & Robinson, Cincinnati, Ohio.
Murrelle Lumber Company, Memphis, Tenn.
Paepcke Leicht Lumber Co., Chicago, Ill.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Perkins Bros., Kelso, Ark.
Pickrel Walnut Co., St. Louis, Mo.
Powe Lumber Co., Thos. E., St. Louis, Mo
Probst Lumber Co., Cincinnati, Ohio.
Reese Sheriff Lumber Co., Williamsport, Pa.
Ritter Lumber Co., W. M., Columbus, Ohio
Rush Lumber Co., Memphis, Tenn.
Sondheimer Co., E., Memphis, Tenn.
Spencer, C. A., Montreal, Que.
Spotswood & Son, E. R., Lexington, Ky.
Stark & Co., Jas. E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Sterrett, Will S., Cincinnati
Stimson Hardwood Co., J. V., Memphis, Tenn.
Tallahatchie Lumber Co., Memphis, Tenn.
Thompson, Katz Lumber Co., Memphis, Tenn.
Tustin Hardwood Lumber Co., Memphis, Tenn.
Utley-Holloway Co., Chicago, Ill.
Warren-Ross Lumber Co., Jamestown, N.Y.
Wheeler-Timlin Lumber Co., Wausau, Wis.
Whiting Co., Wm. S., Johnson City, Tenn.
Woodruff Powell Lumber Co., South Bend, Ind.
Wayne Lumber Co., New York
Wood Mosaic Co., Louisville, Ky.
Yellow Poplar Lumber Co., Coal Grove, Ohio.
HYDRAULIC VENEER PRESSES
Perrin & Company, Wm. R., Toronto, Ont.
KNOBS
Waddell Mfg. Co., Grand Rapids, Mich.
JOINTERS
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
KNIVES (Planer and others)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Smith, C. W., Grand Rapids, Mich.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
LEATHER (Artificial)
Burch Co., A. F., Grand Rapids, Mich.
Fibro Mfg. Company, Beverly, N. J.
MACHINE KNIVES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
MIRRORS
Hart Mirror Plate Co., Grand Rapids, Mich.
MITRE SAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
MOTOR TRUCK EXTENSIONS
Swedish Crucible Steel Co., Windsor, Ont.
MOULDERS
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.
MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.
NAILS
Laidlaw Bale-Tie Co., Hamilton, Ont.
NAILING MACHINES
Morgan Machine Co., Rochester, N.Y.
OIL STONE GRINDERS
Mummert-Dixon Co., Hanover, Pa.
PANELS
Hay & Co., Woodstock, Ont.
Holden Company, Henry S., Chicago, Ill.
Roberts, Geo. G., Chicago, Ill.
Rutherford & Sons, Wm., Montreal, Que.
Waetjin & Co., L., Milwaukee, Wis.
PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago. Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
PERIOD MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.
PERIOD TURNINGS
Decorators Supply Co, Chicago, Ill.
Walter & Sons, J., Kitchener, Ont.
PLANERS
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
PLANING MILL MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
PORTABLE DRILLS
Wisconsin Electric Co., Wisconsin, U.S.A.
PRESSES (Veneer)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
REED
Overseas Reed and Cane Co., Ionia, Mich.
RESAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
RIM AND FELLOE MACHINERY
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A. Cincinnati, Ohio.
RIP SAWING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.
ROSETTES
Waddell Mfg. Co., Grand Rapids, Mich.
RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.
SAFETY DEVICES
Cowan & Company, Galt, Ont.

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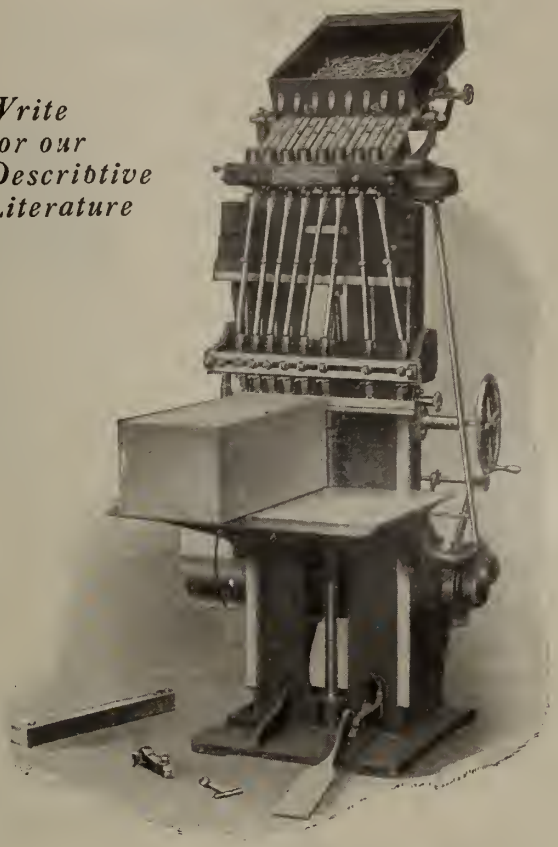

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Branches: 901 Royal Bank Bldg., TORONTO 285 Beaver Hall Hill, MONTREAL.

"Canadian Woodworker" Buyers' Directory—Continued

SANDERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Solem Engineering Co., Sheboygan, Wis.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAND PAPER
Manning Abrasive Company

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Elliot Machinery Co., Belleville, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS
Atkins & Co., E. C., Indianapolis, Ind.
Disston & Sons, Henry, Toronto, Ont.
Elliot Machinery Co., Belleville, Ont.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Silver Mfg. Company, Salem, Ohio.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.

SAW BENCH
Sidney Machine Tool Co., Sidney, O.
Wallace & Co., J. D., Chicago, Ill.

SAW SWAGES
Cowan & Company, Galt, Ont.
Crowel, D. J., Buffalo, N. Y.
Disston & Sons, Henry, Toronto, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES
Canada Machinery Corporation, Galt, Ont. ..
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Company, Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont. ..
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY
Reynolds Machine Co., Massillon Ohio.

SCROLL SAWS
Canada Machinery Corporation, Galt, Ont. ..
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane, & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY
Casey, M. E., Montreal, Que.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Osborne Sexton Machinery Co., Columbus, O.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAPER COLLARS
Woodworkers Tool Works Chicago, Ill.

SHAVING COLLECTORS
Anketell & Davies, Toronto, Ont.
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

STAINS
Ault & Wiborg, Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ohio.
Shannon Co., Ed. J., Cincinnati, Ohio.
Standard Paint & Varnish Co., Windsor, Ont.
Williams Bros. & Co., Hounslow, Eng.

SINGLE SPINDLE BOXING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE
Whitney & Son, Baxter D., Winchendon, Mass.

STEEL DOOR MATS
Cary Mfg. Company, Brooklyn, N.Y.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Colladay Machine Works, Indianapolis, Ind.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Tannewitz Works, Grand Rapids, Mich.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohoa.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES
Jefferson Woodworking Co., Louisville, Ky.
Walter & Company, B., Wabash, Ind.

TEMPERATURE REGULATORS
Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Compan, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS
International Business Machines Co., Toronto, Ont.

TRIMMERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Preston Woodworking Machinery Company, Pretson, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS
Cowan Truck Company, Toronto, Ont.
National Dry Kiln Co., Indianapolis, Ind.

TURNED WOOD GOODS
Algoma Wood Products Co., Algoma, Wis.

TWINES & WEBBING
Doon Twines, Ltd., Kitchener, Ont.

UPHOLSTERY FABRICS
Burch Co., A. F., Grand Rapids, Mich.

UPHOLSTERY SUPPLIES
Burch Co., A. F., Grand Rapids, Mich.

VARNISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto, Ont.
Flint Varnish & Color Co., Montreal, Que.
Penfound Varnish Co., Toronto, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N.Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS
Astoria Mahogany Co., New York, N.Y.
Batesville Lumber & Veneer Co., Lawrenceburg, Ind.
Birds Eye Veneer Co., Escanaba, Mich.
Bury & Compny, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christmann Veneer & Lumber Co., St. Louis, Mo.
Curtis Co., C. E., Chicago
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Evansville Veneer Co., Evansville, Ind.
Freiberg Lumber Co., Cincinnati, Ohio
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Holden, Henry S., Chicago, Ill.
Geo. Kersley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Litton Veneer Co., Rockford, Ill.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Veneer Co., New Albany, Ind.
Roberts, Geo. G., Chicago, Ill.
Southern Veneer Mfg. Co., Louisville, Ky.
Stimson Veneer & Lumber Co., Memphis, Tenn.
Sturm Co., Adolph, Chicago, Ill.
Talge Mahogany Co., Indianapolis, Ind.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Underwood Veneer Co., Wausau, Wis.
Veneer Manufacturers Co., Chicago, Ill.
Waetjen & Co., George L., Milwaukee, Wis.
Wood Mosaic Co., Louisville, Ky.

VENEER TAPE
Canadian Nashua Paper Co., Peterboro, Ont.
Gummed Products Co., Troy, Ohio.
Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.

VENEER JOINTERS
Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY
Garlock-Walker Machinery Co., Toronto, Ont.

VENEER PRESSES (Hand and Power)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Company, Wm. R., Toronto, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Johnson Co., O. E., Chicago, Ill.

WALNUT LUMBER
American Walnut Mfrs. Assn., Chicago.
Des Moines Saw Mill Co., Des Moines, Iowa.
Pickrel Walnut Company, St. Louis.
Purcell Walnut Lumber Co., Frank, Kansas City.

WIRE
Laidlaw Bale-Tie Co., Hamilton, Ont.
Pakanship Company, Brooklyn, N.Y.

WIRE BOX STRAPPING
Cary Mfg. Company, Brooklyn, N.Y.

WOOD FINISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Penfound Varnish Co., Toronto, Ont.

WOODWORKING MACHINERY
General Machinery Co., Toronto, Ont.

WOOD SCREWS
Robertson Mfg. Co., P. L., Milton, Ont.

WOOD TURPENTINE
Brown Corporation, Quebec, Que.

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Garlock-Walker Machinery Co., Toronto, Ont.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WODD LATHES
Colladay Machine Works, Indianapolis, Ind.

44 Yates No. 275
36 and 66-in. Automatic

Knife Grinders,
Brand New, at

One-half Price

Machines arranged for Motor Application as per cut, or regular belt drive, if wanted.

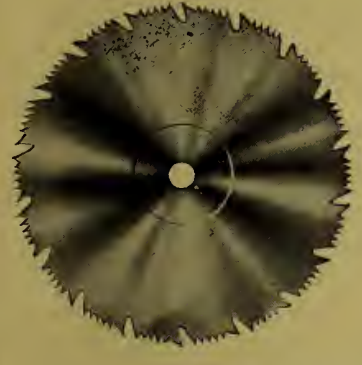
We have in Cincinnati, available at once, three Whitney 30-in. single surfacers and two Whitney 30-in. double surfacers, all with sectional rolls; three double arbor revolving saw tables; three single arbor tilting table saw benches; F.&E. single-end tenoner with roller table, and a few other choice machines. All are in exceptionally fine condition—are doing precision work at the present time.

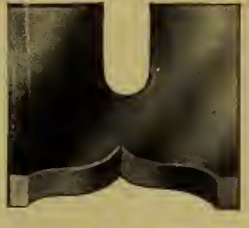
7 New Hermance Molders, 8, 10 and 12-in., Stationary and slip-on heads.
8 New Andrew Multiple Vertical Borers, 20, 30, 42 and 60-in., any number of heads.

Band saws, 32, 36 and 38-in.
Borer, Andrew, 10-ft., 13-spindle, power table.
Borers, Andrew mult. vert., 20, 42 and 60-in., new.
Door clamp, Fay-Egan, heavy.
Door clamp, Jenkins-Hayes power-feed.
Edgers, two, three and four saws.
Glue cookers and retainers.
Jointers, 8, 12, 16, 20, 24 and 30-in.
Lathes, speed, eight, mounted on iron bed.
Lathes, turning automatic, Mattison No. 8
Yates No. 72, practically new.
Matcher, American Northwest, 24x8-in., 3 sides.
Matcher, 24x6-in., 3 and 4 sides.
Molders, 4-side, 9, 10 and 12-in. American.
Molder, Fay & Egan, 12-in. outside, heavy.
Mortiser, chain saw, New Britain No. 7, new.
Mortisers, F. & E. vertical, hollow-chisel; also plunger type; Greenlee vertical, double hollow-chisel.
Nailers, two, Hayes, 8-track, 8d, closed back.
Nailing machines, 2 closed back, 4-track, 4d, 15-in. spread, Hayes' make.
Pony planers, 16, 20 and 24-in.
Rip saws, self-feed, Hoosier, F. & E. Greenlee.
Rip saw, gang, Luther, for box work.
Router for stair stringers.
Sand belt, closet seat and similar work.
Sander, H. B. Smith, spindle and disc, practically new.
Sanders, 30- 42 and 54-in. Columbia; 30, 42 and 48-in. Invincible; 30 and 36-in. F. & E. double.
Saw, 8-ft. double cut-off, roller table.
Saws, combination and variety, single and double arbor, also tilting arbor, stationary and tilting table, 24 and 30-in. circular resaw.
Saw, circular re-slab, 40-in. blade, power feed rolls.
Shapers, Fay single-spindle reversible, also Shimer single with overhead routing attachment.
Shaper, Whitney No. 7 and 8 double-spindle, practically new.
Surfacer, 30-in. double, cabinet, B. & M., practically new.
Surfacer, Whitney 30-in. double, sectional roll and sectional chipbreaker; American No. 4½, 36-in. sectional and solid; Fay & Egan No. 140, 27 and 30-in. double divided rolls; also 18, 20, 24 and 30-in. single cylinder panel planers.
Tenoners, Fay & Egan double-end, also single-end.
Window frame machine for production work, new.
Window frame machines, Smith & Phillips combination.
Wood-worker, universal, Fay & Egan and Bentel & Margedant. One lot of glue room machinery.

We have just received two carloads of Band Saws and Jointers—all new—which are ready for immediate delivery.
Band Saws, 20, 26, 32, 36 and 38-in. Jointers, 8, 12, 16 and 24-in.

The Osborne & Sexton Machinery Co.
Re-manufacturers **COLUMBUS OHIO**





100% Production

will be necessary to meet the demand for all wood-working material and furniture that will be required for the 4,000,000 buildings that must be erected in 1920.

ATKINS

STERLING QUALITY

SAWS and KNIVES

will make it possible for you to meet this demand in producing your share.

The high grade material and expert construction of Atkins Saws and Knives make possible the superior service they render.

Let Their Efficient Performance Tell You the Atkins Story of Perfection.

Write to-day for our Knife Booklet "CW" and Pattern Template Paper.

E. C. ATKINS & CO., ***Makers of Sterling Saws***

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

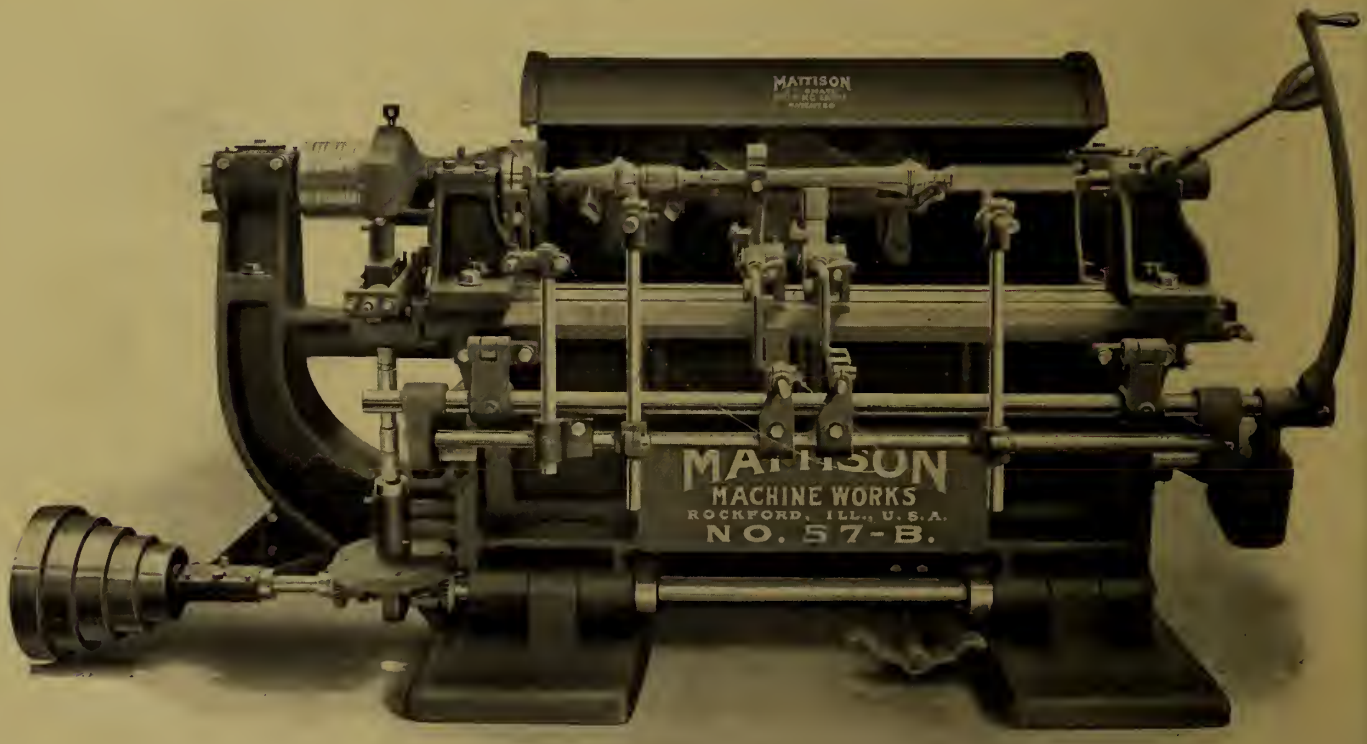
-the Exception Proves the "Mattison"

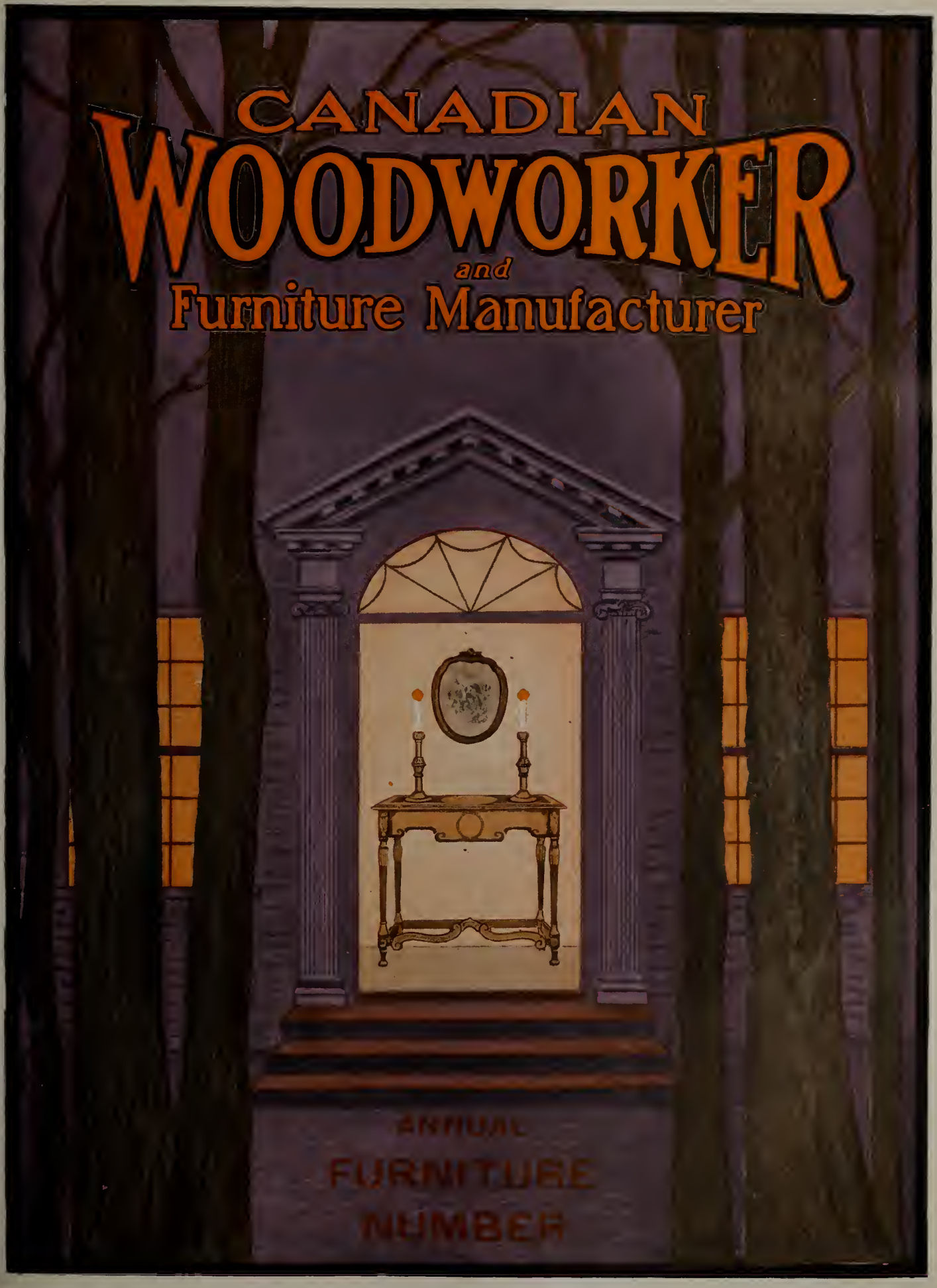
3000 Mattison Lathes are in operation. Still some manufacturers are getting along without one. Their high costs and the difficulty they experience in securing good work—quickly PROVES that it pays *big* to operate a "Mattison" Lathe.

MATTISON
"Automatic"
The Standard Shaping Lathe

Manufactured Only by

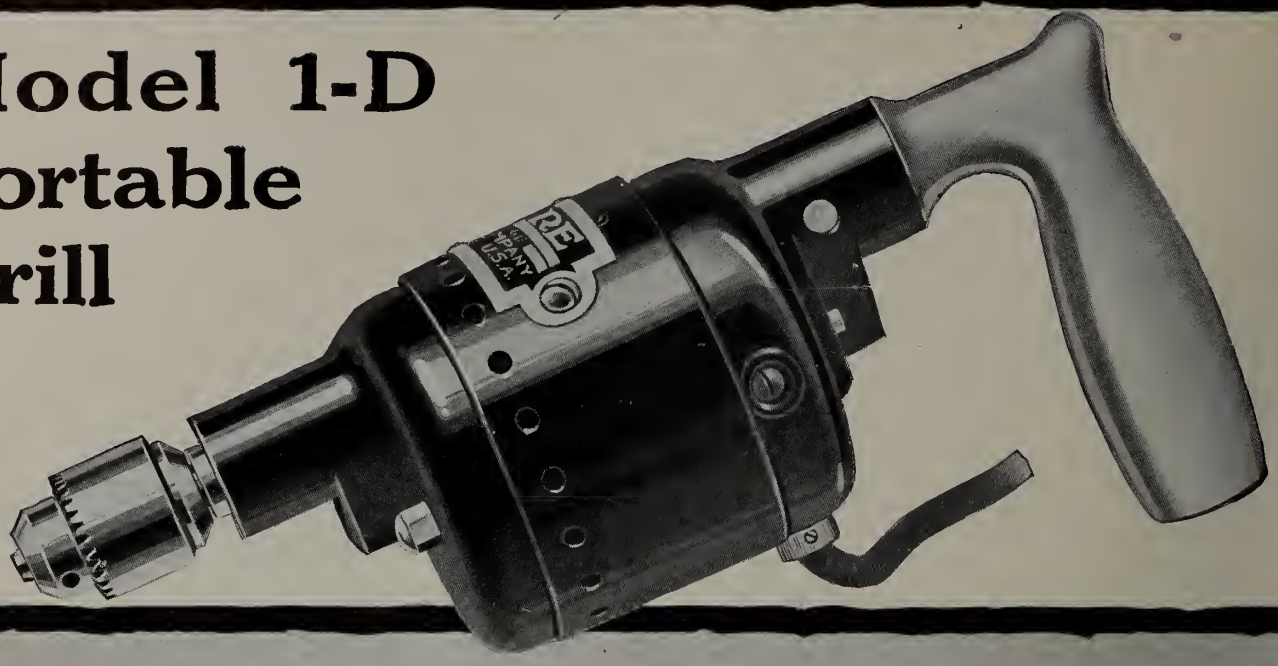
MATTISON MACHINE WORKS
ROCKFORD, ILL.





Vol. XX Toronto, November, 1920 No. 11

Model 1-D Portable Drill



HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—4¾ pounds.

Capacity—Steel, 0 to $\frac{3}{16}$". Wood and alloys, 0 to $\frac{13}{64}$".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3⅜ inches.

Spindle—Offset from center $\frac{33}{64}$".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

Jacob's Chucks used as a regular equipment.

FOR speed in drilling and countersinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

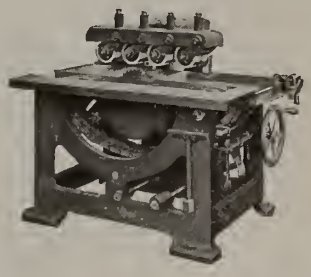
Wisconsin Electric Company
7129 Sixteenth Street, Racine, Wisconsin, U. S. A.

DUMORE GEARED ELECTRIC DRILLS

The Best Woodworking Machines

No. 30 American Universal Saw Table for ripping, cross-cutting, mitreing and dadoing. It is a double arbor machine, carrying both rip and cross cut saws. It will fill your requirements for an accurate and versatile machine that can be quickly set up for different operations.

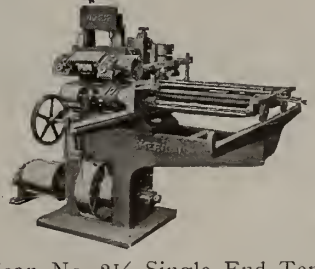
American No. 200 Automatic Self-Feed Knife Grinder. A universal machine that will grind either thick or thin knives. Made in two sizes 31 inch and 37 inch.



American No. 25 Power Feed Edging and Ripping Saw. Perfectly straight joints can be made on this machine and it will rip stock as short as 5 inches. Ask us for the names of furniture manufacturers using this machine; then ask them what they think of it.

American 36" Single Cabinet Surfacer fitted with sectional roll and chipbreaker. Cut shows machine with direct connected motor but the machine we have in stock is for belt drive We will be pleased to set this machine up under belt for your inspection.

Above illustration shows American Hand Feed Jointer. We have a 30 inch machine of this type, fitted with power feed attachment. Just the machine for facing your lumber preparatory to surfacing.



American No. 2½ Single End Tenoning Machine. Will cut a tenon 3⅞" at one operation. Any thickness of tenon can be cut on stock up to 5¼" thick and 15 inches wide.

The above are a few machines selected from the stock in our Toronto warehouse.

We have a large and varied stock of new and used woodworking machines and take this opportunity of inviting your inspection of them.

Write us about your machinery problems—Our experience may be of benefit to you.

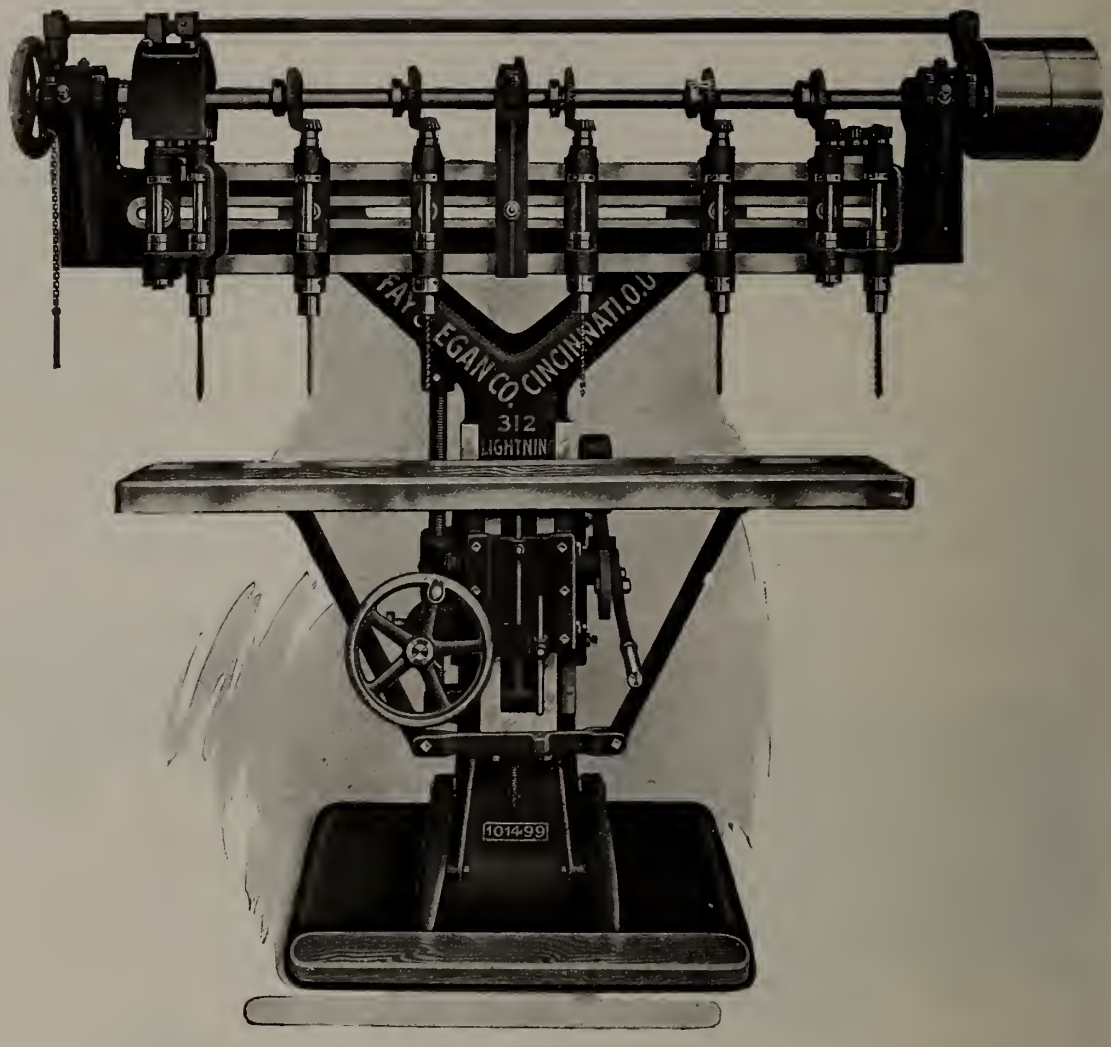
Garlock-Walker Machinery Company, Limited

32 Front Street West

WINNIPEG TORONTO MONTREAL

Everything in Woodworking and Metal Working Machinery

DO YOUR BORING ON A



No. 312 "Lightning" Multiple Spindle Borer

Designed for use in car-shops, arsenals, agricultural implement and ordnance works, wagon, toy and furniture factories. Extensively used in air-craft factories for boring tightening and stringer holes in wing webs, and for boring metal fittings.

No. 312 will bore twenty or more holes of different sizes, either in a straight line or staggered, in the time usually taken to mark off and bore one hole. All holes are bored at one stroke at the table and every piece is an exact duplicate of all others. No laying or marking off required. This is a modern, high efficiency tool which will greatly reduce the cost of doing this class of work.

No. 312 saves time—labor—power and money wherever used.

For detailed information send for Bulletin K-21

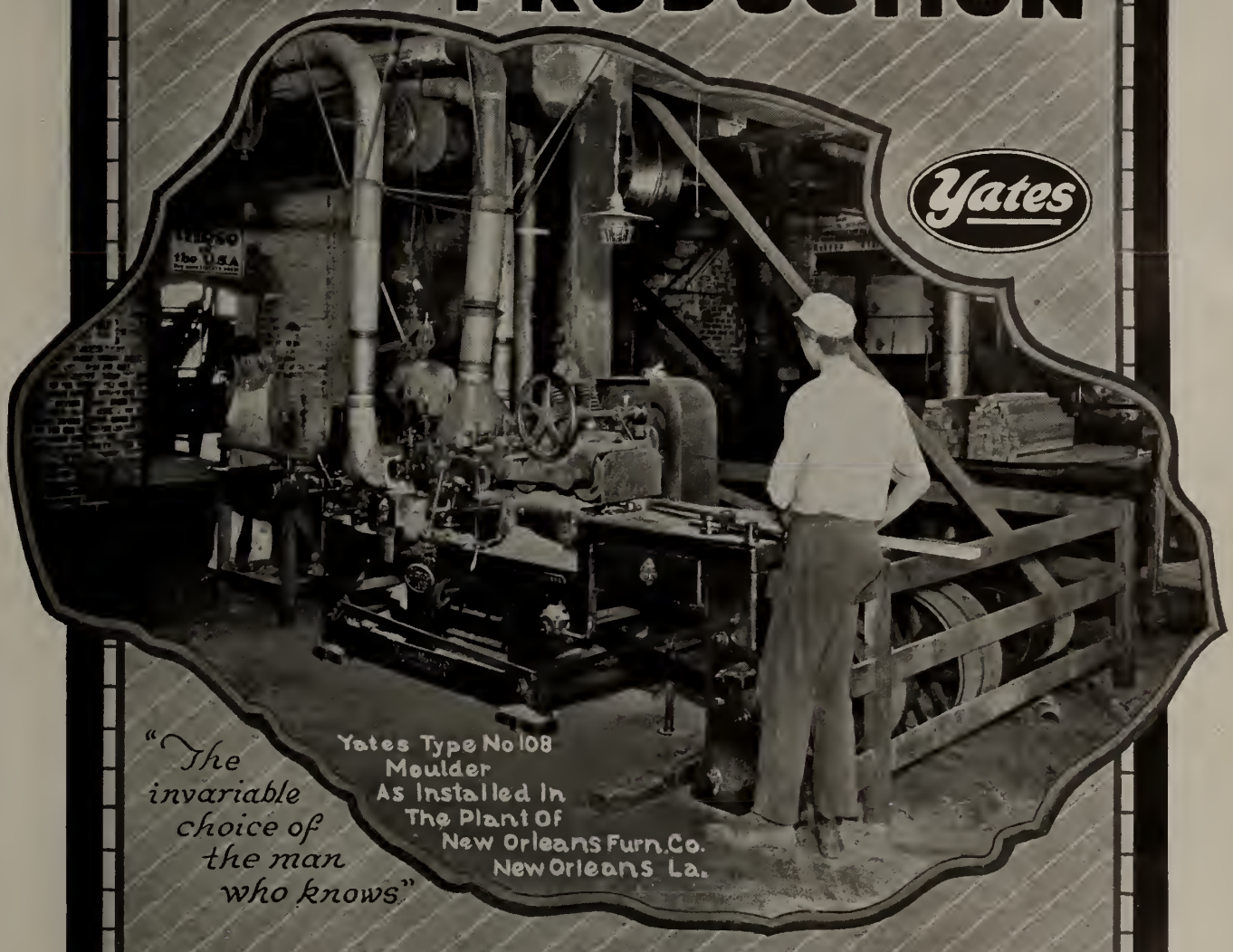
J. A. FAY & EGAN COMPANY

ESTABLISHED 1830

World's Oldest and Largest Manufacturers of Woodworking Machinery

153-163 West Front Street - Cincinnati, Ohio

LESS MEN, MORE PRODUCTION


Yates
"The invariable choice of the man who knows"
Yates Type No 108 Moulder As Installed In The Plant Of New Orleans Furn. Co. New Orleans La.

The Yates No. 108 Moulder

is built for strength and speed and it sure does get the work out. Is just the machine progressive mill men are looking for. They cannot afford to be without a No. 108. This is the big reason. By actual tests, in many mills, under all conditions, the Yates No. 108 got out more mouldings and better mouldings with less men. Write a letter for detailed information and circulars.

P. B. Yates Machine Co. Ltd.,
HAMILTON, ONT. CANADA.
U. S. Plant - Beloit, Wis.

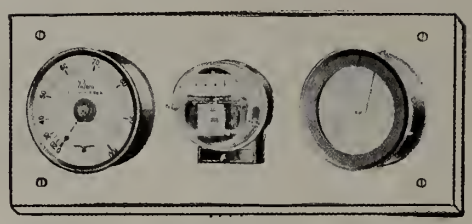
Republic
TWINS

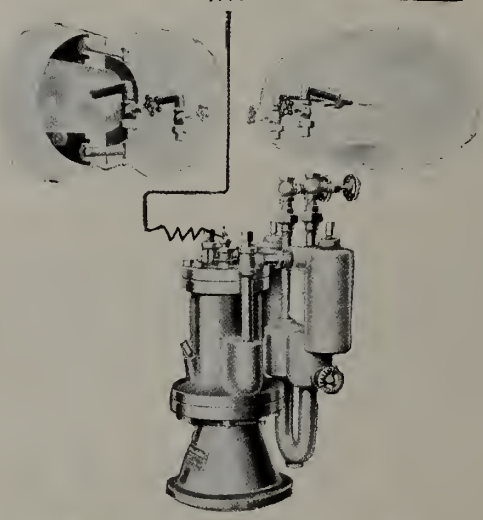
Trading Flow Meters for Boilers

BY installing Republic Flow Meters on a battery of six boilers, a well-known traction company avoided ordering two additional boilers to take care of its peak load. Not only was the cost of the boilers avoided, but also the continual expense of keeping additional boilers banked under light load during the off-peak part of the day. This Company traded Flow Meters for boilers at a tremendous profit.

When you consider that a saving like this is merely incidental to the many economies brought about by tracing erroneous conditions during the regular operations of the boiler room, you begin to realize how really indispensable an installation of Republic Flow Meters IS.

In every-day operation the Republic is a constant guide to furnace efficiency—a continual indication of the performance of individual boilers—an indisputable record of power costs by Departments.





Trading CO_2 Recorders for COAL

COMBUSTNON means a combination of carbon with the correct amount of air. If too much air is admitted the coal is wasted. The only method of checking continuously and correctly is by the use of a CO_2 Recorder. If a CO_2 Recorders is installed, the amount of air cut down, then the amount of coal is lessened; in fact, you have traded CO_2 Recorder for coal.

With coal at the prevailing prices, a CO_2 Recorder is a very good investment under such conditions.

Also by the use of a CO_2 Recorder **Black Smoke is avoided.**

Republic CO_2 Recorders have no valves, no glass (tubing or otherwise), only two moving elements, no complication of mixtures, absolute absorption insured by long travel of gases through absorbent.

Republic Flow Meters Company of Canada, Limited

Eastern Representative:
The Mason Regulator & Engineering Co., Limited
185 Dagenais St., Montreal

Republic System

145 Wellington Street West
TORONTO

The "Shimer Limited" Expansion Head

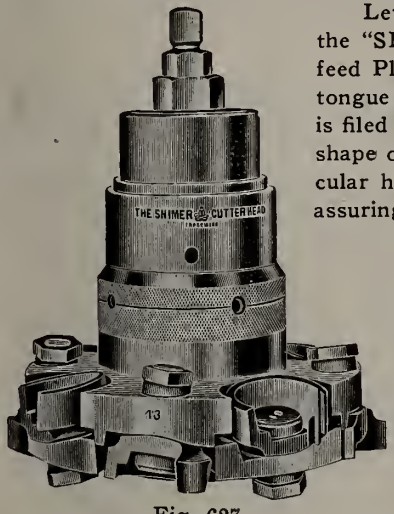


Fig. 627

Let us draw your attention to the advantages of using the "SHIMER CUTTER HEAD" for general Mill and fast feed Planer work. The Cutter is turned to cut the shape of tongue and groove desired, so that to sharpen the cutter it is filed or ground on its face, guaranteeing the user the same shape of cut during the life of the cutter. The bit being circular has from 3½ in. to 5 in. cutting length to the cutter, assuring long wearing life to the cutters

Note that the cutter, being fastened to a concave seat on a compound angle, assures the user of the proper clearance of cutters, consequently they never burn.

These heads are fitted with or without the Self-Centering Sleeve, and made Expansion or Solid, to suit the customer's wishes.

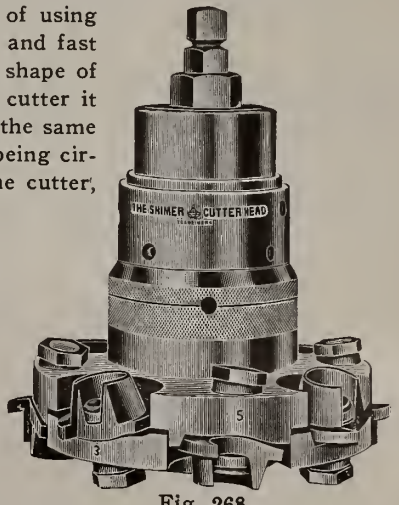


Fig. 268

Shimer Heads have been in use for sixty years, and their reliability and reputation have spoken for them in the past. Let us know your wants and we will guarantee their reliability at the present.

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

Manufacturers of Cutter Heads, Safety Cylinders and Grinders

GALT, ONTARIO

The Height of Efficiency

The illustration shows the most popular machine of its kind on the Canadian market —a prime favorite in furniture factories and other manufacturing plants.

Our

Hydraulic Veneer Press

Used for all classes of veneer work. This press has reached the height of efficiency, giving the utmost satisfaction to manufacturers.

We also make Power Screw and Filter Presses.

Write for Bulletin

William R. Perrin

Limited

TORONTO, - - ONTARIO

Your High Class Machinery Needs High Quality Belting

THE finest of machinery cannot do itself justice when equipped with inferior belting. Neither can it function as profitably for its owner; there is something essential that is lacking. But fine machinery equipped with a really efficient belting! Here you have a team that is unbeatable.

Woodworkers have been quick to realize this truth, and quick to apply it too—hence the extensive use of "CROWN PLANER."

Become acquainted with "CROWN PLANER" now, every day that passes means an actual loss in time and money. A word from you will bring immediately full information.

Sadler & Haworth

ESTABLISHED 1876.

TANNERS AND MANUFACTURERS

For 44 years Tanners and Manufacturers of the best Leather Belts.

TORONTO	ST. JOHN, N. B.	MONTREAL	WINNIPEG	VANCOUVER
38 Wellington St. E.	149 Prince William St.	511 William St.	Princess St. & Bannatyne Ave.	560 Beatty St.

What Belting are you using on your Planers?

The owner of the machine shown here has adopted "Crown" Planer Belting, because he knew the service tension under which it would have to work — reliability was essential.

Did you know that sometimes too high grades, and too expensive belts are used; sometimes a heavy belt is purchased when a lighter one would answer the purpose; sometimes a double belt is put on the pulleys when a single belt would be better. These however are rare exceptions, more frequently the belting is of too low a grade, or a single is used where a double or its equivalent would be better and far more economical. Another frequent fault is the use of too narrow belting. It is good judgment to use just as wide a belt as possible. But whatever your problems remember that we are always ready to help you solve them. Do not hesitate to ask our assistance.

Sadler & Haworth

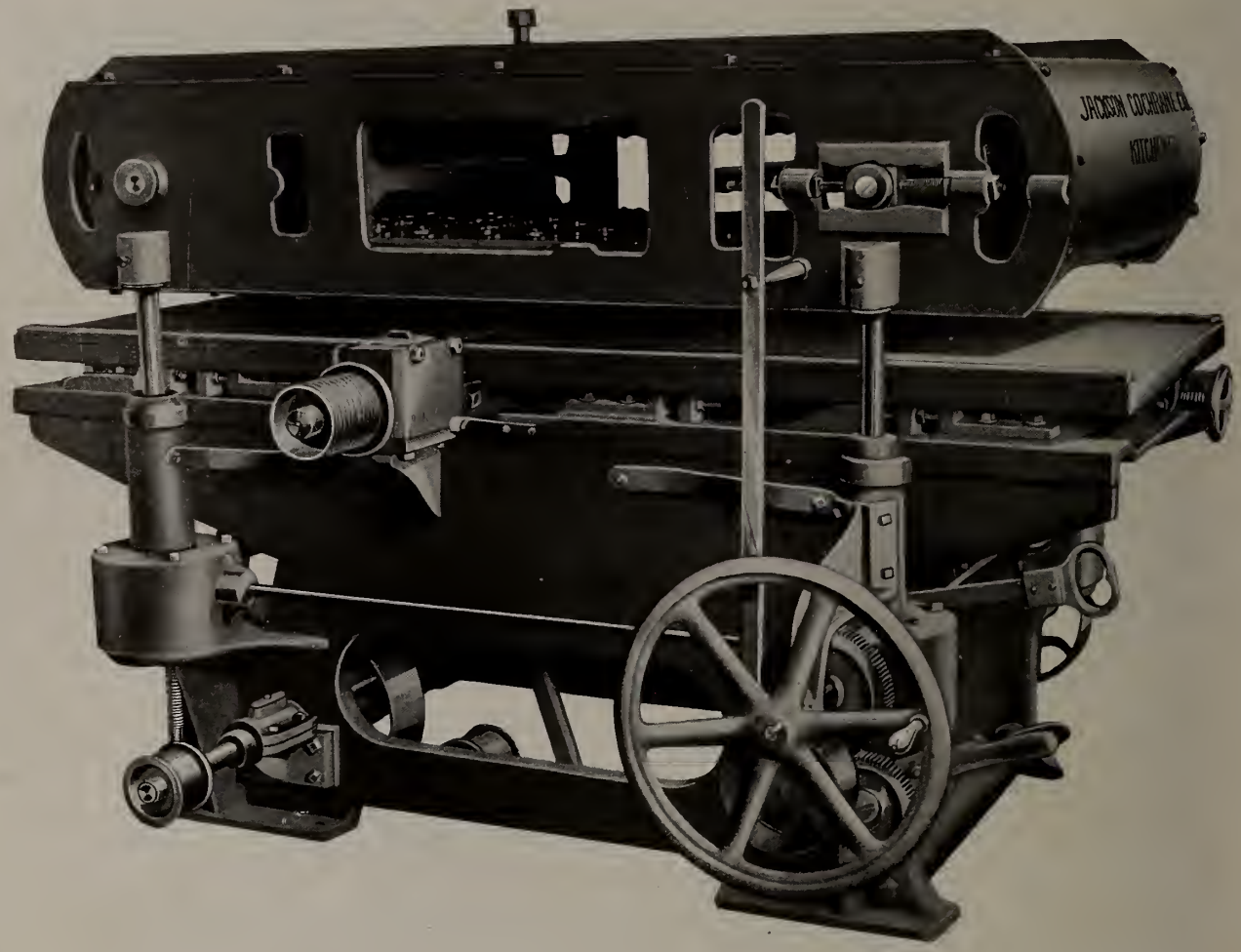
ESTABLISHED 1876.

TANNERS AND MANUFACTURERS

For 44 years Tanners and Manufacturers of the best Leather Belts

TORONTO	ST. JOHN, N. B.	MONTREAL	WINNIPEG	VANCOUVER
38 Wellington St. E.	149 Prince William St.	511 William St.	Princess St. & Bannatyne Ave.	560 Beatty St.

Herzog Self-Feed Jointer



Two Boys Could Operate This Jointer for You

Think what a saving that would effect in your shop—two boys doing the work—better—and from three to five times faster than hand jointers. Such efficiency is made possible by the many splendid qualities the machine possesses, its simplicity of operation, its ruggedness of construction and its ability to work at high pressure without frequent breakdowns.

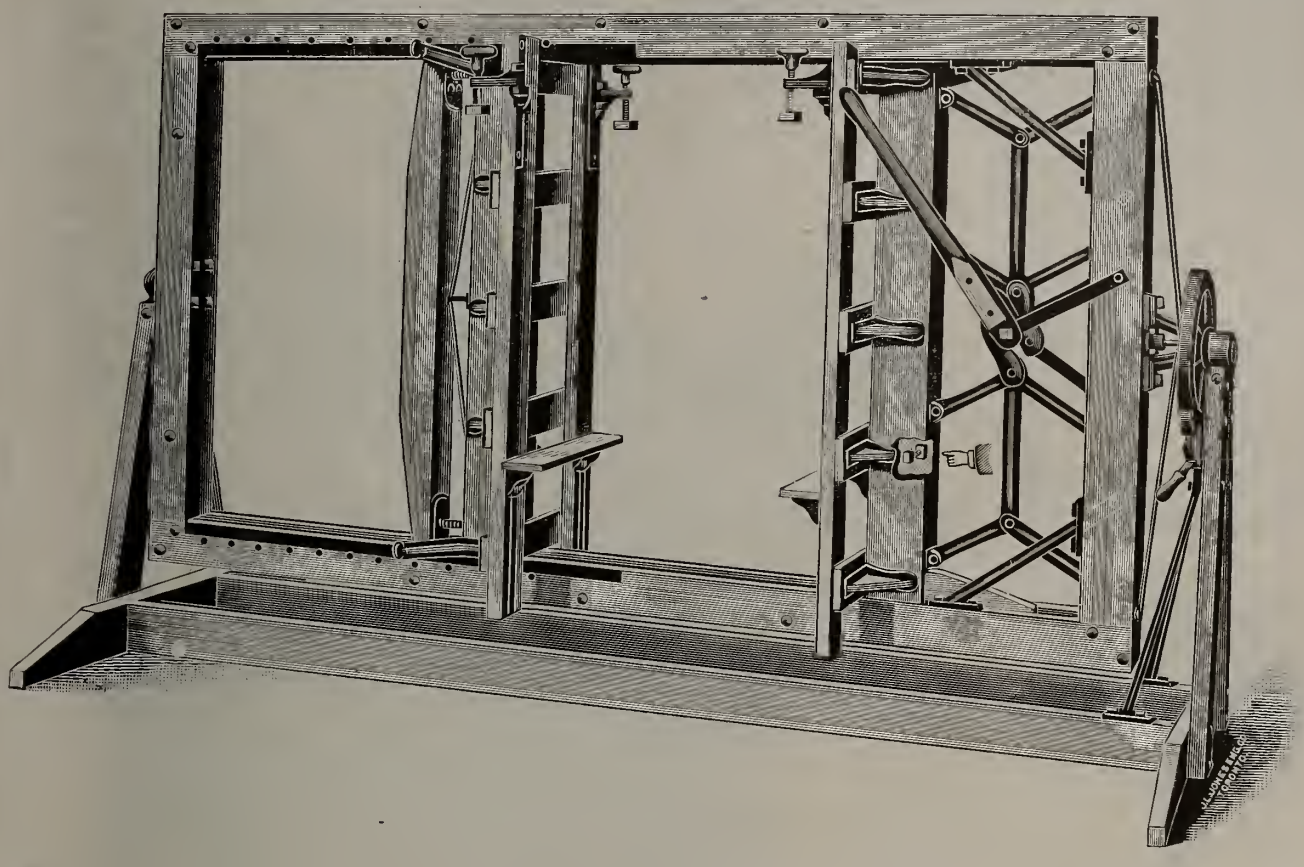
The Herzog Self-Feed Jointer handles stock varying in width from 1 inch to the full width of the machine. It will operate at fast or slow speeds while the knives require about one-fifth the attention given hand jointers.

We would like to send you full particulars and prices. May we?

Jackson, Cochrane & Company

KITCHENER - CANADA

No. 190 Improved Revolving Case Clamp



For Greater Production Install This Machine

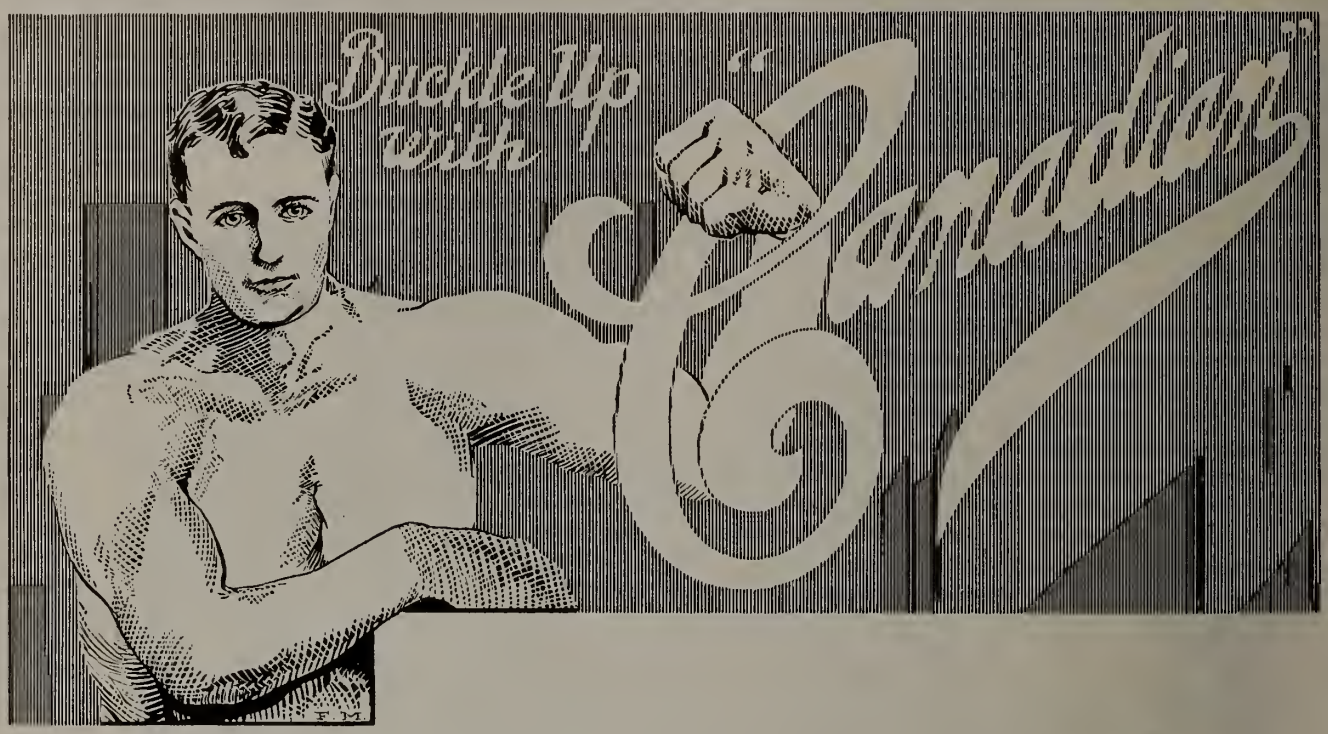
In the manufacture of dressers, bureaus, wash stands, phonographs, etc., the machine shown above proves invaluable. It is operated entirely by one man and eliminates all unnecessary handling of the work. The clamp accommodates a wide range of sizes as one end is moveable to any position while the other end has sufficient movement to allow the case to be tightly clamped. As will be seen in the illustration this is accomplished by means of the large lever shown at the right.

The clamp will not spring, neither does it have to be released before revolving, and the workman can get at all parts of his case while standing in front of the machine.

We can supply this machine in two sizes 50 inches high by 5 feet wide and 72 inches high by 5 feet wide. Fullest particulars gladly sent on request.

Jackson, Cochrane & Company

KITCHENER - CANADA



A blacksmith or wheelwright who is equipped with efficient, accurate and serviceable tools like the CANADIAN not only can do better work but much faster and with the least possible effort

Blacksmiths and wheelwrights are mechanics—they must have the best tools and equipment. Their work demands them.

Let us send you our catalog so that we may tell you more about our line.

WRITE DEPT. 13

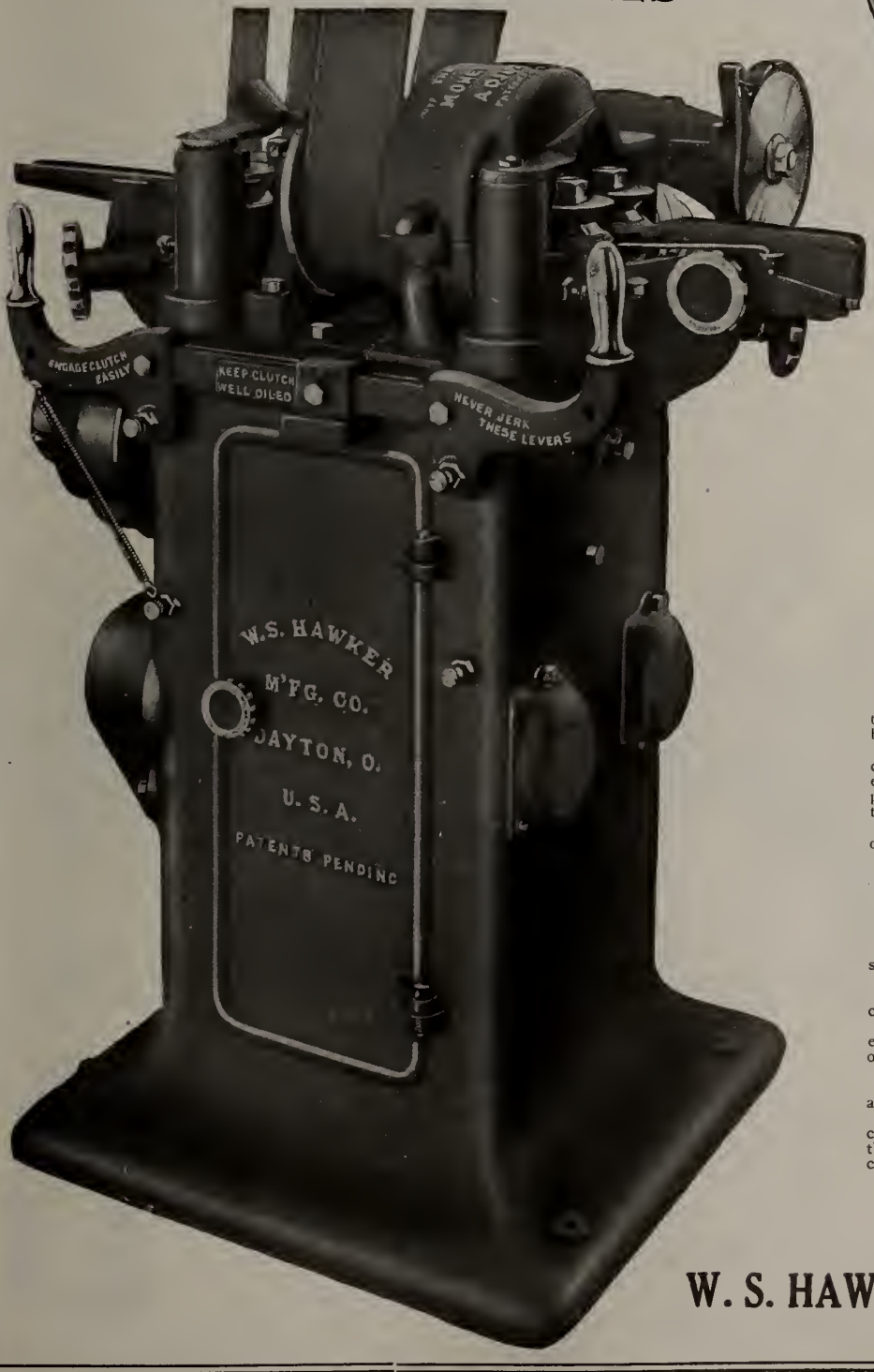
Canadian Blower & Forge Co.
Limited
KITCHENER, ONT.

UNIVERSAL ADJUSTABLE CUTTER HEAD Patented
Infringements (maker or user will be vigorously prosecuted.

Two Heads

that have put 100% more profit in the production of Dowel Stock.

FOR SHIP TREENAILS



W. S. HAWKER.

Inventor and Designer of the World's most efficient Tubular Turning Machinery

THE

Money Maker Adjustable Rod

and

Dowel Machine

The machine that is sent under a guarantee to show you a gain of from 100 to 400 per cent. before you buy it.

The improved dowel machine that 90 per cent. of the largest and oldest machinery builders and dealers now endorse and recommend in preference to the solid chuck machines they themselves previously built.

One cutter head turns from 1/4 in. to 2 in. diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

Works stock as short as five inches.

Rolls automatically centre variations in squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid chuck dowel machine.

We can save you from one dollar out of every two, to four out of every five, that the operation of solid chuck machines costs you.

Engagements for competitive test solicited.

Formal orders not solicited. All sales made after demonstration.

The only question is, are you willing to cut cost of your dowel turning to one-half or one-third of what it costs with any make of solid chuck machine?

Machine delivers the goods before you buy.

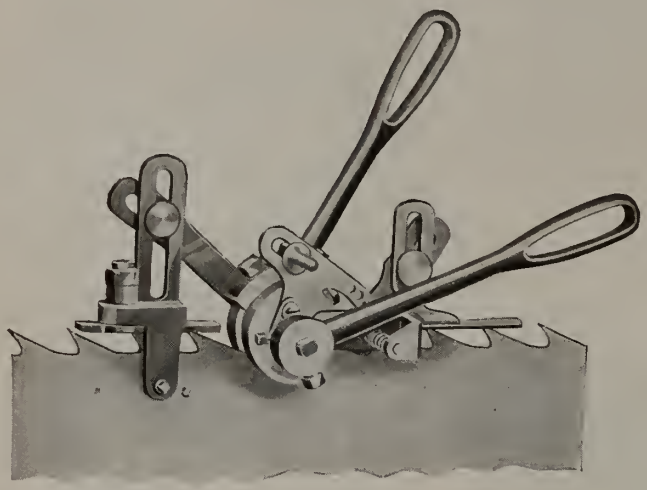
State conditions of stock closely.

Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY

DAYTON, OHIO.

Used All Over The World



Band Resaw and Circular Swage

"Crowell" Swages are used in every civilized country on the globe.

Their reputation is known by thousands of Saw Filers in hundreds of different lines of the Woodworking Industry.

They are built so strong they can't go wrong.

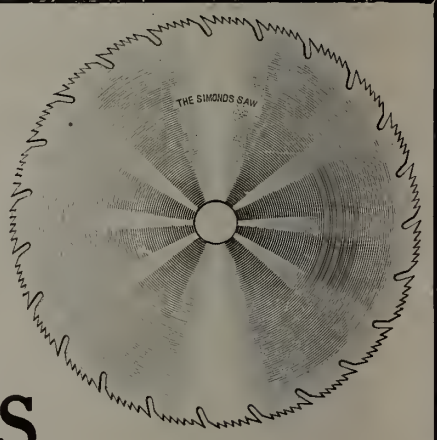
Write to-day for catalogue.

AGENTS:

Radcliff Saw Mfg. Co., 1550 Dundas St. W., Toronto.
Shurly-Dietrich Co., Ltd., Galt, Ont., and Vancouver, B. C.
A. R. Williams, Toronto, Ont.; St. John, N. B., and Montreal, Que.
P. B. Yates Machine Co., Hamilton.
Simonds Canada Saw Co., Montreal, Que., & St. John, N.B.
Henry Disston & Sons Ltd., Toronto, Canada.
J. L. Neilson Co., Winnipeg, Man.

D. J. CROWELL

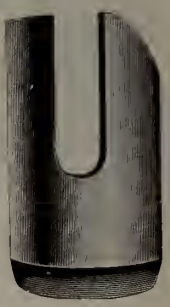
61 Terrace - Buffalo, N.Y.



SIMONDS SAWS AND KNIVES

The woodworkers' friend. They are satisfactory and guarantee the best results. Made of Simonds Special Crucible Steel, they are evenly tempered, uniform in construction and have the cutting qualities.

We make all kinds of Saws and Knives for either wood or metal cutting



SIMONDS CANADA SAW CO., Limited

St. Remi Street and Acorn Ave.

VANCOUVER **MONTREAL, Que.** ST. JOHN, N.B.

British Woodworking Machinery

We are quantity producers of woodworking machinery of the following types :

Combined Thicknessers and Planers
Over-Hand Planers,
Swing Cross-Cut Saws,
Jig Saws,
Wood Turners' Lathes,
Spindle Moulders,
Hand Morticing Machines,
Rise-and-Fall Table Saw Benches,
Wood Trimmers,
Bench Planers,
Treadle Saw Benches,
Saw Tables,
and other Woodworking Machinery.

Each machine is made in a separate works in quantities of from 20 to 50 per week of each size.

Quality and finish is of the highest, and prices the lowest of any English Manufacturer.

Immediate Deliveries

Enquiries are invited from merchants capable of handling our machines in Canada

The Hollis Wood Trimmer Company

GENERAL SALES OFFICES:

"Imperial" Works, Wylde Green,
BIRMINGHAM, ENG.

Telegrams: "Holltrim" Erdington, England.

Aluminium Cauls

Kinlochleven, Scotland, one of the power stations and factories of The British Aluminium Co., Ltd.

FOR Veneer Pressing, Aluminium Cauls are superior to zinc in that this metal is only one-third the weight, and retains the heat half as long again as zinc. They are easy to clean and handle, and require to be prepared only once a week.

Aluminium Sheet cannot be surpassed for covering Kitchen Cabinets, Tables, Sinks, Shelves, and for lining Refrigerators.

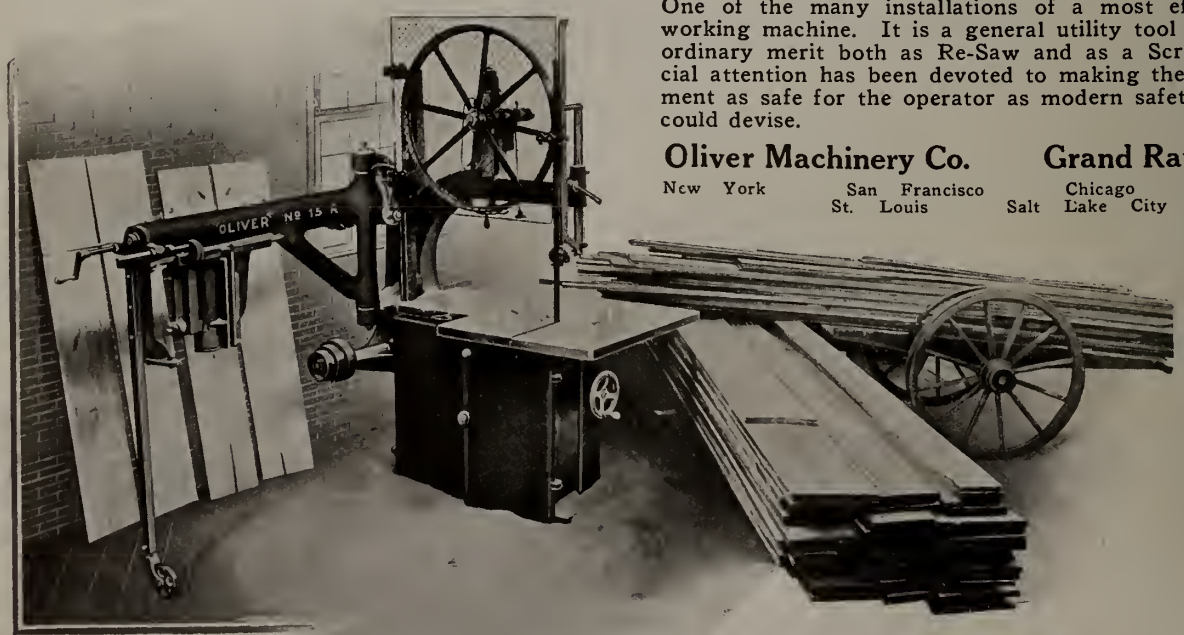
Write for our Bulletin and Prices.

THE BRITISH ALUMINIUM COMPANY, LIMITED

263-267 Adelaide St. West, TORONTO, ONT.

Eastern Agents: SPIELMAN AGENCIES REG'D., Montreal, Que.

THE OLIVER COMBINATION BAND RESAW AND SCROLL SAW



One of the many installations of a most efficient woodworking machine. It is a general utility tool of more than ordinary merit both as Re-Saw and as a Scroll Saw. Special attention has been devoted to making the entire equipment as safe for the operator as modern safety engineering could devise.

Oliver Machinery Co. **Grand Rapids, Mich.**

New York San Francisco Chicago Los Angeles
St. Louis Salt Lake City

Carries a 2½" Re-Saw blade or a ⅛" Scroll Saw blade

DISSTON

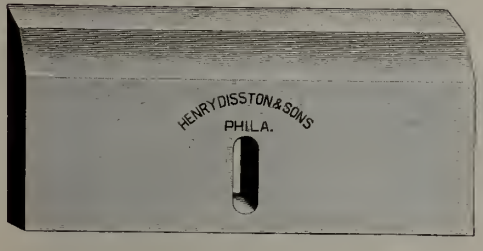
ALL STYLES OF KNIVES FOR WOODWORKERS

Are you getting the maximum production from your knife equipment? With the present necessity for greatly increased production, be sure your knives will give you the best possible results.

Disston knives cut fast and clean ,and hold their cutting edge.

Write for the Disston booklet on Machine Knives.

HENRY DISSTON & SONS LIMITED
TORONTO CANADA
Branch: Vancouver, B. C.

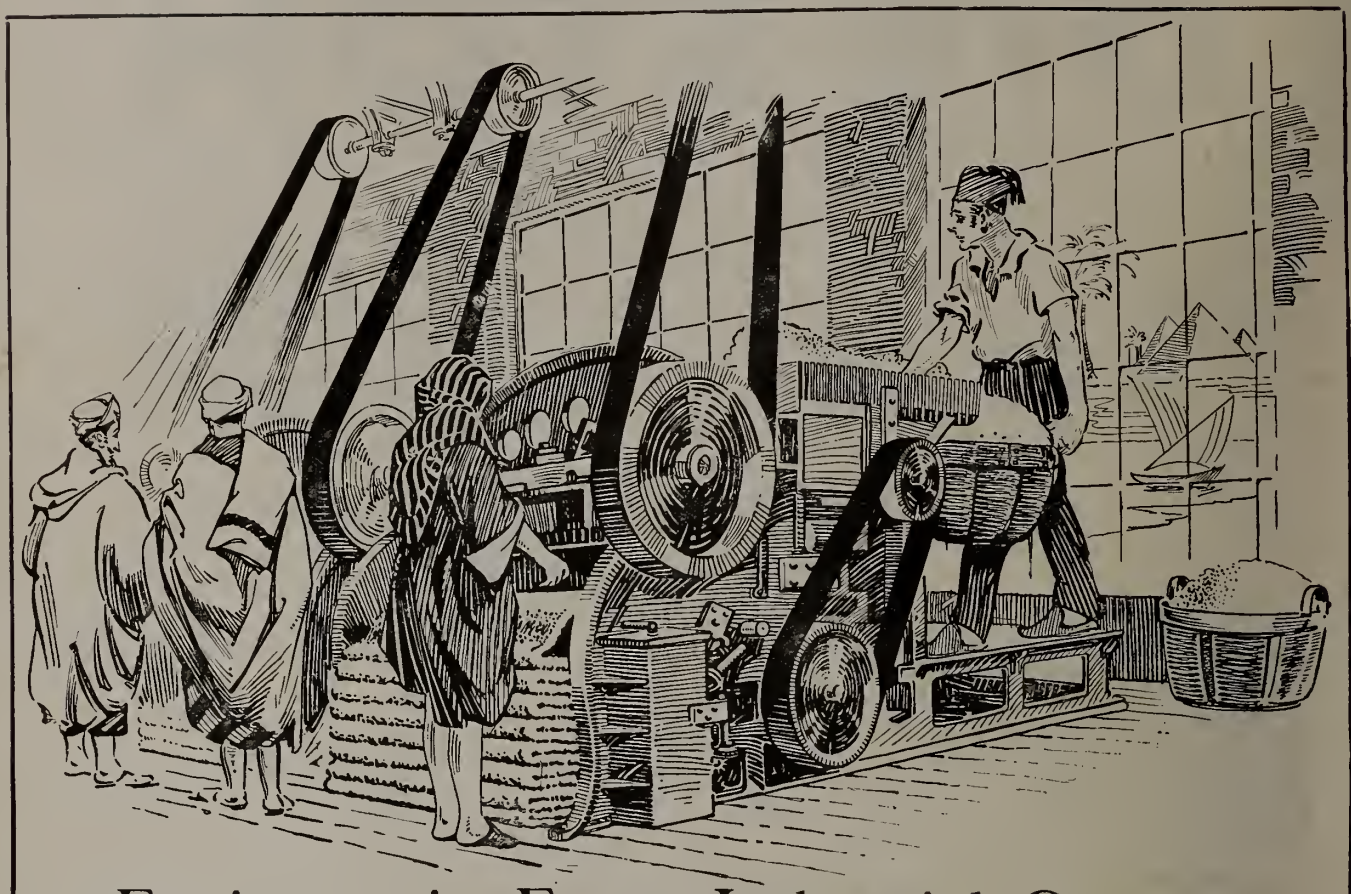


"MAPLE LEAF" SAWS

Inserted Tooth Saws
Solid Tooth Saws
Shingle Saws
Lath Saws
Special Grooving Saws
Dado Heads
Band Saws
Cross Cut Saws
Hand Saws
"Crowell" Swages and Shapers

Maple Leaf Saws are made by the largest All-Canadian Saw Manufacturers

Shurly-Dietrich Co.
LIMITED
Galt Vancouver Ottawa



Engineers in Every Industrial Country Endorse Goodyear Belting

INDUSTRY of other countries approves the economical and satisfactory power transmission which Goodyear Belting is rendering daily throughout Canada.

In the factories and mines of South Africa, the workshops of India and the Orient, the mines of Australia; in industries throughout the world, Goodyear Belting is daily solving power problems. Every obstacle overcome teaches us something more about the efficient specification of the proper belt for each drive Men all over the world who have problems similar to yours will now contribute their experience to the fund of knowledge possessed by the Goodyear belting man who calls on you.

To meet the conditions of this world-wide trade, it has been necessary to change some of the brand names of Goodyear Belts.

For instance, Goodyear Extra Power is now Goodyear Klingtite Belt.

But the change is in name only. Goodyear Klingtite Belt is the old Extra Power in every particular.

Any Goodyear branch will send a man who has studied power transmission problem solved by the use of Goodyear Belting the world over—who will br ng this knowledge to bear in solving yours.

No obligation. Phone, wire or write the nearest branch

The Goodyear Tire & Rubber Co. of Canada, Limited

Branches:—Halifax, St. John, Quebec, Montreal, Ottawa, Toronto, Hamilton, London, Winnipeg, Regina, Saskatoon, Calgary, Edmonton, Vancouver. Service stocks in other cities.

GOODYEAR BELTS

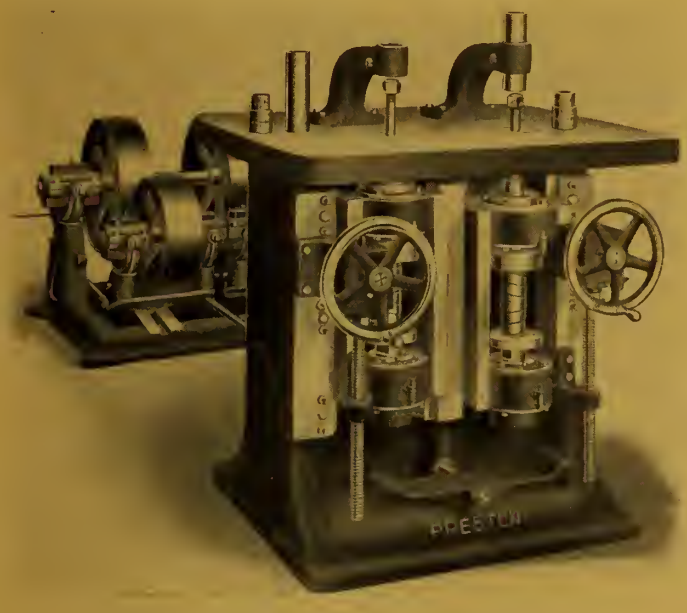
MADE IN CANADA

KLINGTITE GLIDE BLUE-STREAK

Just on the Market

Designed for Quantity Production

This "PRESTON" High Speed Shaper was designed primarily for the quantity production of small pieces such as brush handles, plane handles, saw handles, or any other small work.



Preston high speed shaper for quantity production

It is designed to run at the unusually high speed of 11,000 R.P.M. This speed not only materially increases the productive capacity of the machine, but enables it to turn out very smooth work, so smooth that little or no sanding is required.

LET US SEND YOU SAMPLES

This shaper is made with 12, 14 or 19 in. spindle centres or may be had with any centre to suit the requirements of the user. The brackets shown behind the spindles carry form guide collars. The ordinary form is used and is worked against these guide collars which do not revolve. This eliminates the necessity of working the form against the spindle and also does away with all friction, thus tending for better work.

The bearings in this machine are all S.K.F., including ball bearings in the loose pulley on the countershaft.

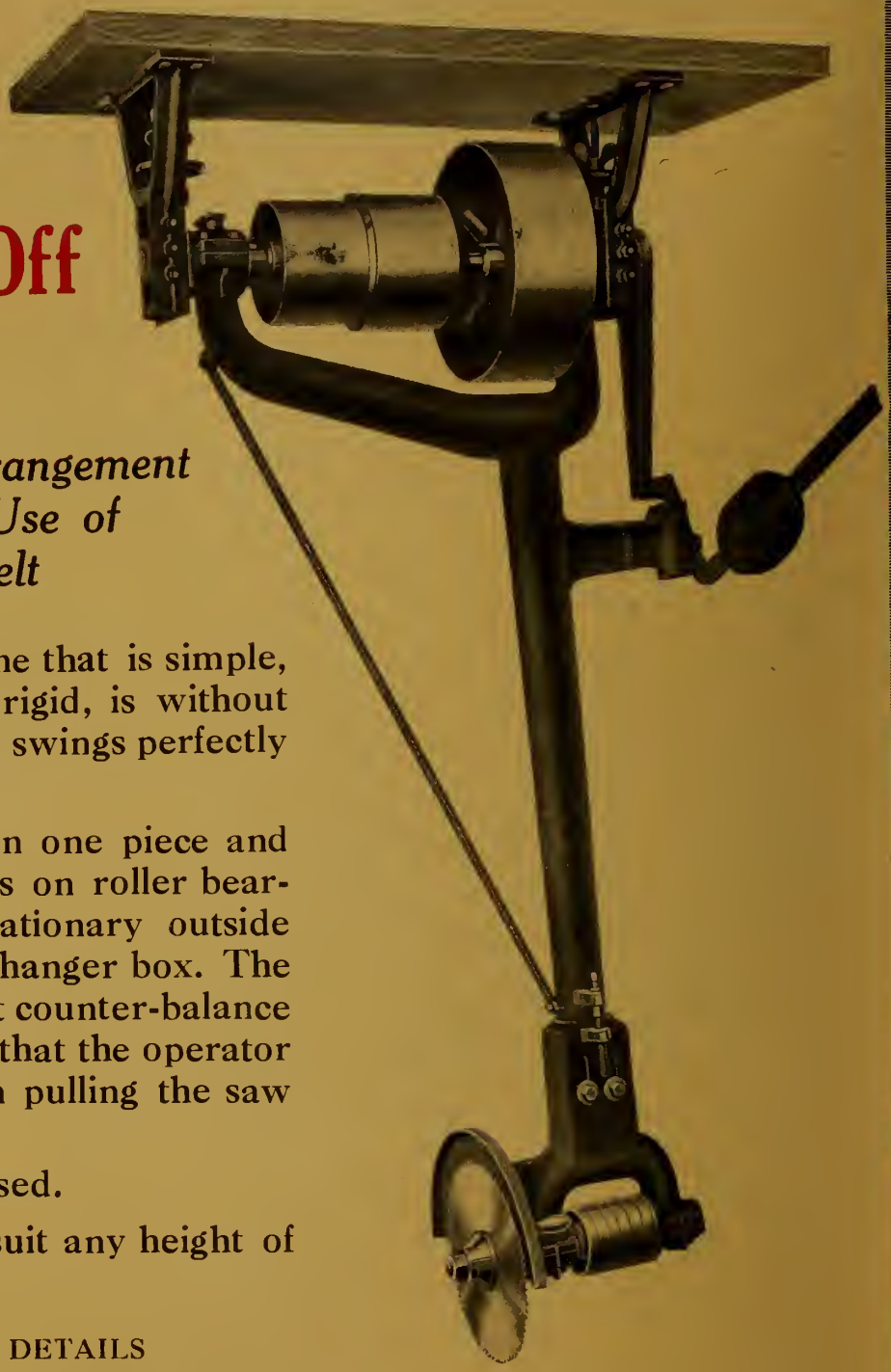
We can supply Single Spindle Shapers and Double Spindle Shapers of any size or weight required.

Write for particulars and prices

The
Preston Woodworking Machinery Co.
Limited
Preston - Ontario

No. 152 "PRESTON" Swing Cut Off Saw

With Special Arrangement Providing for Use of Endless Belt



A "Preston" machine that is simple, practical, absolutely rigid, is without vibration, and always swings perfectly true.

The column is cast in one piece and cored out. It swings on roller bearings on a solid, stationary outside section of the square hanger box. The machine has a perfect counter-balance which is so arranged that the operator is actually assisted in pulling the saw through the lumber.

The endless belt is used.

Machine is built to suit any height of ceiling.

WRITE FOR DETAILS

We are the sole manufacturers in Canada of the Eaglesfield Patented BELTLESS Swing Saw. Let us send you a cut.

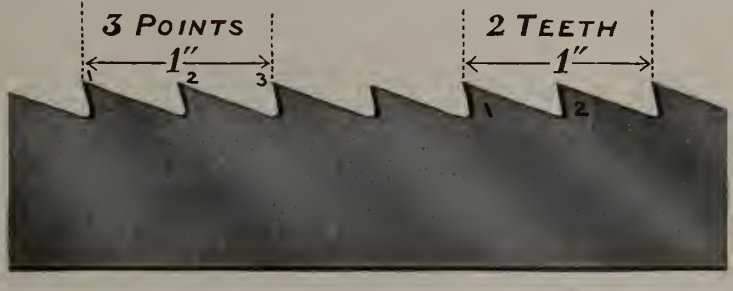
The
Preston Woodworking Machinery Co.
Limited

Preston - Ontario

Hollow Ground Saws for Fine Trimwork

"Beaver" Brand Saws

The Choice of Canadian Craftsmen



"Beaver" Dado for all kinds of grooving.

Radcliff Band Saws

Made of the best quality Swedish Crucible Steel—under exacting conditions—by workmen skilled in the craft—these are the reasons Beaver Brand Saws find such favor in the better class workshops. You, too, can use them to advantage—either with the object of increasing production or improving your work—for they enable you to do both.

Write us for full particulars.

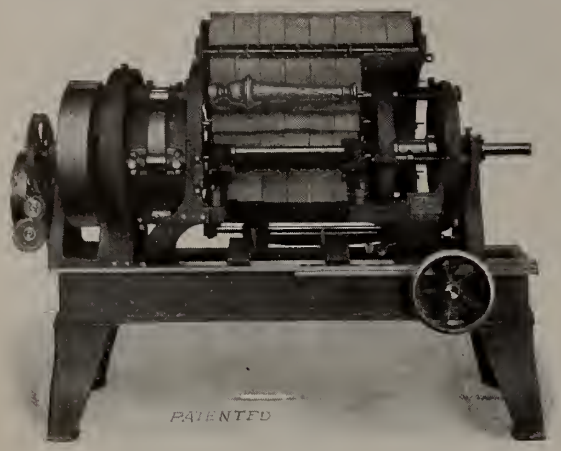
"Beaver" Groover Saws for use on shaper.

Radcliff Saw Manufacturing Company, Limited

1550 Dundas Street West - TORONTO, ONT.

AGENTS FOR L. & I. J. WHITE CO., MACHINE KNIVES

Don't You Think

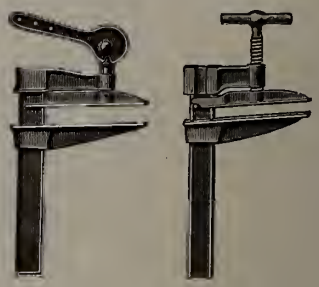


It is high time the cost of sanding your furniture and chair turnings is being reduced ?

If you are sanding by hand, I can show you a big saving by the use of one of my Sanders.

J. M. NASH, Milwaukee, Wis.

Colt's Clamps
for the
Woodworker



Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

For further information write for Catalogue No. 294.

Batavia Clamp Co.

235 Centre St. BATAVIA, N. Y.

The Elliot Bull Dog Planer

The illustration shows our new 16" x 6" Planer.

This Planer will fill a long felt want for a machine that will run from a 1½ or 2 H.P. Motor. It can be run from the Motor on an ELLIOT WOODWORKER, or from any other power by the addition of a counter-shaft.

We have eliminated all cut gears with which all other Planers are equipped, and drive the feed rollers with a worm gear thereby saving power.

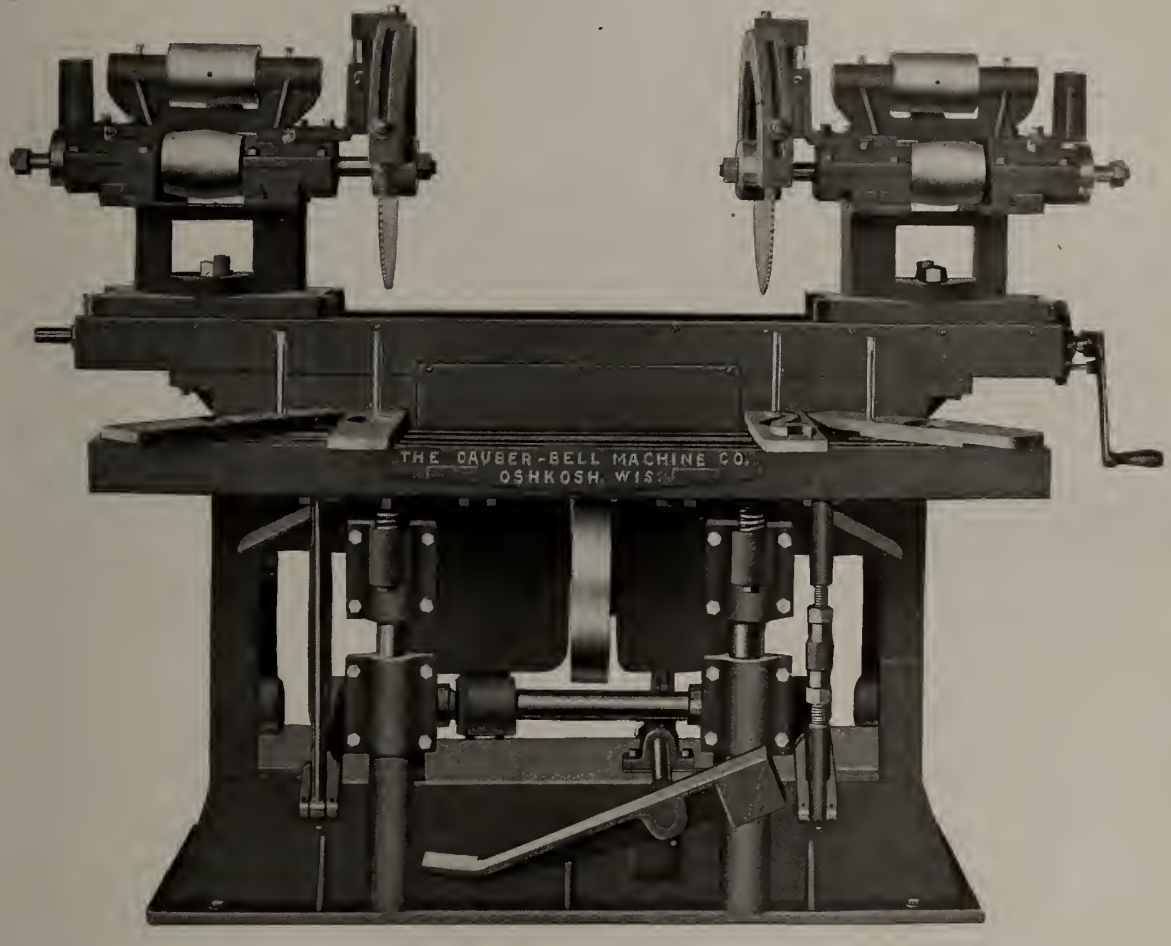
This machine will do fine work and will soon pay for installation.

Write for prices and terms.

ELLIOT MACHINERY
Company, Limited
BELLEVILLE · ONTARIO

The "BELL" Double Cut-off Saw

For Square or Angled Work



This machine cuts both ends of work whether it be square, simple or compound angles. A wonderful labor saver for furniture, chair, refrigerator, casket, wheel, auto body, airplane, phonograph cabinet and other work.

Furnished with belt drive or direct connected motor drive.

Increases speed of production and gives absolute accuracy.

The saws can be swivelled to any angle and the table is power driven. Can be used for notching and gaining as well as cut-off work, as the arbors are suitable for dado heads as well as saws.

Manufactured by

The Dauber-Bell Machine Co.

OSHKOSH, WISCONSIN

What does SKF mean?

TO say that S K F denotes a standard of quality in a ball bearing is to recount that which has been proven and obvious for years.

To even say that S K F is a mark denoting a *kind* of bearing, is to omit its more important significance.

For years this S K F mark has been the device of a business, pioneering in all fields of industry, championing the application of the ball bearing to mechanical design.

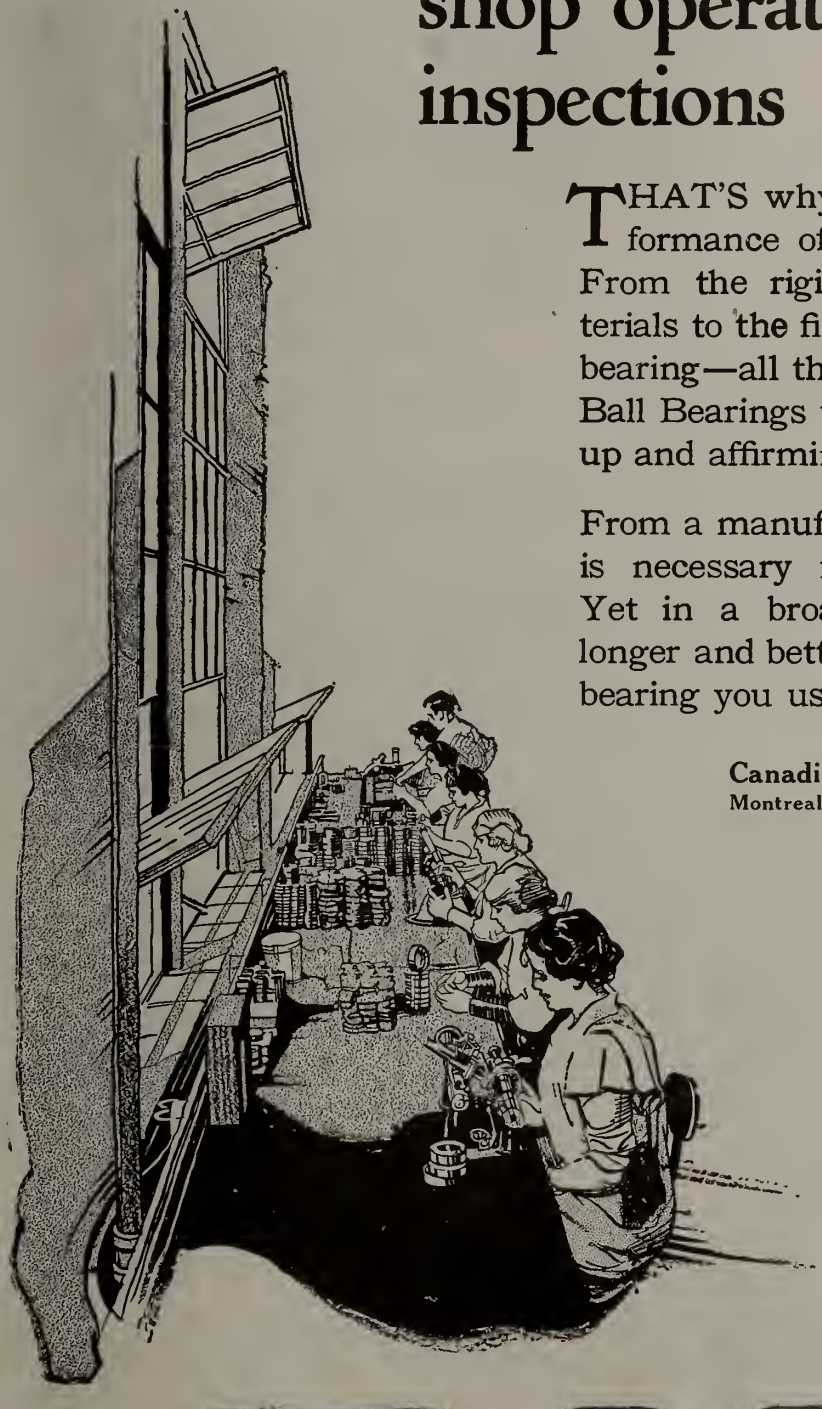
So that to the extent that it has overcome precedent in machine design, or upset traditions in bearing practice, S K F means more than a kind or type of bearing: it is a brand of service—working in the cause of better machine practice.

Canadian S K F Company, Limited
Montreal **Toronto**

SKF

502

Nine out of twenty-six shop operations are inspections



THAT'S why you can count on the performance of every S K F Ball Bearing. From the rigid examination of raw materials to the final inspection of the finished bearing—all through the making of S K F Ball Bearings there is a constant checking up and affirming.

From a manufacturing standpoint all this is necessary for economical production. Yet in a broader sense, it must mean longer and better service from every S K F bearing you use.

Canadian S K F Company, Limited
Montreal Toronto

SKF

504

Cut Miles without Grinding

A Characteristic Experience

Richmond, Indiana.

G. M. Diehl Machine Works,
Wabash, Ind.

Gentlemen:—

You may possibly be interested in an experience which we had recently in our factory with your Diehl Heads and Cutters.

Our Sticker man recently made a run of 10,000 stiles, each piece being 73 inches long, of hardwood, in which we cut a groove ¼ inch wide by 9/16 inch deep, and we made the entire run without taking the Heads or Bits off the machine and without re-sharpening, which makes a total run of a little more than 11½ miles. The Bits would, no doubt, have run quite an additional number of feet before it would have been absolutely necessary to sharpen them. We consider this a very good performance, especially in view of the fact that these stiles were all run from the rough wood and the Heads being used on a four-sided Sticker

Very truly yours,

RICHMOND FURNITURE MFG. CO.,
Per O. H. BRUBAKER, Manager.

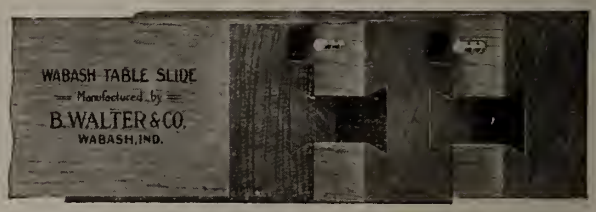
Send for Catalogue

The G. M. Diehl Machine Works

WABASH, INDIANA - U. S. A.

On the Banks of the Wabash

THE SLIDE IS THE HEART OF YOUR EXTENSION TABLE



If the Slide Does Not Work Properly Your Whole Table is Condemned

Wabash Slides insure Satisfied Customers

SLIDE MAKING is a SPECIALTY BUSINESS

We can Furnish Better Slides for Less Cost

Eliminate Slide Troubles by using WABASH SLIDES

MADE BY

B. Walter & Company

Edsall St., Wabash, Ind.

THE PUBLISHING HOUSE of MACLEAN

Thos. S. Young, General Manager

Hugh C. MacLean, Limited

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Footwear — Canada Lumberman
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Advance Information on Building and Engineering

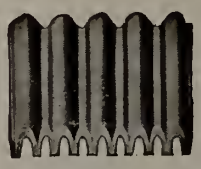
The Hugh C. MacLean Co., Ltd

Publishers

Coal Review — Western Canada Contractor
The Commercial — Western Lumberman

Toronto, Montreal, Winnipeg,
Vancouver, Chicago, New York,
London, (Eng.)

Cary's SUPERIOR QUALITY Corrugated Fasteners



SAW EDGE

PLAIN EDGE

According to final decision, after long litigation, we have been granted the SOLE RIGHT to manufacture a Saw Tooth Corrugated Fastener with a continuous cutting edge. Our fastener is beveled evenly on both sides, which enables fasteners to be driven in straight, and much easier than any other fastener made. Our Corrugated Fastener is made in various widths and corrugations, also in coils wound right and left. Try our products and you will use no other.

Samples and prices on request.

CARY MFG. CO., Brooklyn, N.Y.

THE "SIG'NODE SYSTEM" IS A PROCESS OF APPLYING METAL STRAPPING TO WOODEN BOXES! BALES, FIBRE CARTONS AND MANY OTHER TYPES OF CONTAINERS WITHOUT USING NAILS, RIVETS OR BUCKLES. ITS EFFICIENCY AND ECONOMY COMMEND IT TO ALL UP-TO-DATE SHIPPERS. "SIG'NODE SYSTEM" SIG'NODES, JOINTS, BINDERS, AND PROCESSES ARE FULLY PROTECTED BY PATENTS AND TRADE-MARKS IN THE UNITED STATES AND FOREIGN COUNTRIES.

TRADE MARK REG. U. S. PAT. OFF. SIGNODE SYSTEM COPYRIGHT 1917 SIGNODE SYSTEM INC.

CABLE ADDRESS
"SIG'NODE CHICAGO"
ALL CODES

SIG'NODE SYSTEM INC.

Manufacturers

564 WEST ADAMS STREET
TELEPHONE FRANKLIN 2734-35-36

Chicago

OFFICES
TORONTO
MONTREAL
NEW YORK
PHILADELPHIA
BOSTON
ATLANTA
SAN FRANCISCO

Mr. Box Manufacturer,
Everywhere,
Canada.

November, 1920

Subject: Nailless Strapping

Dear Sir:—

To show how to get the business you would otherwise lose is the object of this **open letter.**

Shippers everywhere are seeking a satisfactory means of reducing the cost of their shipping containers. The meeting of this demand requires serious consideration and intelligent foresight on the part of box manufacturers.

The solution lies in advocating the use of lighter shooks in connection with nailless strapping, which scientific tests have shown results in a stronger, lighter and cheaper box and one that is sealed against pilferage.

Rather than have your prospective customers substitute some other type of container for wooden boxes, your good judgment will suggest that you test our claim that the Sig'node System is the answer to the problem. Elsewhere in this issue of The Canadian Woodworker interesting comparative tests are shown which bear out our contention.

Representatives at Toronto and Montreal will gladly demonstrate the method of operation of our system and advise as to size and cost of strapping best adapted for use on various boxes.

Strapping your shooks and veneers The Sig'node Way solves another shipping problem.

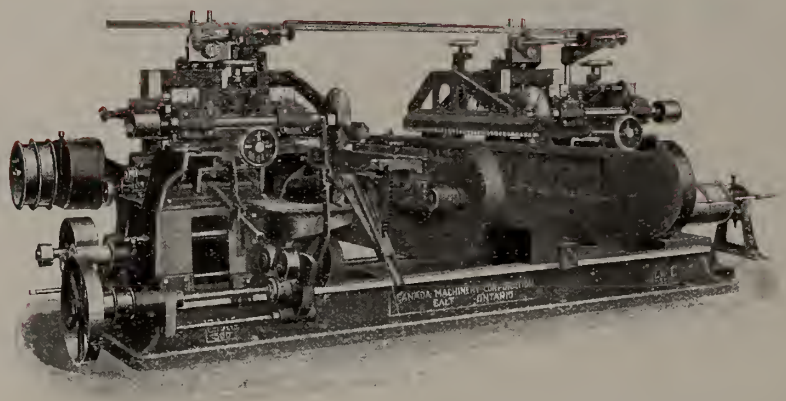
Get in touch with our Canadian representatives. It will pay you to do so.

Faithfully yours,

SIG'NODE SYSTEM, INC.,

Toronto, 46 Colborne St. Montreal, 20 St. Nicholas St.

C.M.C.

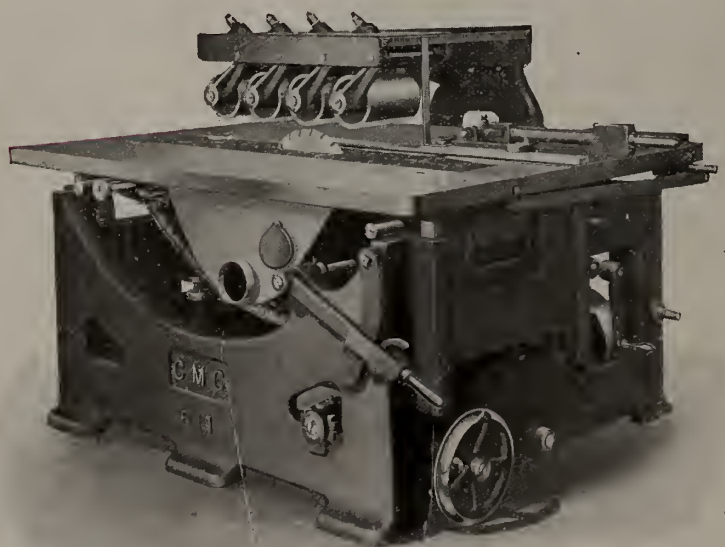


No. 500 Double End Tenoner

SAVING

Save Time
Save Labor

On these two pages, we illustrate four machines of the latest improved design that will produce the highest grade work quickly and with the least trouble. It will pay any interested woodworker to investigate our claims.



No. 611 Straight Edging and Jointing Saw

THE QUANTITY PRODUCTION we claim for these machines is being regularly obtained by many of our leading woodworkers.

Use these
get more work

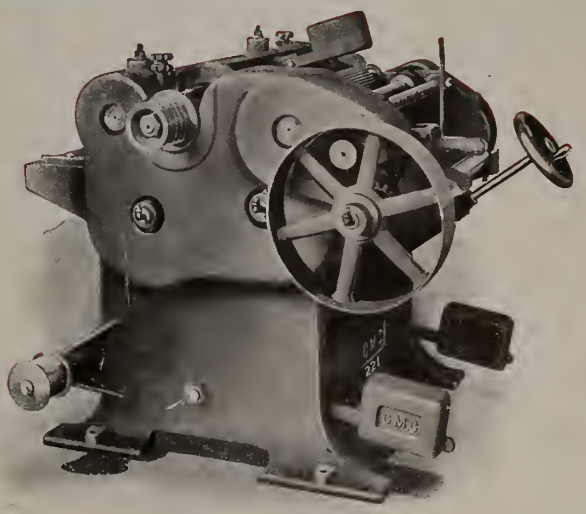
CANADA MACHINERY CORPORATION
LIMITED

GALT, - ONTARIO

C.M.C.

MACHINES

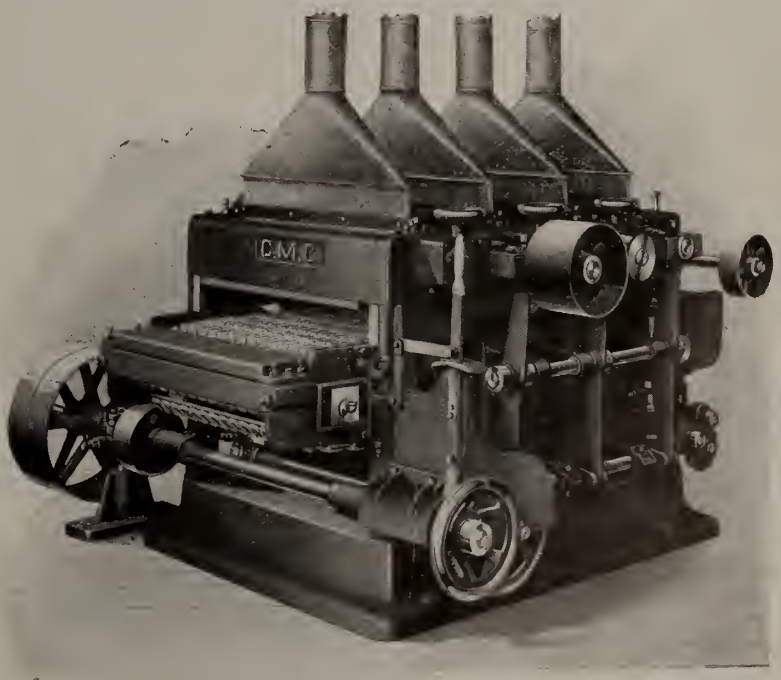
Save Material
Save Money



No. 221 Heavy Pony Planer

Why waste effort trying to obtain quality work from out of date tools when the HIGHEST GRADE WORK is being easily secured from these machines?

A combination of quality and quantity producing machines which will ultimately produce the profits.



No. 400 Revolving Bed Sander

machines and with less money.

CANADA MACHINERY CORPORATION
LIMITED

GALT, - ONTARIO

KILNS

that will dry your lumber ***right*** no matter what you make.

Grand Rapids Vapor Kiln
Grand Rapids, Mich.

Western Vapor Kiln Co. Seattle, Wash.

We Manufacture a complete line of

Chair, Cane-Cutting
and
Bending Machines

CUTS AND CATALOG UPON REQUEST

L. G. McKnight & Son Co.
GARDNER, MASS.

THE THREE CARDINAL POINTS

Flexibility, Simplicity and Perfect Ventilation

OF THE

Sidman Lumber Curing Kiln

explains WHY it perfectly cures ALL and ANY KIND of LUMBER, no matter how thick, or whether GREEN from SAW or air dried for years.

THE SIDMAN L.C.K. Reg. Trade Mark
LONDON CANADA

The SIDMANS of CANADA

Heating and Ventilating Engineers
Lumber Curing Specialists

LONDON : ONTARIO

Wood-Mosaic's New Plant Showing

THE STANDARD DRY KILNS

Made in Indianapolis

No. 3 Self Contained Scroll Saw

Colladay Machine Works

Successors to

Jos. O. Colladay Co., Inc.

Manufacturers of a complete line of woodworking machinery

Since 1867 Philadelphia, Pa.

Empire Clamps Save Money

Because they do not break and put you to the trouble of doing over again the work caused by the broken clamp. They do not break because of the superior materials and finer workmanship which compose them—they last longer, yet cost no more than the ordinary kind. All sizes. Prompt shipment.

It pays to use Empire all steel Retaining Clamps.

Special Woodworking Tools of all Kinds

Empire Tool Works

TORONTO

Automatic Hole-Cutting Machines

The Wheel and Hole Cutting Machine has four automatic movements, all of which work in perfect unison, performing their functions in clock-like regularity.

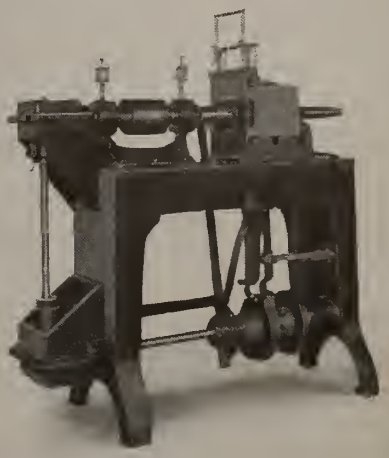
The Hand-Hole Machine will cut hand holes in crate and box ends. It is worked by a carriage and levers, and will cut any size or length hole with either round or bevel edge in any kind of wood.

WRITE FOR NEW DESCRIPTIVE CATALOGUE.

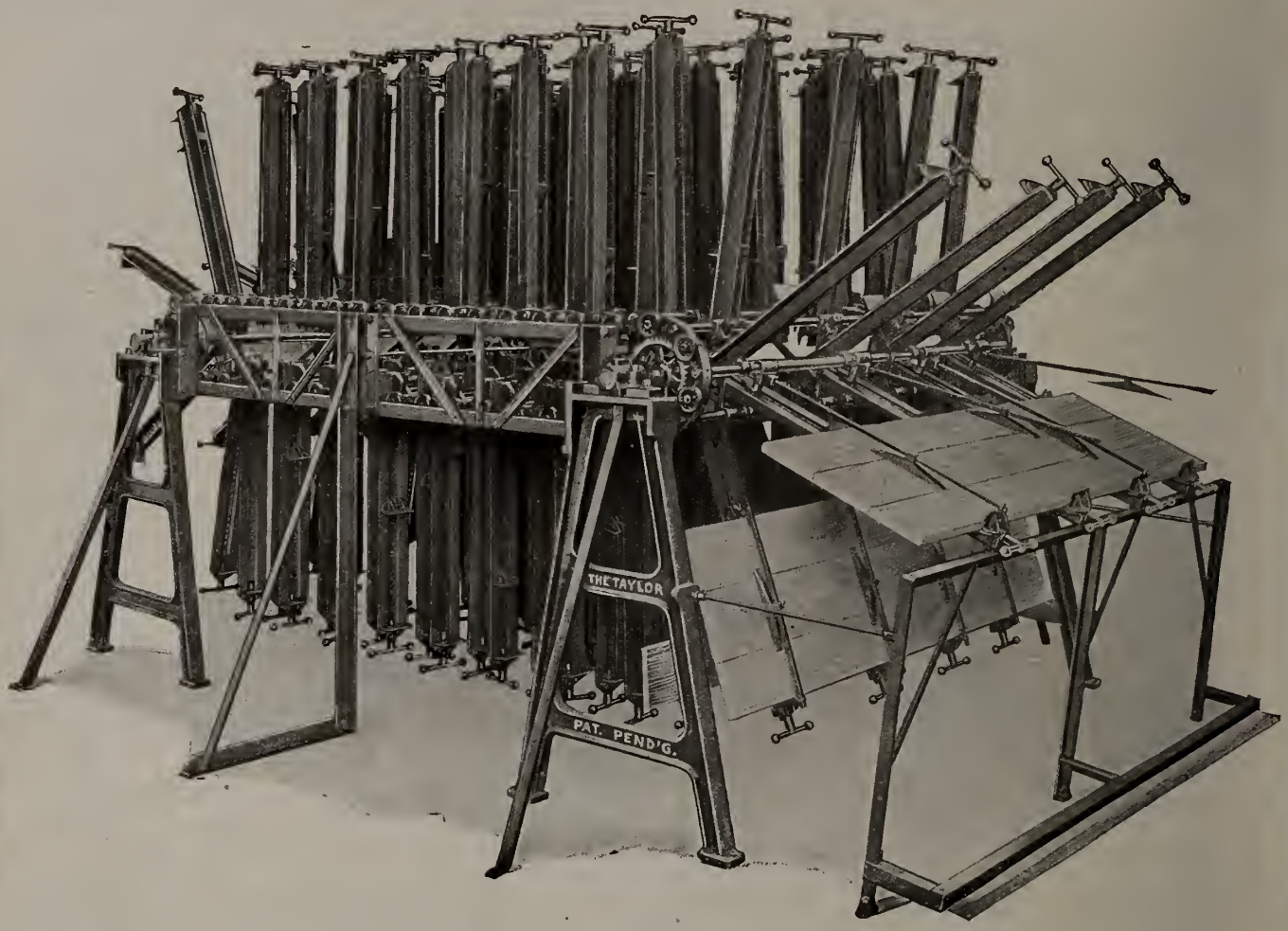
The Virginia Wheel & Hole Sawing Machine Company

S. S. SEE, Manager

14 Third Street N.E. Roanoke, Va.



CLAMP The Taylor TRADE MARK CARRIER



Forty section machine carrying 160 clamps, measuring 8 ft. 2½ in. between shaft centers.

The clamp is one of the most interesting features of the clamp carrier. A remarkable strain can be applied with greatest ease; the work it turns out—both thick and thin stock—is 100 per cent. perfect.

An Engineering concern recently wrote:

"I am recommending Taylor clamps to the Germain Mfg. Co. because I have proven the clamps more efficient through scientific time studies on both and all existing types of gluing-up machines and devices."

As a result of the above recommendations, The Germain Mfg. Co. referred to bought two Taylor carriers. They installed them, and tested them and have since purchased two more. We can tell you numerous instances where customers are using from two to nine Taylor carriers each as a result of similar experiences.

Let us prove the truth of these claims by showing you one of these carriers in operation, or you can try the clamps out on your own work. Ask for C. C. Folder and further information.

A. R. Williams Machinery Co., Toronto, Canada — Representatives

James L. Taylor Manufacturing Co.

POUGHKEEPSIE, N. Y.

CANADA'S LEADING MACHINERY HOUSE

ST. JOHN, N. B.
WINNIPEG
VANCOUVER

The A·R·WILLIAMS MACHINERY Company Limited

64-66 Front Street W Toronto, Canada

DODD'S DOVETAILERS

The illustration on the right shows a front view of a 12 Spindle Dovetailing Machine, a compact machine that will be found exceedingly efficient and yet simple in operation. All machines are direct gear driven from countershaft, requiring no belts except the belt drive. Special gears on spindles, new style bed for straight or swell front and will work 1″ or ½″ centres, visible or blind dovetail. For furniture or box work. Made in five sizes: 10, 12, 15, 20 and 25 spindles. working 9″, 11″, 14″, 19″ and 24″ wide respectively.

The Assurance of a Perfect Finish

The ECLIPSE AIR BRUSH

For the application of Shellac, Stains, Fillers, Varnishes, Enamels, etc., as they should be applied by proper air brush work the "Eclipse" will be sure to meet with your approval. Here are the reasons: First, the material is not chilled in the application; second, the ease with which it is kept clean and operating; third, the thinner or solvent is not volatized or evaporated at high pressure; fourth, fumes are reduced to a minimum; fifth, it does not waste material.

The ECLIPSE AIR BRUSHES are being adopted by many of Canada's most progressive furniture manufacturers. Write us today for prices, etc.

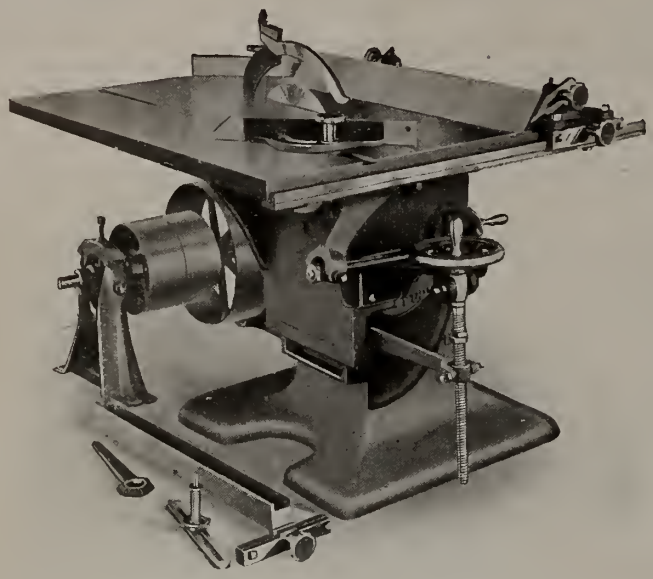
THE

A. R. Williams Machinery Co. Limited

Head Office: TORONTO, ONTARIO

ST. JOHN N.B. MONTREAL, Que. BUFFALO, N.Y.
WINNIPEG, MAN. VANCOUVER, B.C.

DODDS' Tilting Saw Tables

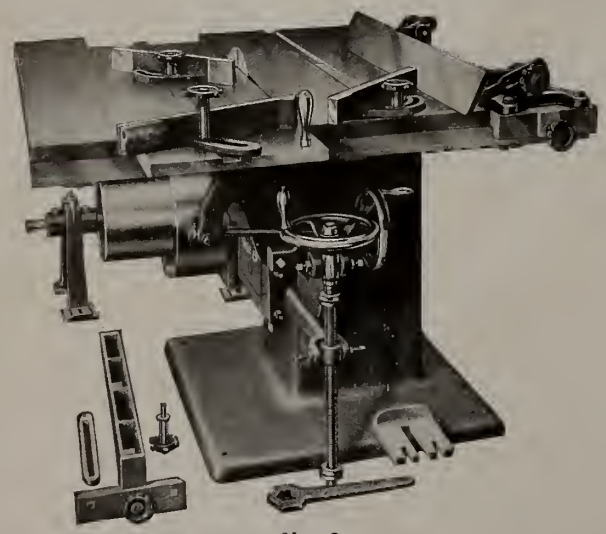


No. 4

The No. 4 machine is belt driven. Size of top, 36 in. by 43 in. Furnished complete with one saw, 12 in. or 14 in., tilting rip gauge, solid or two-sided rip gauge to be used on either side of the saw, two cross cut mitre gauges. Saw guard and spreader which does not have to be removed when tilting the table. Self-centering saw collar that will take any size hole in saw from 1 in. to 1¼ in. Removable iron throat to permit the use of dado heads. Table is raised and lowered with screw on lever and pitman, easily operated. Table is tilted by handwheel and screw and has micrometer index to indicate any desired bevel without the use of a square. Saw Arbor is in a yoke on top of the base and may be adjusted so as to keep the saw in line with the grooves in the table at all times. Countershaft has 10 x 4 tight and loose pulleys, driving pulley is 16 x 5, countershaft should run 700 r.p.m. Machine furnished with boring attachment if so desired. This makes a very complete outfit.

If interested write for prices and further details. We have a complete line of saw tables, stationary or tilting tops.

Improved Types Especially Adapted for Furniture Factories



No. 8

The table of the No. 8 machine is 40 x 44. The base is similar to what we have been using on our No. 4 Saw Table, only we have made it larger on the floor. The raising and lowering device is the same as on the No. 4 machine, with steel lever and pitman.

The Arbor is made of 3½-inch steel, running in long ring oiling boxes. We furnish a self centering saw collar which takes any size hole in saw from 1-inch to 1¼-inch, also one 14-inch saw on each machine. It will carry a 16-inch saw if desired.

Table is made with a center slide 12 inches wide with a movement of 24 inches. Has locking device and detachable mitre gauge. Can cross-cut with table extended to 24 inches, also rip up to 24 inches wide. Table has a removable throat that can be taken out when using dado. It also has two mitre gauges for regular work and a two-sided rip gauge that can be used on either side of the saw: also a tilting rip gauge to be used to cut bevel work when you do not wish to tilt the table.

Countershaft has T. and L. pulleys 10 x 4 inches, and the drive pulley is 16 x 5 inches. Countershaft should run 700.

All Dodds Saw Tables can be very conveniently arranged for direct motor drive.

WRITE FOR CATALOGUE AND PRICES

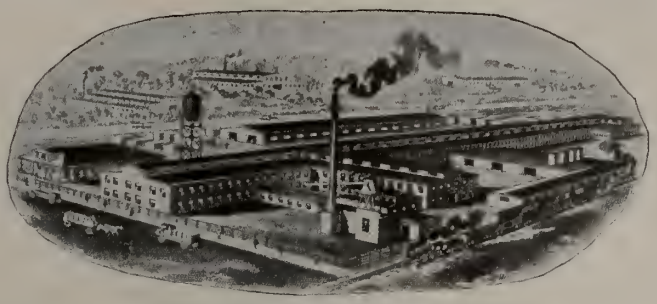
The A. R. Williams Machinery Co., Ltd.

Head Office - TORONTO, ONT.

ST. JOHN, N.B. MONTREAL, P.Q. BUFFALO, N.Y. WINNIPEG, MAN. VANCOUVER, B.C.

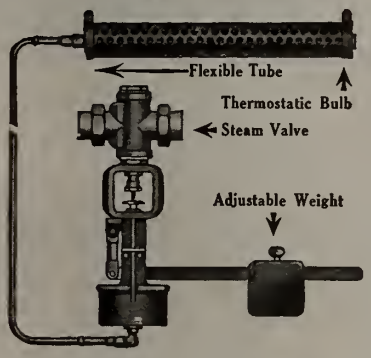
The Largest Plant in America devoted exclusively to the manufacture of special table parts for the table maker

TABLE SLIDES
TABLE RIMS
TABLE PEDESTALS



QUEEN ANNE
WILLIAM & MARY
TABLE LEGS

THE JEFFERSON WOODWORKING CO., Inc. **Louisville, Ky.**



THE POWERS REGULATOR NO. 15

For control of air temperatures. The thermostatic bulb is so constructed that it may be placed at any point and in any position in the room to be controlled, and connected with the steam valve by a flexible tube, of any required length. It is very sensitive and reliable. Self-contained and entirely automatic. Particularly adapted to control temperatures in dry kilns, ovens, varnish and dry rooms, etc. Write for bulletin 138.

Minimize Your Labor Problems

Put your men on jobs they like and you will go far toward solving the labor problem. For example, take the men off the drudgery of watching thermometers and turning steam valves.

Powers Heat Regulators

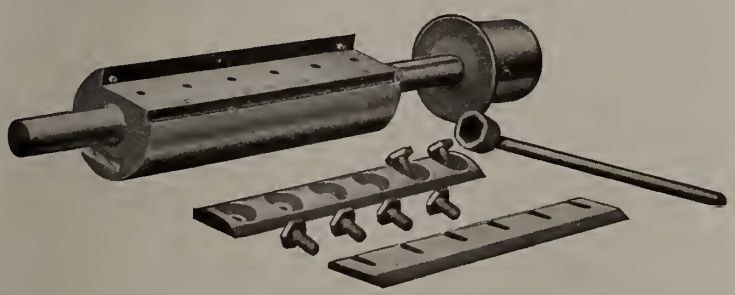
With these automatic guardians on the job, more men are released for work that is directly productive. Besides, you save fuel and materials and standardize your product. Powers Regulation is a necessity in most plants right now. Probably yours is no exception.

Here's a Fair Test—
Try one for thirty days at our risk.

The Canadian Powers Regulator Co., Ltd.

Specialists in Automatic Heat Control

82 Chestnut Street **Toronto, Ontario**



PROTECTION—

Safety First! How often have we heard or seen this phrase, yet daily, yes, and oftener, accidents are occurring. Silver's Round Safety Cylinder will protect the operators of any of our new jointers from needless injury. They are greatly appreciated by the operators of these machines and they help wonderfully to increase production. Write us for descriptive matter regarding our complete line of machinery that will interest you.

The Silver Mfg. Co. Box 370 **Salem, Ohio, U.S.A.**

EXCELSIOR
AND
WOOD WOOL

Long experience and care in manufacture is the reason for the good quality of Excelsior and Wood-Wool produced by Rankins & Co. Furniture manufacturers recognize the merits of our products, and a trial generally results in repeat orders.

Drop us a line, and let us show you.

RANKIN & COMPANY Ltd.
1536 Dundas Street West,
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ZERO NATURAL W. VA. RUBBING OIL IS
BEST—Because that BEAUTIFUL SHINING SURFACE becomes almost Impervious to FINGER PRINTS.
CHEAPEST—Because it goes further on the job than PARAFFINE OIL.

THE BEST
NATURAL
West Va.
ZERO
RUBBING
OIL
PRODUCTS

ZERO OIL COMPANY
PARKERSBURG, W. VA.
Furniture Manufacturers, Try an Order

A REAL SANDPAPER SAVER
Save 25 Per Cent of Your Sandpaper by Using
The Loeffler Close-joint Sanding Drums

Patents Pending.

Same time; change your paper in 5 minutes.
Loeffler Drums do better work because they are turned perfectly true, have no vibration because they have a perfect running balance and an unnoticeable joint.
Satisfied users are saving over 25 per cent. of sandpaper with the Loeffler Drums.
Sizes in 9, 16 and 20-in. diameters, 24 to 36-in. face.
We also build interchangeable close-joint drums to fit your drum arbors.
Edge belt sanders—Belt sanders—Drum sanders. It will pay you to investigate.

The Wm. LOEFFLER MACHINE COMPANY
Manufacturers of Chair Machinery
SHEBOYGAN, - WIS., U.S.A.

Do You Know Me?

The Productimeter

I am the little machine that is always at the head of my class in accuracy, reliability, promptness, and deportment.

You attach me or one of my brothers to your moulders, matchers, stickers, self feed rip saw, or any other machine and I count or measure all the lumber going through. Then I tell you the exact amount so you can stop guessing at your production. I'll say I'm some boy.

Write my factory what machine you want me to check up on, and they'll send me to you on 30 days' trial. I have to make good or you can send me back.

Catalog No. 17 tells all about me.

The Durant Manufacturing Co.
MILWAUKEE, WIS.

Direct Motor Drive

A Real Wonder - Saw

IERTSEN
THE VERY BEST

The 14-inch Junior Bench Band Saw

Motor Drive by Belt

—

Motor Drive by Gears

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Have "The Very Best"

Belt Drive

THE ONLY BENCH BAND SAW FOR DISCRIMINATING PEOPLE

THE "LITTLE GIANT" OF THE WOODWORKING INDUSTRY

Write us today

West Side Iron Works

Leading Makers of Motor Driven and Ball Bearing Band Saws

Works: GRAND RAPIDS, Mich.

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When you decide you get more

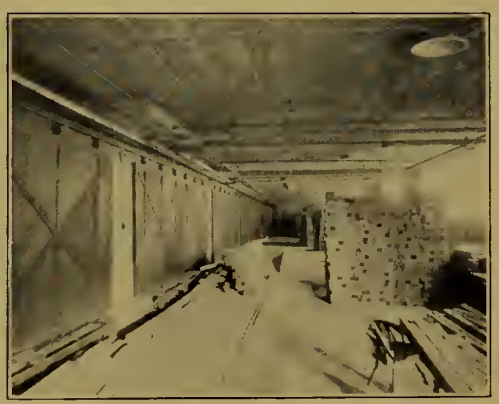
The Service that goes with every National Dry Kiln assures you of the good results our users always get.

This service starts with the rigid investigation by our dry kiln engineers of the special drying problem which the nature of your product requires and carefully supervises every stage of construction until the dry kiln is in actual operation. It goes further, in fact this service is continual—the results which you obtain are essential to our future business, and our experts are always at your command to see that you get satisfactory performance at all times and under constantly varying conditions.

The establishment of our resident dry kiln expert in Toronto has been especially undertaken to give our Canadian users quick and efficient service. If you are thinking of installing new kilns or are having trouble with your present equipment, get in touch with him.

C. A. FIELDS,
P. O. BOX 55
Toronto, Ont.

He will give you personal service at our expense. "Efficiency" is our watch-word—Best Results our aim. Wherever National Equipment is installed satisfactory performance is guaranteed.



Ten National Compartment kilns Prudden Wheel Co., Lansing, Mich.

Six National Compartment kilns, Brunswick Balke Collender Co., Dubuque, Iowa.

The National

1117 E. Maryland Street

on a "National" than a Dry Kiln

Our Engineers will help you decide on which type you need:

National Compartment Kilns
National Progressive Kilns
National Box Kilns

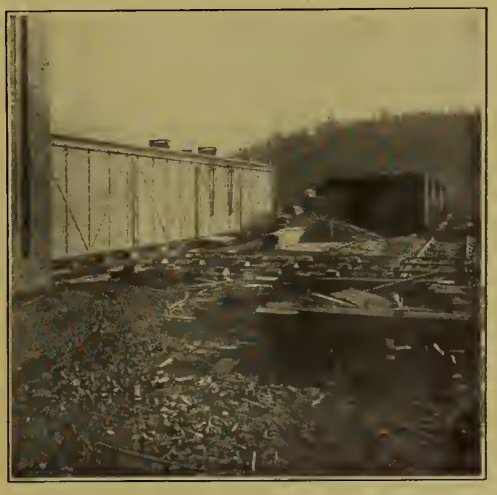
After it has been carefully and properly determined which type is most suitable to your particular requirements, a first-class set of plans is then drawn up by our specialists.. Certain standard plans and specifications for construction are used which enable our engineers to give you the most practical equipment at the most economical cost.

A force of expert erectors is at your service, and because of their experience and familiarity with the work always prove their value by a large margin of saving in erection costs. During construction a careful check is kept on the progress of the work—if you are in a hurry the value of this system will be readily appreciated.

Every part is manufactured in our own plant under our rigid inspection system. We know these parts are all in perfect working order before they are shipped to you. We also carry a complete stock of dry kiln parts and equipment, which is one of the reasons that manufacturers ordering a NATIONAL Dry Kiln are assured of having it within record time.

We can tell you many interesting facts about the success of National Dry Kilns where they are in constant use by America's largest manufacturers. It will be no obligation on your part to purchase if we send you this data. Would you like to have it?

National Progressive kilns are used by many manufacturers.



Complete lumber storage systems designed and furnished.

Dry Kiln Co.

Indianapolis, Ind., U.S.A.

An important step in swing saw improvement

EAGLESFIELD "Beltless" Swing Saw

This new idea machine is designed with a special view to economy, reliability of operation and compactness. It is especially adaptable to close accurate work, and with it many operations can be completed which have heretofore required cutting stock oversize and then joining to the final close dimensions. The elimination of belting and the use of ball bearings, with the motor directly connected to the saw mandrel

Ensures increased production and safety to the operators

The Motor is mounted on the lower end of column and directly connected to saw mandrel by a steel bevel gear, the saw mandrel is 1⅛ inch and is mounted in S.K.F. Ball Bearings. The steel bevel gear and the ball bearings operate in oil. The column is of channel steel, suspended from a rigid cast iron hanger of unified construction to insure rigid support and eliminate vibration. Each side arm of hanger having a four-way adjustment, which makes for accurate alignment. The column is adjustable six inches in length to accommodate various sizes of saws.

A rocker coil spring is provided in place of the ordinary counter-balance weight to increase speed of operation is so designed, that as soon, as the saw starts through the work, the spring is inoperative and the operator has only the resistance of the cut and the weight of machine to pull. To prevent the saw swinging forward too far, an automatic stop is provided.

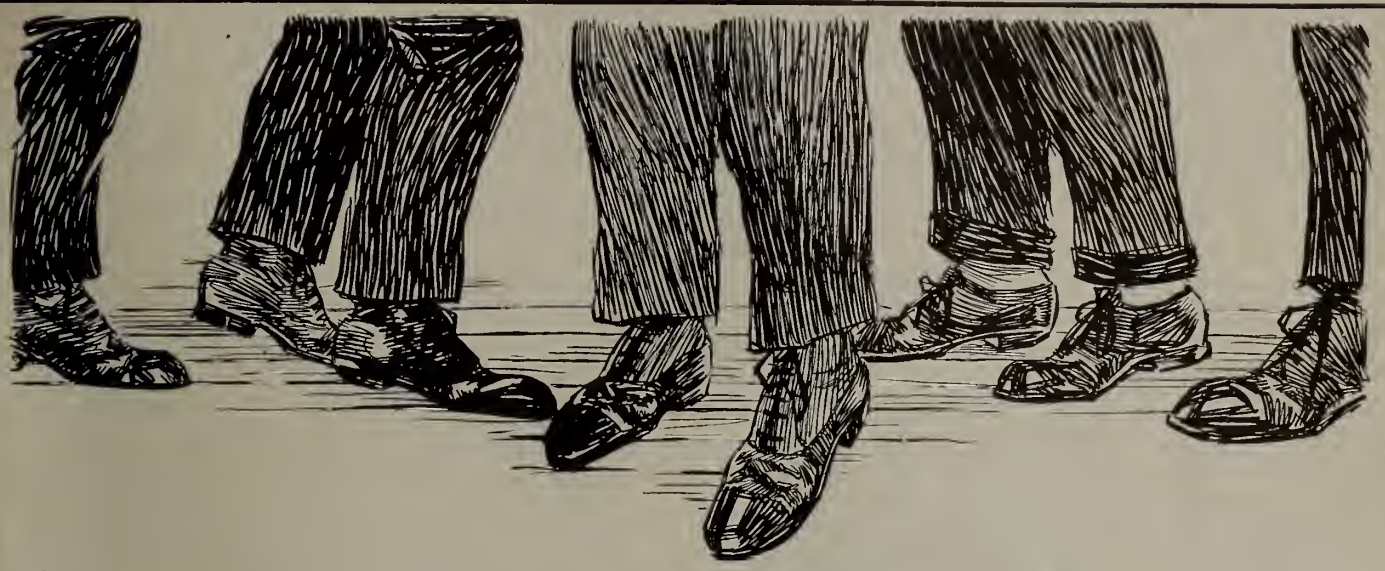
The saw guard is of cast iron, extending completely over the top half of the saw. The handle is extra long and is so designed, in connection with the guard, that danger to the operator's hand is eliminated.

The machine is equipped with a 4-H.P. motor, of any voltage, 2 or 3 phase, 600 cycle current and one 16-inch circular saw. The motor speed is 3600 R. P. M. with the saw mandrel geared down to operate at a speed of 2200 R. P. M. Weight, complete, 350 pounds.

R. D. EAGLESFIELD

21st & Norwestern Ave.

INDIANAPOLIS - INDIANA



Tired Feet Reduce the Work You get *for* each Dollar *of* wages

Across the shop to the big jointer, back again to the bench; then to the big saw, then back again; still another trip to the jointer,—back and forth, all day long, year in and year out. How much is this wasted time costing you? How much is the consequently reduced energy costing you in man-power? Then figure in the time wasted in sawing and planing by hand,—slow tedious, inaccurate processes.

Is it any wonder that thousands of modern shops are being equipped with Wallace Bench machines?

ADOPT THE WALLACE IDEA

Make certain that your men remain at their benches, using their energy only in profitable work. By installing Wallace Bench machines throughout your shop, your men remain right where they belong, wasting no time on journeys between bench and tool. Wallace Bench machines are portable—they operate from any point on your electric light circuit as simply as an incandescent bulb.

One step and the workman is at his individual machine—a snap of the switch and his motor purs—a quick, true, sure operation and the work is done—accurately, economically and efficiently.

Now is the time when every second counts; every manufacturer knows that. Wallace Bench Machines will pay for themselves quickly and will bring you dollars for every penny of their cost. Any Wallace user will verify that fact without hesitation.

You owe it to yourself to get acquainted with the Wallace Idea —ask any first-class machinery dealer or inquire directly of us.

adopt the WALLACE IDEA at every bench

Ask Your Machinery Dealer

Practically all of the machinery dealers that know the needs of their customers and aim to advise their customers and supply that need, have Wallace Bench Machines in stock and will gladly demonstrate them to you. They are the class of man who would advise you to use these bench type machines on certain operations if advisable, regardless of their profits. They are good men to know and to consult, for the maintenance of this equipment. Being located in all principal cities, they are in a position to render our customers real service.

J. D. WALLACE & CO., 1414 W. Jackson Blvd., Chicago, Illinois

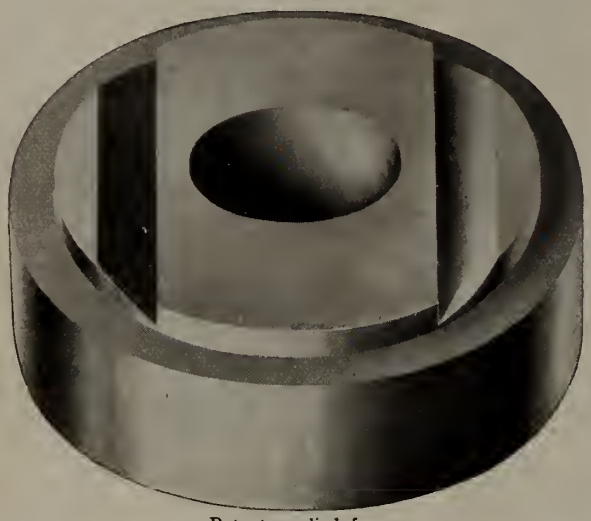
Branch Offices: Boston, Mass., Philadelphia, Pa., Pittsburg, Pa., Louisville, Ky., San Francisco, Cal., 88 Bagg St., Detroit, Mich., New York, Buffalo, N. Y., Middletown, O., St. Louis., Mo., 220 East Scott St. Knoxville, Tenn.

THE SHAPER MAN'S DREAM

THE KNOUREK PATENT

Ball Bearing Shaper Guide Collars

A Decided Improvement Over the Revolving Solid Collars Now in Use



Patent applied for

Ball-bearing Shaper Guide Collars are made with grooves as shown, for flat knives, and without grooves for solid steel cutters.

ORDER A SET ON 30 DAYS FREE TRIAL

The friction set up by stock or patterns bearing against solid revolving collars is entirely eliminated when ball-bearing shaper collars are used. Every shaperman knows the effect of this friction on stock being run, and so will appreciate the real value of these new shaper collars.

In the operation of the ball-bearing collar, the outer shell is free from the slotted collar proper and ceases to revolve with the spindles when pattern or stock comes in contact with it. It does not stop entirely but simply rolls along with the feed of the work. In this way there is no friction whatever between the collar and the work, therefore the edge surface can neither be burned nor worn down.

To save your patterns, stop spoilage of stock and in an easy manner, enable your operator to do more work, you should try out these new ball-bearing shaper collars —note the results by actual operation in your own plant.

Dept. A **WOODWORKERS TOOL WORKS** **Chicago, Ill.**

"The Woodworker's Standard"

Carborundum Brand Garnet Paper and Cloth

Are flexible and fast cutting and invite the most rigid tests.

We carry a complete stock of sheets and rolls in all standard widths and grades.

If you use some special abrasive, mail us the number and make, or send a sample if possible.

Norman Macdonald

62 and 64 Temperance Street

TORONTO - - ONTARIO

A Hundred Table Tops Now— Seventy-five Before

THE operator here, is a good man—a steady, hustling, careful workman, but he says the best he was able to get out of a garnet belt was seventy-five table tops. It wasn't his fault. It was clearly up to the belt.

A Carborundum Brand Garnet Belt is on his machine now and he is turning out 100 tops to the belt.

Proving once again that

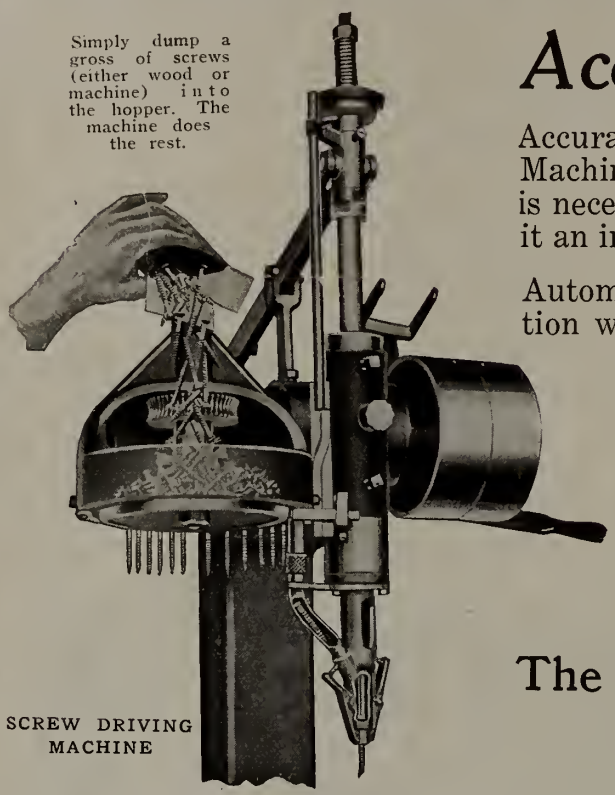
Carborundum Brand Garnet Products

Make Good Sanders Better Sanders

The Carborundum Company, Niagara Falls, N. Y.

New York Chicago Boston Philadelphia Pittsburgh Cleveland
Cincinnati Grand Rapids Detroit Milwaukee

Simply dump a gross of screws (either wood or machine) into the hopper. The machine does the rest.



SCREW DRIVING MACHINE

Accuracy plus Speed

Accuracy in operation makes this Reynolds Machine an asset where quality production is necessary. Speedy manipulation makes it an important factor in economy.

Automatically perfect, its positive operation will enable you to drive 1000 to 2000 ordinary screws per hour without the services of a skilled mechanic. We can save you 85% in labour costs.

Write today, giving outside dimensions of your work and gauge and length of screws used and we will send you descriptive literature and list of users.

The Reynolds Machine Co.

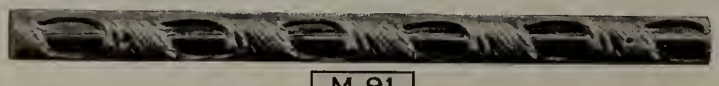
Department C

Massillon, Ohio, U. S. A.

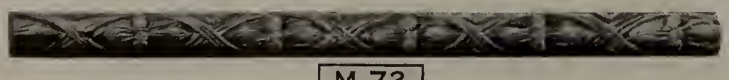
M 97

M 88

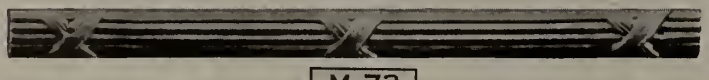
M 77



M 91



M 72



M 73

MOULDINGS We are making more Period Mouldings than ever before. Orders should be placed early to assure your supply when needed.

KNOBS The Period Knobs we placed on the market a few months ago are proving very popular. If you have not received samples ask for them now.

ROSETTES A new Period item to accompany the knobs.

OP8 OP5 OP6

Waddell Manufacturing Company

Coldbrook and Taylor, N. W. **Grand Rapids, Mich.**

Do Not Gamble on Your Veneer Tapes

BUY THE BEST.

Ideal Veneer Tapes

The material with the guarantee behind it

Profit by our many years' careful application to the subject of Veneer Tapes.

We have several qualities, cloth and paper, plain and perforated, which will cover all of your requirements.

Write for booklet.

IDEAL COATED PAPER CO.

Veneer Tape Specialists

Main Offices and Mills, BROOKFIELD, Mass.

MAGIC VENEER TAPE

is made of highest quality Kraft Paper that peels off your veneer in one piece, thus eliminating that tedious and expensive work of sanding or scraping.

YOUR especial needs of Veneer Tapes, whether Paper or Cloth, can be furnished by

The Gummed Products Co.

Troy - Ohio

Chicago Minneapolis New York

O.K'd by the Furniture Makers

The growing demand from furniture manufacturers for Nashua Veneer Tapes is conclusive proof of the popularity of this Canadian-Nashua product.

One of the most trying problems of the furniture maker is to get veneer tapes that stick fast when they are supposed to —and not until then!

Nashua Veneer Tapes

adhere quickly to the wood and make a good hinge to hold the two edges of veneer firmly. These tapes are wholly a Canadian product.

When you are in need of Kraft, Hollands or Coarse Cloth, send your order to Peterborough and we will fill it promptly.

Write for Samples and Prices

CANADIAN·NASHUA·PAPER·CO·LTD
SERVICE SATISFACTION QUALITY
NASHUA
TRADE MARK
PETERBOROUGH ONT.

CANADIAN NASHUA PAPER CO., Ltd.

Peterborough, Ont.

HART MIRROR PLATE CO.

IMPORTERS AND MANUFACTURERS OF

MIRRORS

GRAND RAPIDS QUALITY

Grand Rapids, Mich.

Largest manufacturers of high grade mirrors in America serving the furniture trade exclusively.

BRITISH · P.B. · CANADIAN · GLASS ·

Pilkington Brothers

Limited

Manufacturers of

BRITISH PLATE GLASS
CANADIAN WINDOW GLASS

Specialty:-- **MIRRORS** PLAIN AND BEVELLED

FOR FURNITURE TRADE

(Silvering on All Our Mirrors Protected by Copper Backing)

And Every Description of Glass for Building Purposes

FACTORIES:—THOROLD, Ont., ST. HELENS, Eng.

EASTERN DEPOTS:—TORONTO, Mercer St., MONTREAL, Busby Lane, HALIFAX, Queen Street

Sole Canadian Agents for KAWNEER Metal Bars and Mouldings for Store Front Construction.

PERIOD CARVINGS

for

FURNITURE

Quality the Best

Prompt Shipment

Largest Manufacturers of Imitation Wood Carvings in the World

Unlimited facilities for the manufacturing of high grade period wood carvings in composition and wood fibre. Reproductions of exclusive designs our specialty.

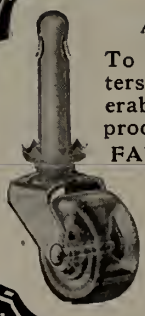
CATALOGUE SENT ON REQUEST

THE DECORATORS SUPPLY COMPANY

ARCHER, LEO AND LIME STREETS

CHICAGO

The Faultless Caster



A REFINEMENT

To use Faultless casters is to add a considerable value to your product.

FAULTLESS CASTER COMPANY

Evansville, Ind.

New York,
Fifth Ave. Bldg.

An Efemco Product

Easier Rolling— Smoother Action

You actually sell these facilities with every piece of furniture equipped with Efemco Acme Grip Neck Ball Bearing Casters.

These casters are Efemco products through and through. Of standard quality—the result of 85 years' manufacturing experience.

Heavy loads and severe tilting strains never put Efemco Casters out of commission. And their rugged, flat tops prevent the balls from binding or falling out. Made in non-plated, brass-plated and nickel-plated. Sizes 3, 4, 5, 6 and 7. With Maple, Lignum Vitae, Steel, Iron and Fibre wheels.

Write for catalogue showing new lines of improved Efemco *Casters*

FOSTER, MERRIAM & CO.

Meriden, Conn. Hamilton, Ontario New York City

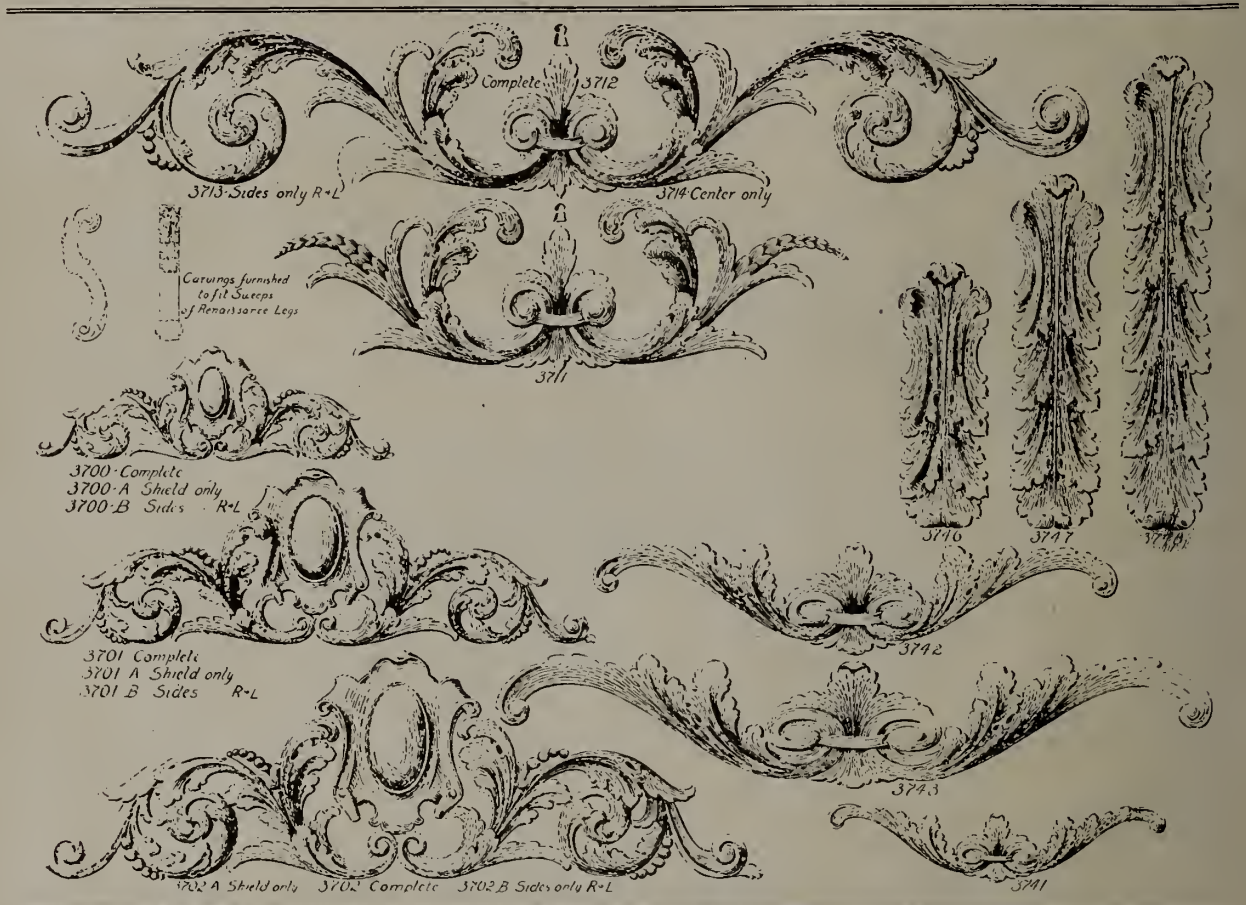
Efemco PRODUCTS

Grip Neck Casters	Truck Casters	Piston Rings
Ball Bearing Casters	Furniture Trimmings	Cast Aluminum Ware,
Roller Bearing Casters	Automobile Accessories	Grey Iron Castings

Standardized by 85 years of service

Efemco Products / Efemco Products / Efemco Products / Efemco Products / Efemco Products / Efemco Products

Wood Fibre Carvings



ORNAMENTATION FOR

Furniture	Churches	Altars	Steamships
Offices	Schools	R. R. Coaches	Show Windows

Thousands of designs to choose from

WE INVITE YOUR INQUIRIES

J. WALTER & SONS

KITCHENER - ONT.

"CASCO" Waterproof Glue

Mixed Cold—Used Cold

COST

FOR JOINTING—very much less than the hide glues.

FOR VENEERING—A little more per pound than vegetable, but little, if any, more per GLUE LINE FOOT.

Hundreds of large manufacturers are using "CASCO" to produce the BEST veneered products, at no increase in cost.

The Casein Manufacturing Co.

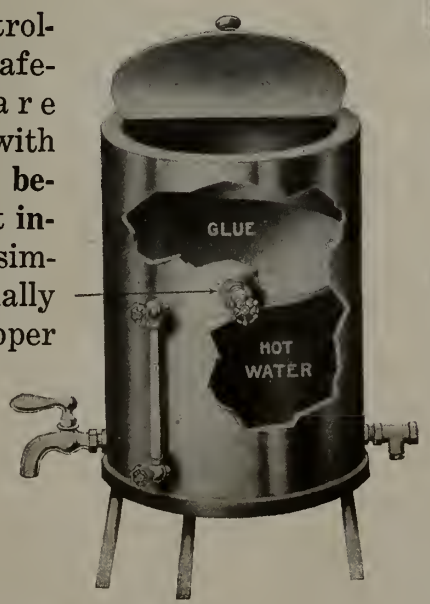
Manufacturers of Casein Glues for twenty-five years

15 PARK ROW NEW YORK CITY

NOTE. Send for Casco Red Book. It contains much information on glue, veneer and panels.

Improved Glue Heater

No heat controllers or other safety guards are necessary with this heater, **because it cannot injure glue.** It's simple, substantially made of copper and costs less than any other.



Let us tell you more about it.

We make any size desired.

Cincinnati Glue Heater Company
Cincinnati, Ohio

Built to Stand Hardest Service

"INTERNATIONAL" Electric Glue Heaters

Fireless cooker principle conserves and utilizes every bit of heat generated. Holds glue at correct working temperatures without guesswork. Average cost of operation about one cent per day. Keeps glue at correct temperature for greatest tensile strength. Properly glued joints never fail. This heater has a place in every shop and factory. Sizes, one pint to fifty gallons. Heavy spun copper construction. No seams or soldered joints. Three heats. No water bath. Clean, safe, economical. Portable. Fits any lamp socket. Used by prominent concerns everywhere.

Write for folder, "Correct Temperature in the Glue Room."

INTERNATIONAL ELECTRIC COMPANY

MANUFACTURERS
ELECTRICAL HEATING APPLIANCES

INDIANAPOLIS, U.S.A.

Canadian Distributors

R. E. T. PRINGLE, Limited

TORONTO
95 King Street East

MONTREAL
401 New Birks Bldg.

WINNIPEG
703 Confederation Life Bldg.

VANCOUVER
402 Vancouver Block

"International Electric Heaters are the best."

QUICK REPAIR

Is a material very desirable for use by woodworking manufacturers of all kinds and is used for repairing splits, checks and other defects in both surface and core stock?

Made in colors to meet the requirements of the best finishes of all cabinet woods.

Put up in tubes for convenient use on surface stock and in quart cans for larger defects in core stock.

Quick Repair has been used by some of our customers for a number of years.

Small sample tube mailed free on request.

Manufactured and sold exclusively by
Makers of

PERKINS
183
Trade Mark Reg. U.S. Pat. Off.

Perkins Glue Company

Factory and General Offices:
Lansdale, Pennsylvania.

Sales Office:
South Bend, Indiana

Select
UNIFORM STRONG
Fibre Cord

Select Fibrecord is unexcelled for furniture work.

Made from special stock, carefully inspected for uniformity, strength and smoothness.

Select Fibrecord has the smooth, hard finish which is essential in the better grade of fibre furniture.

It cuts the expense of finishing materials as the stain and finish lay on the surface—they don't soak through. This gives a smooth, even color.

Our UNAFLEX seaming cord is universally used for upholstered furniture. It gives everlasting service.

Write for Samples and Prices.

GRAND RAPIDS FIBRE CORD COMPANY

Myrtle Street and P. M. R. R. **GRAND RAPIDS, MICH.**

Some Wise Man said

"No mere spasm of goodness will make a right life, for we rise no higher than our habitual thinking."

—Anon.

This can be paraphrased to read

"No mere spasm of efficient manufacturing will make a first class product, and no business endures, except by habitual right methods."

We use the best skill possible in our manufacturing process, carried out under our exclusive formula. Our

PERKINS 183

TRADE MARK (Reg. U.S. Pat. Office).

is the result and this result is reflected in the factories of our customers and

THE PERKINS HABIT Insures Efficient Glue Room

Process and Product Patents covering Perkins Glue were granted July 2nd and March 19th, 1912, and have been held valid and infringed by the United States Circuit Court of Appeals. Patents have also been granted in Canada, Great Britain, Germany, France, Belgium, Italy and other foreign countries.

Perkins Glue Company

Factory and General Offices:
LANSDALE, Pennsylvania.

Sales Office:
SOUTH BEND, Indiana

TO USERS OF GLUE

GLUES and GELATINE *Also* Cold Water Glue

We have the right grade for all purposes

"BEST BY TEST."

Careful attention to enquiries. Lowest Prices. Samples on application to—

Witting Bros. Ltd., Montreal

P.O. BOX 3293.

STRONG AS THE ROCK

Made Under U.S. patent

Representatives and stocks at:—

CHICAGO
DETROIT
ST. LOUIS
MINNEAPOLIS
SAN FRANCISCO
TORONTO, CANADA

Monite Waterproof Glue

represents proved superiority. MONITE satisfies all the requirements in glue, namely:

Strength Uniformity Dependability Heat and Water Resistance
Unchanging Adhesion in All Weathers and Climates.

The product of years of research and experiment, MONITE offers new and greater value—the best waterproof glue obtainable in America. It can be adopted with confidence in every branch of the woodworking industry.

Write for our booklet – let us submit prices and samples.
Our skilled demonstrators are at your service.

CASEIN GLUE MANUFACTURING CO.

General Sales Office
136 W. Lake St., Chicago, Ill.
Successors to Certus Cold Glue Co.
Detroit

W. H. Gage Glue Co.
Distributors for South & West
St. Louis, San Francisco

Canadian Distributors
W. H. Cunningham Co.
Toronto, Can.

MONITE WATERPROOF GLUE

Concentrate on Quality

Every quality argument is strengthened by the use of

NAPCO Waterproof Glue

The first impression in the woodworking plant, is decidedly in its favor.

Napco, is a powerful glue that holds---is impervious to water, and absolutely odorless.

No glue on the market is as economical. It is mixed cold, and applied cold, thereby saving much time and trouble in preparing.

Introduce Napco Waterproof Glue in your plant.

WRITE FOR PRICES

Waterville Veneer & Panel Co. Ltd.

WATERVILLE, QUE.

Sole Agents for Canada.

Deliveries made from either Waterville or Toronto Warehouses.

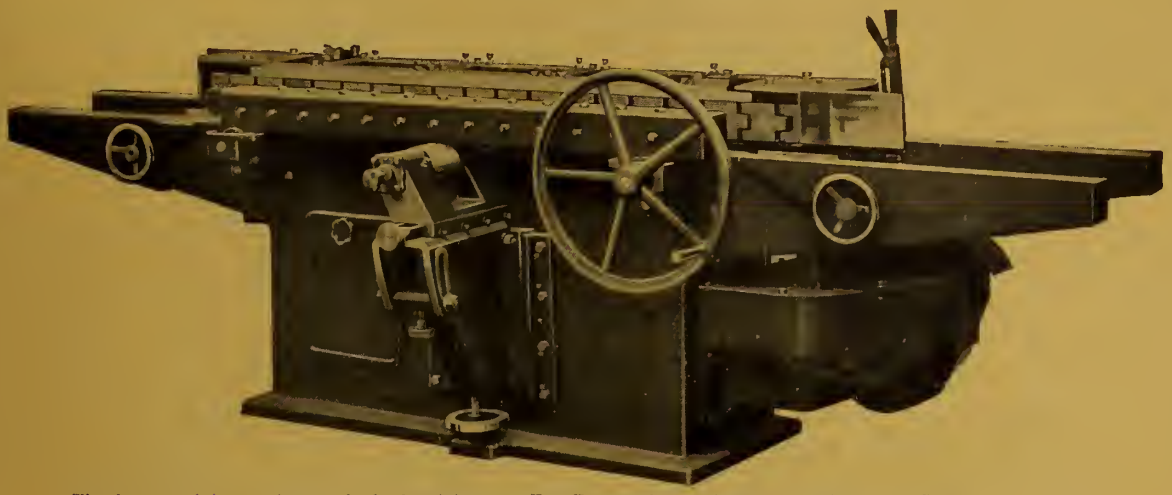
An Original Malcolm Design

The above Suite is one of the many of our original new patterns, which are so much in demand by discriminating buyers. Shown at all the best shops.

THE ANDREW MALCOLM FURNITURE CO. LIMITED
KINCARDINE AND LISTOWEL
Head Office: Kincardine, Ont.

Jenkins-Falls 3-C Glue Jointer

"THE BEST OF THEM ALL"



The last word in continuous feed glue jointers. For Perfect Glue Joints on Furniture and Pianos. For Moulding on shelf Edges. Stair Nosing, Rolling Joints for Drop Leaves on Tables. For squaring Stock and Tank Staves.

You should have particulars of this machine.

Jenkins-Falls No. 23 Veneer Jointer

The only Veneer Jointer that will effectively joint buckled veneer.

Stock is held flat by patented clamping device while the carriage travels past cutter and stops automatically according to length of stock worked. Carriage is returned by reversing friction lever.
If you are still using ordinary huzz planers for jointing your stock this machine will prove a real cost cutter in your veneer room.

LET US TELL YOU ABOUT IT.

The Jenkins Machine Company

(Successors to Hayes Machine Co. and Falls Machine Co.)

SHEBOYGAN, WIS., U. S. A.

Canadian Sales Agents

Garlock-Walker Machinery Company, Limited

32 Front St. West, TORONTO, ONT.

AMERICAN WOOD WORKING MACHINERY CO.

ROCHESTER, N. Y.

SALES OFFICE FOR BRITISH COLUMBIA, PORTLAND OREGON
AGENTS FOR THE REST OF CANADA, GARLOCK-WALKER MACHINERY CO., TORONTO
AGENTS FOR GREAT BRITAIN, THE PROJECTILE CO., LONDON

FIRST IN QUALITY

American 25 Edging Saw

It will straight-edge crooked and uneven stock, match up for gluing and rip to width in the usual manner with a rip gauge.

It will take stock short as five inches and twenty inches wide; three inch stock can be ripped with a fourteen inch saw.

A machine unsurpassed for the large range of sawing found in furniture factories.

Delivery from Toronto Warehouse.

CANADIAN SALES AGENTS

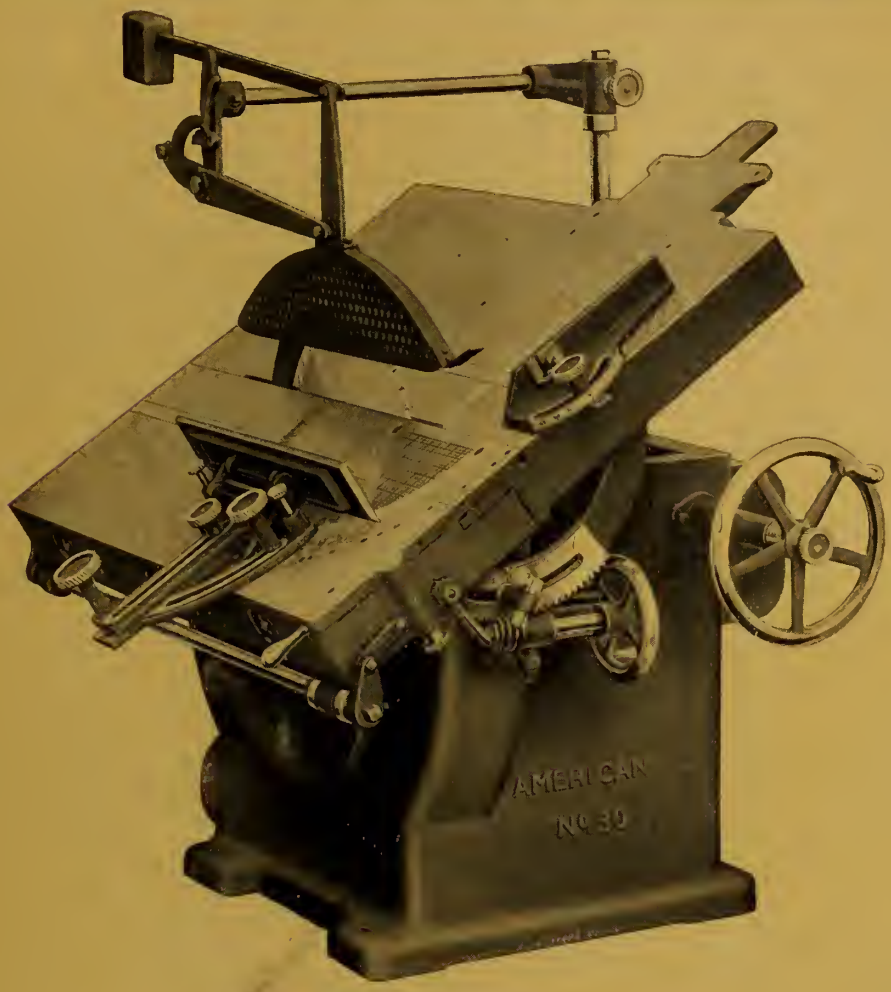
Garlock-Walker Machinery Company

32 Front Street West, TORONTO, ONT. Limited

TORONTO MONTREAL WINNIPEG

A Page from Our Catalog

AMERICAN WOOD WORKING MACHINERY COMPANY



Showing Table Tilted and Rip Gauge to Left of Saw.

American No. 30 Universal Saw Bench

OUR No. 30 Universal Saw Bench is a machine that will do ripping, cross-cutting and dadoing in an efficient and thorough manner. It will cut a perfect mitre; it will measure any angle instantly and accurately; it will cut off to length or rip to width —all without the operator having to do any previous calculating or even referring to a rule. It is built with extreme care, like an iron-working tool, to insure absolute accuracy of operation. "Built like an iron-working tool" is not merely a phrase with us—it is a fact characteristic of American wood-working machines. We know how, and do make iron-working tools of the highest order and these machines are of the same high class.

CAPACITY—Rips from 1-16 to 27½-in. and cuts off to 31-in. wide when saw is set for 2-in. thick. An 18-in. saw may project 5¾-in. above the table. The table tilts to 45 degrees for bevel sawing. Two 18-in. saws, 1⅛-in. hole, are furnished. If necessary one 20-in. saw (not adjustable) can be used. Dado heads 2½-in. wide can be used.

Write for large illustration and complete details.
Delivery from Toronto warehouse.

CANADIAN SALES AGENTS:

Garlock-Walker Machinery Company Limited

32 Front Street West, TORONTO, ONT.

Toronto Montreal Winnipeg

NEW YORK ROCHESTER CHICAGO NEW ORLEANS SAN FRANCISCO PORTLAND ORE.

THE KELLEY ROUTER

A Wood Cutter that Cuts Your Costs

Here are some of the things the Kelley Electric Router will do:

Stair routing, shelf housing, sunken panel work, newell posts, cabinet work, edge moulding, church pew ends, dovetailing, tank crozing, routing out for inlay work, column and pilaster fluting, crowning piano backs, cutting-in for ribs in piano backs, etc.

It will be interesting to Ontario Manufacturers to know that the Kelley Company have now developed a 25 cycle motor for use in this Router, thus making it unnecessary for users of this style current to install a D.C. Generator to operate a Kelley Router.

Tell us what your work is—we will tell you if the Router will do it, and send it on trial to prove it

Kelley Electric Machine Company 111-119 Dearborn St. BUFFALO, N.Y.

Canadian Sales Agents

Garlock-Walker Machinery, Company, Limited

MONTREAL 32 Front St. West, TORONTO WINNIPEG

The Latest Improved Veneer Lathe

"Coe New Twentieth Century Model"

Write for Bulletin No. 201 which contains a complete description and many illustrations of this lathe.

Did you ever see a lathe that could be instantly changed to cut another thickness of veneer? This is only one of the improved features of this machine. It embodies so many features that are entirely new that we believe every owner and operator of a lathe will want to know about it.

Descriptive bulletins of the following improved Coe Veneer Equipment are yours for the asking:

LATHES	DRYERS	DRAG SAWS
CLIPPERS	AUXILIARY TABLES	SLICERS
KNIFE GRINDERS	STAMPERS	VENEER SAWS

Manufactured by **Coe Manufacturing Company** PAINESVILLE OHIO

Garlock-Walker Machinery, Company, Limited

MONTREAL 32 Front St. West, TORONTO WINNIPEG

WE WILL HAVE

Two Million Feet of Fine Yellow Birch

to be Sawn to order this winter.

Write for particulars to the

FLETCHER CORPORATION SHERBROOKE, QUEBEC.

Southern Michigan Beech

The lower peninsula variety excells any other locality in the soft, even texture and straight grained quality of this product. Cut from old growth virgin timber, this stock is representative of the highest standard of quality.

5/8 No. 2 Com. & Btr.	170M
4/4 Selected & Better	125M
4/4 No. 1 Common	100M
4/4 No. 2 Common	80M
5/4 No. 1 Com. & Btr.	175M
5/4 Selects & No. 1 Com.	25M
5/4 No. 2 Com. & Btr.	200M
5/4 No. 2 Common	50M
6/4 No. 1 Com. & Btr.	150M
6/4 Selects & No. 1 Com.	30M
6/4 No. 1 & 2 Common	52M
6/4 No. 2 Com. & Btr.	250M
6/4 No. 2 Common	75M
8/4 No. 2 Com. & Btr.	150M

Our complete assortment offers exceptional opportunities for replenishing your stocks. If the items listed do not offer the assortment desired, we will supply any grade or combination of grades.

We can kiln dry.

20 Million Feet of Assorted High Grade

NORTHERN HARDWOODS

THE BIGELOW-COOPER CO.

BAY CITY - - MICHIGAN

L. D. LEACH & COMPANY

FISHER BUILDING, - CHICAGO

Manufacturers

OAK	Furniture and Vehicle Dimensions Plain Sawed, Red and White Car Stock Wagon Stock
GUM	Plain and Quartered, Sap and Red
HICKORY	Flitch and Dimensions
ELM	2, 2½ and 3 inch.

HARDWOOD LUMBER

Thirteen Band Mills
Six Planing Mills
Eleven Flooring Units

Annual Capacity, 130,000,000 Feet

In a former issue we told of the hardwood stumpage which we have from which to produce lumber to supply our patrons; probably, however, those who purchase lumber would prefer some data as to our production of lumber rather than in regard to our ownership of trees.

We produced, during the first six months of 1920:

FOURTEEN MILLION feet of poplar lumber, including
- 1,000,000 feet of panel
- 2,472,999 feet of 1s and 2s
- 3,151,831 feet of Nos. 1 and 2 common.

TWENTY-SEVEN MILLION feet of oak lumber including
- 2,288,455 feet of quarter-sawn stock
- 4,916,456 feet of 1s and 2s
- 6,467,522 feet of Nos. 1 and 2 common

We produced also the other varieties of stock in poplar and oak which naturally would result, accompanying the manufacture of items above listed.

In addition to our production of poplar and oak, we manufactured millions of feet of basswood, ash, chestnut, hemlock and other varieties of such hardwoods as grow in the choicest sections of the Appalachian hardwood areas.

During these first six months of the year, we manufactured 11,567,253 feet of the choicest hardwood flooring, strip and parquetry, plain and quartered.

We produce standardized products.

We render a service possible only from Standardized Efficiency.

W. M. Ritter Lumber Co.

COLUMBUS, OHIO., U. S. A.

Canadian Representative: John Hall, 160 Huron St., Post Office Box 32, Toronto

For Discriminating Buyers

Dry stock ready for prompt shipment

1 Cars 1 " Fas Plain Red Oak
4 " 1 " No. 1 Com. Plain Red Oak
7 " 1 " No. 2 & 3 Com. Plain Red Oak

1 " 1 " Fas Quartered Red Oak
7 " 1 " No. 1 Com. Qtrd. Red Oak
6 " 1 " No. 2 " " " "

1 " 1 " Fas Quartered White Oak
5 " 1 " No. 1 Com. Qtrd. White Oak
7 " 1 " No. 2 " " " "
1 " 1 " 1s&2s Plain White Oak

2 " 1 " No. 1 Com. Plain White Oak
2 " 1 " No. 2 " " " "

2 " 1¼" Fas Quartered Red Gum
5 " 1 " Com. & Btr. Qrtd. Red Gum
4 " 1½" " " " " "
3 " 2 " " " " " "
3 " 1¼" No. 1 Com. Qtrd. Red Gum

1 " 1 " Fas Plain Red Gum
3 " 1¼" Fas Plain Red Gum
6 " 1 " No. 1 Com. & Btr. Pl. Red Gum
3 " 1 " No. 1 Common Plain Red Gum
5 " 1¼" No. 1 Common Plain Red Gum
1 " 2 " " " " " "
3 " 1 " No. 2 " " " "

2 Cars 1 " Fas Sap Gum
2 " 1 " " " " 13" and up
3 " 1 " Sap Gum Box Boards, 13 to 17"

1 " 1¼" Fas Sap Gum
1 " 2 " Common & Better Sap Gum

3 Cars 1 " No. 1 Common Sap Gum
2 " 1¼" " " " "
5 " 1 " No. 2 " " "
1 " 1¼" " " " "
1 " 1½" " " " "
1 " 2 " " " " "

1 " 1¼" Fas Qtrd. Red Gum, S.N.D.
3 " 1 " C. & B. Qtrd. Red Gum, S.N.D.
10 " 1½" " " " " "
7 " 2 " " " " " "
2 " 1¼" No. 1 C. Qtrd. Red Gum, S.N.D.

1 " 1 " No. 1 Shop Cypress
2 " 1 " No. 1 Com. "
1 " 1¼" 1s & 2s "
1 " 1¼" Select "
1 " 1¼" No. 1 Shop "
1 " 2 " 1s & 2s "
1 " 2 " Select "
1 " 2 " No. 1 Shop "
1 " 2 " No. 1 Common "

5 " 1 " Log Run Willow

1 " 1 " Log Run Elm
1 " 1¼" " " "
2 " 1½" " " "
1 " 2 " " " "
2 " 2½" " " "
2 " 3 " " " "

WIRE FOR QUOTATIONS AT OUR EXPENSE

The

Frank A. Conkling Company

SOUTHERN HARDWOODS

Memphis, Tenn.

MILLS:
PERCY, Miss., ISSAQUENA, Miss

Stimson Veneer and Lumber Co.

(Inc.)

Office and Mill: McLean Ave. and Union Belt R.R.

Memphis - Tenn.

We sell only the product of our own mills and make band sawn lumber in all Southern Hardwoods.

We specialize in Quartered White Oak, Red Oak, and Red Gum.

With allied companies we make fifty million feet annually.

J. V. Stimson Hardwood Co.

Manufacturers and Exporters

Band Mills: Memphis, Tenn., Helena, Ark.

Memphis - Tenn.

STOCK LIST

QUARTERED WHITE OAK
- 3 cars 4/4" 1s and 2s.
- 5 cars 4/4" No. 1 Common.
- 2 cars 4/4" No. 2 Common .

QUARTERED RED OAK
- 5 cars 4/4" 1s and 2s.
- 10 cars 4/4" No. 1 Common.
- 4 cars 4/4" No. 2 Common.
- 2 cars 6/4" No. 1 Common and Better.

QUARTERED RED GUM
- 10 cars 4/4" 1s and 2s.
- 3 cars 4/4" 1s and 2s Fig.
- 2 cars 5/4" 1s and 2s.
- 2 cars 6/4" 1s and 2s.
- 15 cars 4/4" No. 1 Common.
- 2 cars 5/4" No. 1 Common.
- 2 cars 6/4" No. 1 Common.

QUARTERED RED GUM, Sap no Defect
- 5 cars 6/4" No. 1 Common and Better.
- 10 cars 8/4" No. 1 Common and Better.

ASH
- 4 cars 10/4" No. 1 Common and Better.
- 1 car 12/4" No. 1 Common and Better.
- 1 car 6/4" No. 1 Common and Better.
- 2 cars 4/4" No. 1 Common.
- 2 cars 4/4" No. 2 Common.

SAP GUM
- 10 cars 4/4" 1s and 2s.
- 20 cars 4/4" No. 1 Common.
- 10 cars 4/4" No. 2 Common.
- 2 cars 4/4" 18" up Panel.
- 5 cars 4/4" 13-17" Box Boards.

PLAIN RED OAK
- 2 cars 4/4" 1s and 2s.
- 2 cars 6/4" No. 1 Common and Better.
- 2 cars 10/4" No. 1 Common and Better.

PLAIN WHITE OAK
- 4 cars 4/4" No. 1 Common Plain.

COTTONWOOD
- 2 cars 4/4" 1s and 2s.
- 15 cars 4/4" No. 1 Common.
- 5 cars 4/4" No. 2 Common.

ELM
- 2 cars 4/4" Log Run.
- 10 cars 10/4" Log Run.
- 10 cars 12/4" Log Run.

MAPLE
- 4 cars 12/4" Log Run.

Band Sawn Poplar, Plain and Quartered White and Red Oak— Quartered Red Gum, Sap No Defect

Below we offer, subject to prior sale and immediate acceptance, the following stock:—

ASH

4/4"	Log Run	20,000	ft.
5/4"	Log Run	1,500	"
6/4"	Log Run	1,200	"
8/4"	Log Run	3,000	"

BASSWOOD

4/4"	No. 2 Com. & Btr.	35,000	"

BEECH

4/4"	Log Run	10,000	"
5/4"	Log Run	30,000	"
6/4"	Log Run	12,000	"
8/4"	Log Run	40,000	"
10/4"	Log Run	10,000	"
12/4"	Log Run	3,000	"

CHERRY

4/4"	Log Run	7,000	"

COTTONWOOD

4/4"	Log Run	10,000	"

QTRD. GUM, SND

4/4"	No. 2 Com. & Btr.	7,500	"
6/4"	FAS	20,000	"
6/4"	No. 1 Com.	40,000	"
8/4"	No. 1 Com.	30,000	"

PLAIN SAP GUM

4/4"	No. 1 Com.	45,000	"
4/4"	No. 2 Com.	30,000	"
5/4"	No. 1 Com. & Btr.	30,000	"

QTRD. BLACK GUM

4/4"	No. 2 Com. & Btr.	70,000	"

PLAIN BLACK GUM

4/4"	No. 1 Com. & Btr.	15,000	"

HICKORY

6/4"	Log Run	2,000	"
8/4"	Log Run	12,000	"

QTRD. WHITE OAK

4/4"	FAS	50,000	"
4/4"	No. 1 Com.	200,000	"
4/4"	No. 2 Com.	100,000	"
5/4"	Com. & Btr.	10,000	"

MAGNOLIA

4/4"	FAS	20,000	"
4/4"	No. 1 Com.	50,000	"
4/4"	No. 2 Com.	45,000	"

QTRD. WHITE OAK STRIPS

4/4"	Clr 2½ to 5"	13,000'	"
4/4"	Com. 2 to 3"	3,500	"

PLAIN WHITE OAK

4/4"	FAS	13,000	"
4/4"	No. 1 Com.	60,000	"
4/4"	No. 2 Com.	65,000	"

QTRD. RED OAK

4/4"	No. 1 Com.	75,000	"
4/4"	No. 2 Com.	14,000	"

PLAIN RED OAK

4/4"	FAS	65,000	"
4/4"	No. 1 Com.	130,000	"
4/4"	No. 2 Com.	110,000	"
5/4"	FAS	30,000	"
5/4"	No. 1 Com.	20,000	"

PLAIN OAK

4/4"	Sound Wormy	200,000	"
4/4"	No. 3 Com.	100,000	"

QTRD. POPLAR

4/4"	No. 1 Com. & Btr.	40,000	"

POPLAR

4/4"	No. 1 Com.	200,000	"
4/4"	No. 2A & B Com.	220,000	"
6/4"	No. 1 Com. & Btr.	33,000	"

SYCAMORE

6/4"	Log Run	21,000	"

WALNUT

4/4"	Log Run	2,000	"

We own our stumpage and operate our own band mill in Bude, Miss., manufacturing ten million feet annually, on which we specialize in Quartered White Oak, manufactured from genuine forked leaf White Oak and Yellow Poplar of fine soft texture grown in the hills of Southern Mississippi.

Our grades are dependable and the manufacture of our stock is unsurpassed. We respectfully solicit your enquiries, which will receive our prompt and courteous attention.

L. D. Murrelle Lumber Company

General Sales Office: 1524 Exchange Bldg., Memphis, Tennessee

Band Mill: Bude, Miss.

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

BROWN ASH

	Clear	No. 1	No. 2
1 in.	40,900	....	50,000	17,000
1¼ in.	58,500	7,300	36,200	15,300
1½ in.	36,500	....	35,000	7,500
2 in.	7,500	....	20,000	2,000

WHITE ASH

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	15,000	....	110,000	110,000
1¼ in.	117,000	4,500	140,000	40,000
1½ in.	22,900	1,200	39,000	65,000
2 in.	56,300	500	80,000	86,000
2½ in.	25,500	....	34,000	32,500
3 in.	87,500	....	75,500	33,500
4 in.	7,000	....	15,000	5,500

BASSWOOD

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	115,700	3,000	340,000	240,000
1¼ in.	151,300	14,000	235,500	70,800
1½ in.	94,600	....	41,800	15,000
2 in.	68,900	....	16,000	4,500
2½ in.	90,000	....	13,900	15,000
4 in.	1,300	....	450	....

BEECH

	1 & 2	No. 1 Com.	No. 2 Com.
⅜ in.	.....	.....	.....
¾ in.	2,000	.....	.....
1 in.	25,000	254,700	13,000
1¼ in.	33,200	10,600	12,000
1½ in.	80,800	7,500	8,400
2 in.	6,000	6,000	.....
2½ in.	.....	.....	.....
3 in.	1,100	5,000	5,500
4 in.	225	1,200	475

CHERRY

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	187,500	182,200	90,500
1¼ in.	5,500	4,600	4,500
1½ in.	32,000	21,700	57,300
2 in.	.....	16,200	52,900
2½ in.	5,500	2,700	2,200
3 in.	28,700	3,500	2,300
4 in.	5,900	.....	500

HICKORY

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	3,200	8,400	11,600
1¼ in.	1,100	2,500	2,050
1½ in.	6,600	11,300	25,000
2 in.	2,400	17,200	16,200
2½ in.	7,000	13,000	4,700
3 in.	3,500	7,580	7,200
4 in.	300	.....	275

CYPRESS

	1 & 2	Select	No. 1 Shop
1 in.	.....	2,000	500
1¼ in.	.....	8,800	.....
1½ in.	17,100	5,200	18,000
2 in.	24,000	24,200	4,600
2½ in.	8,000	3,200	.....
3 in.	69,400	23,100	12,000
4 in.	10,300	.....	.....

SOFT ELM

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	4,700	11,000	3,800
1¼ in.	41,500	38,200	6,800
1½ in.	12,500	13,300	5,400
2 in.	6,000	1,000	....
2½ in.	6,000	1,200	300
3 in.	39,280	8,500	8,000
4 in.	7,100	6,200	6,000

PLAIN RED GUM

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	30,300	31,000	15,500
1¼ in.	.....	.....	7,700
1½ in.	8,000	10,300	9,500
2 in.	4,500	3,800	7,500

QUARTERED SAP GUM

	1 & 2	No. 1 Com.	No. 2 Com.
4/4	.....	2,500	12,000
5/4	14,000	.....	.....
8/4	2,000	400	.....
10/4	350	29,000	3,000

QUARTERED RED GUM

	1 & 2	No. 1 Com.	No. 2 Com.
4/4	9,000	20,000	15,100
5/4	8,100	9,800	.....
6/4	3,900	4,500	4,600
8/4	19,100	11,500	3,600

SAP GUM

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	6,400	16,000	200
1¼ in.	.....	800	....
1½ in.	2,400	6,000	13,500
2 in.	4,490	12,700	10,400
2½ in.	.....	1,500	1,200

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	700	.....	9,700	400
1 in.	24,200	3,400	3,500	400
1¼ in.	3,000	.....	3,000	500
1½ in.	350	.....	500	100
2 in.	1,000	.....	7,100	.....

Also Large Stock of BEECH, BIRCH and MAPLE

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

The Best Teacher--

IS there to be a repetition of the high prices in the Spring of 1921 —as there was in the Spring of this year—or are you going to let experience be your best teacher and order now ?

Hardwoods

Present holdings of northern hardwood are about 40% below normal, and it is estimated that this year's cut is to be about 50% below normal. There is sure to be a general shortage, with consequent high prices.

Study your future requirements. Early purchasing and anticipation of future needs heads off a period of stampede buying with the consequent inflated prices.

DO IT NOW

Edward Clark & Sons

Limited

807-9 Bank of Hamilton Building,

TORONTO, ONT.

30 Million Feet Hardwoods Yearly

Manufactured by

Darnell-Love Lumber Co.

Leland, Mississippi

We own and operate two large band mills with sufficient timber to supply these mills, at present capacity, fifteen to twenty years

Cutting

Oak, Ash, Gum, Elm

Cypress, Cottonwood

and various other Native Woods

Our Specialties are—

3/8", 1/2", 5/8" and 3/4" in Gum and Oak

and

8/4" Quartered Red Gum

8/4" Quartered Red Gum Sap No Defect

WE SOLICIT YOUR INQUIRIES AND ORDERS

American Walnut Lumber

QUALITY

SERVICE

More evidence of our untiring efforts to procure the very best raw material for our product.

All Grades and Thicknesses

Pickrel Walnut Company

St. Louis, Missouri

E. SONDHEIMER CO.

MEMPHIS, TENN., U.S.A.

Band Mills at
Baton Rouge, La., Sondheimer, La., Tallulah, La.
Office & Distributing Yard, Memphis, Tenn.

Manufacturers of Southern Hardwoods **Dry Stock Ready for Shipment**

Ask us for prices. We may be able to save you some money. We specialize in genuine Tensas Basin Red Gum—best in the world.

WHITE ASH
10 cars 1" to 4" 1s&2s
10 " 1" No. 1 Com.
5 " 1¼" No. 1 Com.
1 " 1½" No. 1 Com.
3 " 2" No. 1 Com.
5 " 1, 1¼, 1½" No. 2 Cm.

COTTONWOOD
10 " 1" 1s and 2s
15 " 1" No. 1 Com.
10 " 1" No. 2 Com.
5 " 1¼" 1s and 2s
10 " 1¼" No. 1 Com.
10 " 1¼" No. 2 Com.
15 " 1½" No. 2 Cm. & Br.

CYPRESS
1 " 1" Pecky.
10 " 1x4 & 1x7 No. 1 & No. 2 Com.
1 " 1x12" Pecky.
7 " 1½" Sel. & Shop
2 " 2" Sel. & Shop.
2 " 2" Pecky.
1 " 2x6 No. 1 Com.
1 " 3" Shop.

QUARTERED TUPELO
2 " 1" 1s and 2s
10 " 1" 1s and 2s
15 " 1" No. 1 Com.
10 " 1" No. 2 Com.

WILLOW
1 " 1x3 to 17" Box Bds.
10 " 1" 1s and 2s.
15 " 1" No. 1 Com.
15 " 1" No. 2 Com.
10 " 1¼" No. 2 Cm. & Br.
15 " 1½" No. 2 Cm. & Br.
5 " 2" No. 2 Com. & Btr.

MAGNOLIA
5 " 1" No. 2 Com. & Btr.

BLACK GUM
1 " 1" No. 2 Com. & Btr.

PECAN
5 " 6/4" Log Run
5 " 8/4" Log Run

SOFT ELM
2 " 3/4" Crating
3 " 6/4" No. 2 Cm. & Br.
3 " 8/4" No. 2 Cm. & Br.
3 " 10/4" No. 2 Cm. & Br.

QTD. FIG. RED GUM
1 " 1" 1s and 2s
1 " 1" No. 1 Com.

QRTD. RED GUM
2 " 1" 1s and 2s
3 " 1" No. 1 Com.
2 " 1¼, 1½, 2" No. 1 C&B
2 " 2½" No. 1 Cm. & Br.
2 " 3" No. 1 Cm. & Br.

PLAIN RED GUM
4 " 5/8" No. 1 Cm. & Br.
2 " 3/4" 1s and 2s.
10 " 4/4" 1s and 2s
5 " 4/4" No. 1 Com.
1 " 4/4" No. 2 Com.
3 " 1¼ & 2" No. 1 C&B

QRTD. SAP GUM
10 " 1" 1s and 2s.
3 " 1" No. 1 Com.
3 " 1½" 1s and 2s
½ " 2" No. 1 Com.
½ " 2½" No. 1 Com.
3 " 3" No. 1 C&Btr.

PLAIN SAP GUM
5 " 1x13 to 17" Bx Bds.
8 " 5/8" 1s and 2s
10 " 4/4" 1s and 2s
10 " 4/4" No. 1 Com.
10 " 5/4" No. 1 Cm. & Br.
5 " 5/4" No. 2 Com.

QRTD. RED OAK
5 " 1" 1s and 2s.
3 " 1" No. 1 & 2 Com.
3 " 1¼" 1s and 2s
2 " 1¼" No. 1 Com.

QRTD: WHITE OAK
2 " 1" 1s and 2s
3 " 1" No. 1 Com.
2 " 5/8" 1s and 2s.
2 " 5/8" No. 1 Com.

PLAIN RED OAK
3 " 1" 1s and 2s
10 " 1" No. 1 Com.
5 " 1" No. 2 Com.
5 " 1" No. 3 Com.
1 " 1¼" 1s & 2s

PLAIN WHITE OAK
2 " 5/8" 1s & 2s.
3 " 5/8" No. 1 Com.
1 " 5/8" No. 2 Com.
2 " 3/4" 1s & 2s
10 " 4/4" 1s & 2s
15 " 4/4" No. 2 & 3 Com.

Lumber
Walnut, Mahogany Plain and Quartered Oak, Ash, Cherry

Veneers
Walnut and Mahogany

WE specialize in AMERICAN BLACK WALNUT and can furnish straight cars from 3/8 to 4 inches in thickness. Also can load mixed cars WALNUT and MAHOGANY LUMBER and VENEERS, PLAIN and QUARTERED RED and WHITE OAK, ASH and CHERRY.

The Kosse, Shoe and Schleyer Co.

Eastern Branch:
BALTIMORE, Md.

Main Office and Band Mill:
CINCINNATI, Ohio

Brown & Hackney, Inc.

MEMPHIS, TENN.

Manufacturers of High Grade
Bandsawn Southern Hardwood

LUMBER

November 1920—Stock List

BROWN & HACKNEY, Inc., LITTLE ROCK, ARK.

QUARTERED WHITE OAK

10,000' 5/8" 1s & 2s
3 cars 5/8 No. 1 Common
3 cars 4/4 1s & 2s
10 cars 4/4 No. 1 Common
1 car 8/4 No. 2 Common
2 cars 4/4 No. 2 Common
1 car 4/4" Clear Strips
2 cars 4/4 Common Strips
1 car 8/4 No. 1 Common

PLAIN OAK

1 car 3/4" 1s & 2s Plain Red Oak
2 cars 3/4 No. 1 Com. Plain Red Oak
1 car 3/4 No. 2 Com. Plain Red Oak
3 cars 4/4 No. 1 Com. Plain White Oak
3 cars 4/4 No. 2 Com. Plain White Oak
2 cars 4/4 Sound Wormy Oak
4 cars 4/4 No. 1 Com. Plain Red Oak
2 cars 4/4 No. 2 Com. Plain Red Oak
1 car 8/4 Oak Dog Boards

PLAIN GUM

3 cars 5/8 No. 2 Com. Sap Gum
2 cars 6/4 No. 2 Com. Sap Gum
2 cars 4/4 No. 2 Com. & Btr. Black Gum
2 cars 6/4 & 8/4 Gum Dog Boards

CYPRESS

1 car 4/4 No. 1 Shop & Better
1 car 4/4 Pecky
1 car 8/4 No. 1 Shop & Better
3 cars 8/4 No. 1 Common
1 car 8/4 No. 2 Common

ELM

1 car 6/4 No. 1 Com. & Btr. Elm
2 cars 8/4 Log Run Elm

MISCELLANEOUS

1,800' 6/4" 1s & 2s Quartered White Oak
3,000 6/4 No. 1 Com. Qtd. White Oak
8,000 8/4 No. 3 Com. Qtd. White Oak
6,000 8/4 No. 2 Com. & Btr. Qtd. Red Oak
5,500 3/4 Com. & Btr. Black Gum
5,100 4/4 Log Run Lynn
1,800 4/4 Log Run Elm
15,000 4/4 Log Run Sycamore
3" and 4" Red and White Oak Bridge Plank

MARK H. BROWN LUMBER COMPANY
TRANSYLVANIA, La.

QUARTERED WHITE OAK

30,000' 4/4" 1s & 2s
40,000 4/4 No. 1 Common

QUARTERED RED OAK

8,000 4/4 1s & 2s
20,000 4/4 No. 1 Common

PLAIN OAK

24,000' 4/4" 1s & 2s Plain Red Oak
30,000 4/4 No. 1 Com. Plain Red Oak
10,000 4/4 1s & 2s Plain White Oak
30,000 4/4 No. 1 Com. Plain White Oak
50,000 4/4 Sound Wormy Oak

PLAIN GUM

100,000 4/4 No. 1 Com. Plain Sap Gum
50,000 5/4 No. 1 Com. Plain Sap Gum
100,000 6/4 & 8/4 Gum Dog Boards

QUARTERED GUM

25,000 4/4 No. 1 Com. & Btr. Qtd. Sap Gum
130,000 6/4 No. 1 Com. & Btr. Qtd. Sap Gum
50,000 8/4 No. 1 Com. & Btr. Qtd. Sap Gum

CYPRESS

50,000 4/4 No. 1 Com.
40,000 5/4 Shop
30,000 4/4 No. 2 Common

MISCELLANEOUS

15,000 4/4 Log Run Hackberry
50,000 4/4 No. 1 Common Cottonwood

WRITE US FOR PRICES

RUSH LUMBER COMPANY

Manufacturers Southern Hardwoods

Band Mill and Office - Memphis, Tenn.

ASH

2,000' 6/4 No. 3 Com. ....
2,000' 8-10-12/4 No. 3 Com..
18,000' 5/4 Log Run .. ....
5,000' 6/4 Log Run

CHERRY

500' 4/4 Log Run

COTTONWOOD

8,000' 4/4 FAS
20,000' 4/4 No. 1 & 2 Com.
3,000' 5/4 & 6/4 No. 3 Cm.

CYPRESS

15,000' 4/4 Shop & Btr.

ELM

11,000' 6/4 No. 3 Com.
15,000' 6/4 Log Run
11,000' 8/4 Log Run
14,000 '12/4 Log Run

RED GUM

5,000' 4/4 FAS.
12,000' 5/4..No. 1 Cm. & Br.
18,000' 4/4 No. 1 Com.
20,000' 4/ No. 2 Com.

SAP GUM

7,000' 4/4 13 to 17 FAS
15,000' 4/4 6 to 12 FAS.
8,000' 5/4 FAS
3,000' 5/4 13 and up FAS.
30,000' 4/4 No. 1 Com.
40,000' 4/4 No. 2 Com.
21,000' 5/4 No. 2 Com.
25,000' 4/4 No. 3 Com.
21,000' 5/4 & 6/4 No. 3 Com

BLACK GUM

12,000' 4/4 FAS Qtd.
30,000' 4/4 No. 1 Com. Qtd.
12,000' 4/4 No. 2 Com. Qtd.
14,000' 4/4 Log Run Plain

SYCAMORE

7,000' 4/4 No. 3 Com.
25,000' 4/4 Log Run

QUARTERED RED GUM

15,000' 4/4 FAS.
5,000' 8/4 FAS
30,000' 4/4 No. 1 Com.
11,000' 8/4 No. 1 Com.

HICKORY

10,000' 6/4 No. 3 Com.
8,000' 6/4 Log Run

SOFT MAPLE

2,000' 4/4 Log Run
200' 8/4 Log Run
2,000' 12/4 Log Run

QUARTERED WHITE OAK

12,000' 4/4 FAS
11,000' 5/4 FAS
3,000' 6/4 FAS
100,000' 4/4 No. 1 Com
30,000' 5/4 No. 1 Com.
12,000' 6/4 No. 1 Com.
15,000' 4/4 No. 2 Com.
4,000' 5/4 No. 2 Com.
4,000' 6/4 No. 2 Com.
8,000' 4/4 Clear Strips.
10,000' 4/4 No. 1 C. Strips.
2,000' 4/4 No. 2 C. Strips.

PLAIN WHITE OAK

3,000' 4/4 FAS
40,000' 4/4 No. 1 Com.
40,000' 5/4 No. 1 Com.
25,000' 4/4 No. 2 Com.
12,000' 5/4 No. 2 Com.
14,000' 4/4 S.W.
15,000' 4/4 No. 3 Com. ....
12,000' 5/4 & 6/4 No. 3 Com.

PLAIN RED OAK

15,000' 4/4 FAS.
70,000' 3/4 No. 1 & Btr.
30,000' 5/4 No. 1 & Btr.
75,000' 4/4 No. 1 Com.
20,000' 4/4 No. 2 Com.

POPLAR (ROUGH)

8,000' 4/4 FAS
10,000' 4/4 Saps.
20,000' 4/4 No. 1 Com.
22,000' 4/4 No. 2 Com.
3,000' 4/4 No. 3 Com.
6,000' 5/4 & 6/4 No. 3 Cm.

QUARTERED RED GUM

S. N. D.

15,000' 8/4 No. 1 Com. & Btr.
16,000'.12/4 No. 1 Com. & Btr.

Sawed Veneer

Quartered White Oak

For Furniture and Panels

Plain Red Oak

For Interior Trim and Doors

Cypress

For Battery Separators

Manufacturing Uniformly Good.
Quality Unsurpassed

James E. Stark & Co., Inc.

MEMPHIS, TENN.

Tustin Hardwood Lumber Co.

MEMPHIS TENN.

KILN DRIED AND AIR DRIED SOUTHERN HARDWOODS

We operate five mills and Memphis yard, specializing in KILN DRIED Sap Gum, Elm, Maple, Ash. *Send us your inquiries.*

Will quote low prices on following to points not embargoed

4 cars 4/4 No. 1 C. & B. Qtd. White Oak.
1 " 4/4 Fas Qtd. Red Oak.
1 " 4/4 No. 1 Com. Qtd. Red Oak.
2 " 4/4 Fas. Plain Red Oak.
5 cars 4/4 No. 1 Com. Plain Red Oak.
3 " 8/4 No. 1 C. & B. Qtd. Red Gum.
4 " 8/4 No. 1 C. & B. Qtd. Sap Gum.

Johnson Brothers Hardwood Co.

(OUR NAME IS EASY TO REMEMBER)

Sales Agents:
Arko Lumber Co.
Arkansas City, Ark.

Bank of Commerce & Trust Building
Memphis, Tenn., U.S.A.

Double Band Mill Capacity
100,000 ft. per day

Manufacturers and Wholesalers

SOUTHERN HARDWOODS

3,000,000 ft. dry stock on hand and 5,000,000 in process of drying—all thicknesses, ½" to 4", plain and quartered.
White and Red Oak—Red Gum—Sap Gum—Tupelo—Black Gum — Cottonwood—Salix—Willow—Pecan—Sycamore—Elm—Soft Maple—Mangolia.

We offer for quick Sale the following Bone Dry Stock:

1 c/l 4/4" No. 1 & 2 Common Qtd. White Oak
3 c/l 8/4" No. 1 Common Qtd. Red Gum, S.N.D.
2 c/l 10/4 Log Run Sycamore
1 c/l 10/4 Log Run Soft Maple
5 cars 4/4" FAS Cottonwood, Regular Widths
1 car 4/4" No. 1 Com. & Btr. 11" and wider Cottonwood
1 car 6/4" FAS Cottonwood
5 cars 8/4" Log Run Elm
2 cars 10/4" Log Run Ash

Wire us at our expense for quotations

William S. Whiting Company

JOHNSON CITY, TENNESSEE

1 Band Mill *5 Circular Mills*

Hardwood Lumber

Oak	Basswood
Maple	Buckeye
Chestnut	Poplar
Ash	Birch

Rotary-Cut Soft Yellow Poplar Veneers
Quarter-Sawn White Oak Flitches
Sliced and Sawn Quartered White Oak Veneers
Oak and Maple Flooring
Dowel Pins and Dowel Rods
Glued-Up Chestnut Cores and Dimension

5-16" Oak Parquetry Flooring Strips and Squares carried in stock at our warehouses:
138 44th St., Brooklyn, N.Y., and at Elizabethton, Tenn.

Alexander Brothers

Manufacturers and Wholesalers

Southern Hardwoods and Cypress

Specialize in

Quartered Red Gum Red and White Oak and Black Gum

Will be glad to receive inquiries, and figure with consumers for their entire needs.

Band Mills: BELZONI, Miss.; Main Office
MEMPHIS, Tenn.
JUNKS, La.

E. R. Spotswood & Son

INCORPORATED

MANUFACTURERS OF

Kentucky Hardwood Lumber

We specialize in soft texture Kentucky Oak—Plain and Quarter Sawed, also in Ash, Basswood, Chestnut, Poplar, Beech.

Let us quote you on your requirements—our prices are right and we can make prompt shipments direct from our mills.

LEXINGTON - - KENTUCKY

Yellow Poplar Lumber Co.

Manufacturers of Band Sawed

Poplar Plain Oak
Quartered Oak
Chestnut Basswood

Capacity 50,000,000 per annum

SPECIALTY: Monogram Brand Oak Flooring

CANADIAN ENQUIRIES SOLICITED

COAL GROVE, OHIO, U. S. A.

We Offer For Prompt Shipment

PLAIN RED GUM

1 15,000 4/4 1sts & 2nds
2 150,000 4/4 No. 1 Com. & Sel.
3 120,000 4/4 No. 2 Com. & Sel.
4 14,500 6/4 No. 1 Com. & Btr.
5 30,000 6/4 No. 1 Com. & Sel.

QUARTERED RED GUM

6 15,000 4/4 1sts and 2nds
7 15,000 4/4 No. 1 Com. & Sel.
8 31,200 6/4 1sts and 2nds
9 16,000 6/4 No. 1 Com. & Sel.
10 9,600 8/4 No. 1 Com. & Sel.

PLAIN SAP GUM

11 35,000 5/8 No. 1 Com. & Sel.
12 250,000 4/4 No. 1 Com. & Sel.
13 140,000 4/4 No. 2 Common
14 75,000 4/4 No. 3 Common
15 11,500 5/4 No. 2 Common
16 10,000 5/4 No. 3 Common
17 9,000 6/4 1sts & 2nds
18 25,000 6/4 No. 1 Com. & Sel.
19 71,300 6/4 No. 2 Common
20 5,500 6/4 No. 3 Common
21 8,000 8/4 No. 1 Com. & Sel.
22 9,600 8/4 No. 2 Common
23 2,500 8/4 No. 3 Common

QUARTERED SAP GUM

24 35,700 4/4 No. 1 Com. & Btr.
25 13,000 4/4 No. 1 Com. & Sel.
26 28,000 8/4 No. 1 Com. & Btr.

PLAIN RED OAK

27 12,000 4/4 1sts & 2nds
28 200,000 4/4 No. 1 Com. & Sel.
28 120,000 4/4 No. 2 Common
30 13,000 5/4 No. 1 Com. & Btr.

QUARTERED RED OAK

31 75,000 4/4 No. 1 Com. & Btr.

PLAIN WHITE OAK

32 100,000 4/4 No. 1 Com. & Sel.
33 80,000 4/4 No. 2 Common

COTTONWOOD

34 33,200 4/4 1sts & 2nds

PECAN

35 6,800 4/4 Log Run

ELM

36 11,300 4/4 Log Run
37 40,000 12/4 Log Run

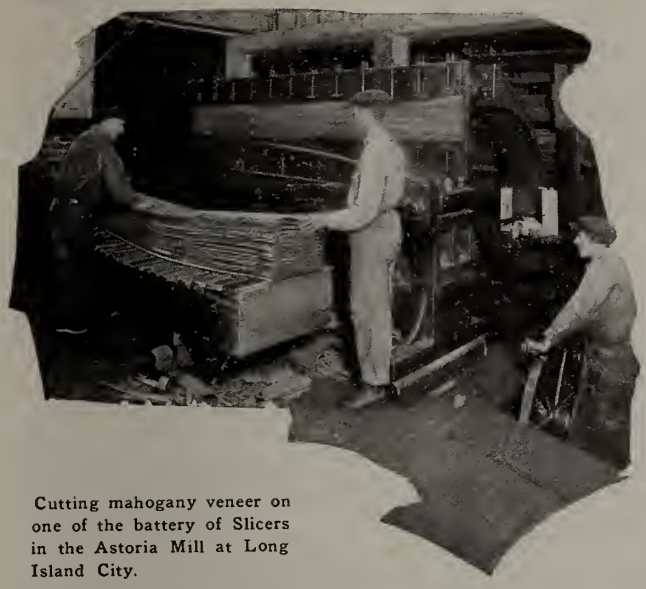
Send us your inquiries, as this is only a partial list of the stock we have at our mill

"CLAYTON QUALITY" TENSA DETA SOUTHERN HARDWOODS

UTLEY-HOLLOWAY COMPANY

General Office: 1226 Conway Bldg., CHICAGO, ILL. **Band Mill: Clayton, La.**

ASTORIA MAHOGANY
LUMBER & VENEERS



Cutting mahogany veneer on one of the battery of Slicers in the Astoria Mill at Long Island City.

Slicing Twenty-eight to the Inch!

THE choice, figured mahogany logs, which our experts select for fine veneer making, are cut by huge diagonally operating knives or "slicing" machines. With these slicers a remarkable degree of uniformity in cut is obtained—an Astoria feature which has long been appreciated by manufacturers of high class furniture. This uniformity of cut is but another element in the service which over a quarter century has made us the largest complete mahogany lumber and veneer organization in the United States.

Astoria Mahogany Co., Inc.
1031 Steinway Avenue, Long Island City, N.Y.
Successors to
Huddleston-Marsh Mahogany Co. F. W. Kirch, Inc.
Astoria Veneer Mills and Dock Co.
Mills ond Yard, Long Island City, New York
BRANCHES—44 North Market Avenue, Grand Rapids, Mich.; 2256 Lumber Street, Chicago, Ill.

OAK

Plain and Quartered
Uniform Color—Soft Texture

Poplar, Ash

and other

Hardwoods

We have 35,000,000 feet dry stock—all of our own manufacture, from our own timber grown in Eastern Kentucky

Prompt Shipments

The Mowbray & Robinson Co.
(INCORPORATED)
Manufacturers
Office: CINCINNATI, OHIO

MILLS
Quicksand, Ky.; Viper, Ky; West Irvine, Ky.

Canadian Representative:
M. E. CUMMINGS, 814 Richmond Ave., Buffalo, N. Y.

West Virginia Oak

Thoroughly Dry, Accurately Sawn, Soft Textured, and Uniform in Color.

Write us when needing choice stocks. All lumber produced from virgin timber of large size and excellent quality.

Twenty Million Feet Hardwood Ready for Immediate Shipment

OAK

Yellow Poplar, Ash, Hickory, Beech, Chestnut, Basswood, Walnut, Maple

THE THOMAS HALL LUMBER COMPANY

Manufacturers

CHARLESTON, WEST VIRGINIA

M. BROWN, Canadian Repres. **Address: 83 Neville Park Blvd., Balmy Beach, Toronto**

Tallahatchie Lumber Company

MEMPHIS, TENN.

Manufacturers of

Band Sawn Hardwoods

Graded so as to be especially attractive to Furniture Manufacturers.

Careful attention to every detail of service.

SEND US YOUR INQUIRIES

PERFECTION ASSURED

Every Gorham Top and Panel is carefully inspected for uniformity and quality—
This established the Trade Mark is applied

Gorham Brothers Company

Mount Pleasant, Michigan

A. E. GORHAM
President of the
Gorham Brothers Company

C.R. GORHAM
Founder of the Business

CHESTER A. GORHAM
Vice Pres. and Gen. Mgr.

First Quality Tops—Panels—Desk Beds

Constant, diligent study of the problem of producing first quality panels, tops, desk beds and other forms of built-up stock has resulted in our ability to serve the furniture manufacturer in an exceptional manner. Our policy from the first has been QUALITY. You can bank on the uniform quality of this product. GORHAM Products will not fail you.

TRADE GORHAM MARK

Gorham Brothers Co.
Mount Pleasant, Mich.

E. M. Nicholson & Co.

Wholesalers of Canadian Hardwoods

201-2-3 Board of Trade Bldg.,

Montreal

Special Items of Interest

for Prompt Shipment

WHITE ASH

11,000′ 4/4 No. 2 C&B

BROWN ASH

60,000′ 4/4 No. 1 C&B
16,000′ 6/4 No. 1 C&B
8,900′ 8/4 No. 1 C&B

BASSWOOD

75,000′ 4/4 Sel. & Fas.
100,000′ 4/4 No. 1 & 2 Com.
75,000′ 6/4 No. 1 Com. & FAS
50,000′ 6/4 No. 2 Com.
40,000′ 8/4 No. 1 C&B

MAPLE

75,000′ 4/4 Log Run

BEECH

65,000′ 4/4 Log Run

BIRCH

30,000′ 4/4 FAS
90,000′ 4/4 No. 1 Com.
150,000′ 4/4 No. 2 Com.
30,000′ 5/4 No. 1 Com. & FAS
45,000′ 6/4 FAS
60,000′ 6/4 No. 1 Com.
75,000′ 6/4 No. 2 Com.
100,000′ 8/4 Sel. & Fas
150,000′ 8/4 No. 1 Com.
100,000′ 8/4 No. 2 Com.
75,000′ 10/4 Sel. & Fas.
125,000′ 10/4 No. 1 Com.
250,000′ 12/4 Sel. & Fas.
100,000′ 16/4 Sel. & Fas.

SOFT ELM

45,000′ 4/4 No. 2 C&B
21,000′ 6/4 No. 1 C&B
22,000′ 8/4 No. 1 C&B

150,000′ 4/4 Basswood, Birch, Ash, Elm No. 3 Com. Under National Rules.

Hardwoods

We can furnish you immediately Factory Stock including all grades and thicknesses of

Walnut, Chestnut
Mahogany, Teak, Oak
Ash, Cypress

ALSO

VENEERS

Oak, Maple, Walnut and other Fancy Woods

The McLennan Lumber Co.
Limited

MONTREAL

CLARKES' TOYS

MANUFACTURED BY

CLARKE BROTHERS LIMITED

BEAR RIVER, NOVA SCOTIA

Also Manufacturers of Dowels, Handles, Clothespins, Lumber, Kraft Pulp and Paper Containers

Mercerau-Hawkins Tie Company

Huntington - W. Va.

Manufacturers and Wholesale Dealers

West Virginia and Southern

HARDWOODS

We specialize in

Oak Tie Siding
White and Red Oak
Yellow Poplar
Basswood
Chestnut and
Gum Lumber.

Canadian Sales in Charge of

C. W. PETERS

Vice President and Manager of Lumber Dept.

BEDNA YOUNG Lumber Company

Jackson - Tennessee

Manufacturers of

Quartered White Oak
Quartered Red Oak
and Other Hardwoods

When in the market for

High Grade Lumber

please let us have your enquiries.

Dacus-Richards Hardwood Co.

A. P. DACUS - H. J. RICHARDS

MANUFACTURERS

Southern Hardwood

Specializing in

RED GUM
SAP GUM

PLAIN AND QUARTERED

OAK

Randolph Building,
Memphis, Tennessee.

Mills at EVANSVILLE, Miss., and PRITCHARD, Miss.

Perkins Brothers

Kelso, Ark.

Manufacturers of

Southern Hardwoods

Quartered and Plain White Oak, Plain Red Oak, Gum Elm, Maple, Ash and Cypress

We are also prepared to cut dimension stock to order in Ash, Oak, Gum, Hickory and Elm.

Let us know your requirements.

Chas. Gill Lumber Co.

WAUSAU, WISCONSIN

MANUFACTURERS & WHOLESALERS

SPECIALIZING IN

MAPLE
BIRCH
AND
BASSWOOD

Complete Stock Crating Material

We solicit correspondence relative to all Northern Hardwoods

Chicago Office — 501 Lumber Exchange

Band Sawn West Virginia HARDWOODS

The W. C. Barlett Lumber Co.

Charleston, W. Va.

Manufacturers

ASH to WALNUT

We produce a complete line of Band Sawn Hardwoods, serving the Body and Wheel, Furniture, Piano, Cabinet and Interior Finish Trades.

If Superior Quality, Fine Width and Length, coupled with Real Service is desired, let us have your enquiries.

Hardwood Dowels

Plain, Straight and Spiral Grooved

"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co. Limited

Orillia, Ontario

Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

D. E. Hewit Lumber Co.

Huntington, W. Va.

MANUFACTURERS

West Virginia Hardwoods

(Not Better than the Best but as Good as the Best)

FAS Plain White and Red Oak
No. 1 Com. Plain White and Red Oak
Implement Oak
Sound Wormy Chestnut
No. 1 Common and Better Chestnut
Hickory Plank
Poplar and Basswood

J. H. Bonner & Sons

Memphis, Tenn.

Mills:
Jonquil and Ruffwood, Ark.

Manufacturers

Band Sawn Hardwood Lumber

Write or wire for prices on

Gum, Oak, Elm, Etc.

GET THE HABIT

When you want good, dependable grades and satisfactory service on your Hardwood Lumber wants write or wire

STERRETT

SEPTEMBER SPECIALS

2 cars 4/4 Com. & Btr. Qtd. White Oak Ohio Stock, wide, good figure.
1 car 4/4 No. 2 Com. Qtd. White Oak —same..
2 cars 4/4 Com. & Btr. Chestnut. Worms no defect.
1 car 8/4 Com. & Btr. Plain White Ohio Oak.
5 cars each 4/4 Com. & Sap Gum & No. 1 Com. Cottonwood.

WILL S. STERRETT

810—2nd Natl. Bldg. - CINCINNATI, OHIO

Reese Sheriff Lumber Co.

WILLIAMSPORT, PENNSYLVANIA

Manufacturers of

Northern and Southern Hardwoods White Pine, Spruce and Hemlock

With special attention to **Oak, Chestnut, Poplar, Cherry, Walnut, Gum and Basswood.**

OUR MOTTO

REASONABLE PRICES - that you can afford to pay.
EFFICIENT SERVICE — that you have a right to expect
FAIR TREATMENT — that you can depend on getting

We would appreciate an opportunity of furnishing a portion of your lumber requirements.

A record we are proud of: "Supplying the Furniture Trade and Allied Industries since 1843" with

Mahogany Lumber and Veneer

Also a Choice Line of

American Walnut Veneer

FROM THE TROPICAL FOREST TO YOUR PLANT

LEWIS THOMPSON & CO. Inc., Colonial Trust Bldg., PHILADELPHIA, Pa.

Warerooms: ASTORIA, L.I., HIGH POINT, N.C. Yards: ASTORIA, L.I., NEW ORLEANS, La.

OAK ASH COTTONWOOD MAPLE

Chapman and Dewey Lumber Company

Manufacturers of

Southern Hardwoods

Band Sawn at our Mills in the ST. FRANCIS RIVER BASIN

WE SOLICIT YOUR ENQUIRIES

Offices:

Marked Tree, Ark. Kansas City, Mo.

GUM ELM SYCAMORE CYPRESS

Indiana

Quartered Red and White

OAK

1,000,000 feet of dry stock carried at all times

ALSO PLAIN OAK AND ASH

We manufacture all stock carried

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
GEO. H. FOOTE, Vice-Pres. & Treas.
JOSEPH WALTMAN, Secretary

Mills at EVANSVILLE, Indiana

SPECIALS!

For Immediate Shipment

QUARTERED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.
5 " 1¼" Common.

PLAIN SAWED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.

OAK

10 cars 1" No. 1 Com. and Btr., White, Pln.
10 " 1" No. 1 Com. and Btr., Red, Qtd.

Thomas & Proetz Lumber Company

No. 3400 Hall St. St. Louis, Mo.

GUM

Sap Red Tupelo Black

Prompt Shipments any Time

Cypress Cottonwood Oak
Ash Elm Beech Sycamore
Crating Fir Spruce
Yellow Pine

INQUIRIES SOLICITED

Manufacturers & Wholesalers

Cornelius Lumber Co.

Home Office—Arcade Building, St. Louis, Mo.
Northern Office—Lumber Exchange, Chicago, Ill.
Northwestern Office—Bremer Arcade, St. Paul.
Southern Offices—Tupelo, Miss., Memphis, Tenn.
Saw Mills—Drew, Miss., Osmeek, La., Lake City, Fla.

ATTENTION:

"Auto Body and Furn. Manfgs."

We are one of the few firms in the country handling

White Ash Exclusively

We sort it to meet all requirements. **Tough** texture and **Medium** texture. Can furnish **Special Widths** and **Lengths** one to four inches thick. Write or wire when needing WHITE ASH.

THOMPSON, KATZ LUMBER CO.

Memphis, Tenn.

Cable Address "TomKats"

— *A name worth remembering* —

Thomas E. Powe Lumber Co.

St. Louis, Mo.

Manufacturers and Wholesalers of

SOUTHERN HARDWOODS

Specializing in

Ash-Oak-Gum-Poplar

Mills: PRESCOTT, ARK.—DOTHAN, ALA.

ST. LOUIS YARD

Mixed Carload Shipments — Carry stocks of the following:

Hickory	Magnolia	Elm
Maple	Willow	Sycamore
Tupelo	Red Cedar	Beech
Cypress	Plain Oak	Quartered Oak
Sap Gum	Red Gum	Mahogany
Poplar	Ash	Black Gum
Yellow Pine		

WAYNE LUMBER CO.

Manufacturers and Wholesalers

110 West 40th St. New York

Canadian Hardwoods

BROWN ASH

15,000' 1	"	No. 1 Com & Btr.
10,000 1¼		No. 1 Com. & Btr.
30,000 1		No. 2 Com. & Btr.
15,000 1		No 2 Common
10,000 1¼		No. 2 Common

BASSWOOD

70,000' 1	"	No. 2 Common
200,000 1¼		Log Run
1 car 1½		Log Run
1 car 2		Log Run

SOFT ELM

50,000' 1"		Log Run
40,000 2		Log Run

BIRCH

10 cars 1	"	No. 1 Common	
5	"	1	No. 2 Common
3	"	1¼	No. 1 Common
7	"	1¼	No. 2 Common
10	"	2	No. 1 Com&1s&2s
7	"	2	No. 2 Common
3	"	2½	No. 1 Com&1s&2s
3	"	2½	No. 2 Common
4	"	3	No. 1 Com&1s&2s

HARD MAPLE

50,000' 1¼"		No. 1 Com&1s&2s
10,000 1¼		No. 2 Common

MAPLE AND BIRCH OUR SPECIALTY

BOXING & CRATING

3 cars 1" Basswood, Elm & Ash

10 " 1 Birch

All Lumber Shipped by Our Own Inspectors

A name that should be on your inquiry list for Hardwood Lumber

American Column & Lumber Co.

Brunson Building, COLUMBUS, OHIO

—Manufacturers of—

West Virginia

Soft Yellow Poplar
Plain White Oak
Plain Red Oak
Quartered White Oak
White Oak Timbers and Plank

Chestnut	Butternut
Basswood	Ash
apple	Cherry
Hickory	Walnut
Beech	Sycamore
Buckeye	Black Gum
Birch	Hemlock

Oak and Hardwood Dimension Stock

Steele & Hibbard Lumber Co.

ST. LOUIS, MO.

52 Years in Business

We carry a large stock of dry

Hardwood Lumber

25 Different Kinds
Quick Shipment
Write or wire for Prices

We specialize Oak cut from Mild Texture Missouri Timber with thin sap both plain and quarter sawed.

We ship also from Sawmills direct; Red as well as Sap Gum and Poplar, both plain and quarter sawed Sound Wormy Chestnut, Cypress and Ash.

F. Huntington Smith

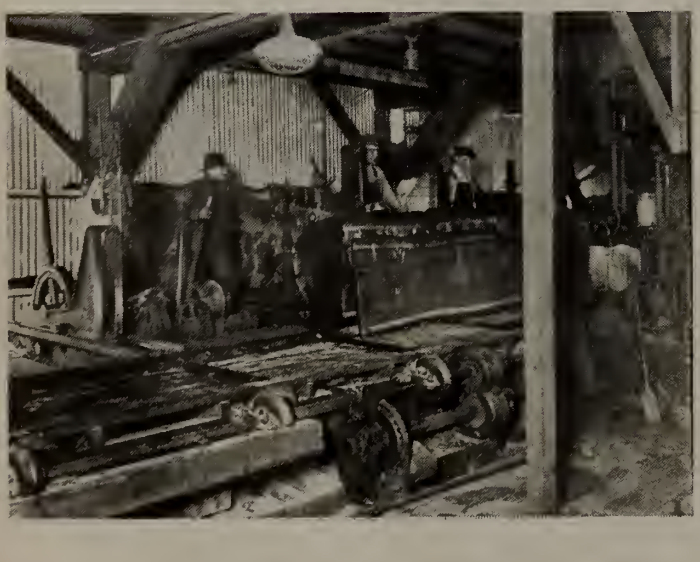
Canadian Representative.

Quality Walnut

SECURED from all parts of the country an immense quantity of choice Walnut Logs, is delivered to our storage yard, which can accommodate two million feet.

The judgment of our buyers, backed by years of experience in the Walnut Industry, and the really unusual care devoted to manufacture, added to the splendid facilities afforded by our mill, enable us to assure our customers of the excellence of our lumber.

Our equipment is thoroughly modern and selected to permit the delivery to the trade of a superior product at a reasonable cost.



Frank Purcell

12th and

Kansas City

—Correctly Manufactured —Carefully Inspected——Promptly Shipped

WE have on sticks, at this time, over two million feet of Walnut Lumber, affording a wide range of selection to supply the demands of the trade.

If you have encountered any difficulty or delay, in the past, in securing your requirements at the time and in the manner you wish, favor us with your next inquiry and join the ranks of those to whom "Purcell Service" is now giving complete satisfaction.

Stock and Price Lists sent promptly on request

Walnut Lumber Co.

elt Line

ansas

Canadian Hardwoods

Good Stocks, Right Goods,
Prompt Shipment

C. A. SPENCER, Limited

LUMBER MERCHANTS

Offices—500 McGill Building
MONTREAL - - Quebec

British Columbia Forest Products

British Columbia Lumber Commissioner

No. 1 Adelaide St. E., Toronto
(Street Floor)

Personal calls or correspondence cordially invited from Dealers and others interested in British Columbia Woods

Telephone Main 6872. Note: We do not quote prices.

Stock on Hand in Kitchener

7,000	ft.	4/4 SAP Gum No. 1 Com. & Selects
9,000	"	8/4 Qtd. Red. Gum, No. 1 C&B
5,000	"	5/4 Pln. Oak FAS
30,000	"	6/4 Pln. Oak FAS
30,000	"	6/4 Pln. Oak No. 1 Com.
30,000	"	8/4 Pln. Oak FAS
50,000	"	8/4 Pln. Oak No. 1 Com.
12,000	"	8/4 Pln. Oak Sd. Sq. Edge
1,200	"	4/4 Pln. Oak No. 1 Com.
15,000	"	4/4 Tenn. Red Cedar Brds. No. 1 C&B
35,000	"	4/4 Qtd. Wht. Oak FAS
35,000	"	4/4 Qtd. Wht. Oak No. 1 Com.
7,000	"	4/4 No. 2 Com. & Sd. Wormy Chestnut
23,000	"	5/4 No. 2 Com. & Sd. Wormy Chestnut
50,000	"	6/4 No. 2 Com. & Sd. Wormy Chestnut
12,000	"	5/4 FAS Chestnut
10,275	"	5/4 No. 1 Com. Chestnut
		Odd lots of No. 1 Com. Chestnut 4/4, 6/4 & 8/4
1,847	"	3/4 No. 1 C&B Qtd. Wht Oak
69	"	4/4 FAS Qtd. Wht. Oak
2,065	"	4/4 No. 2 Com. Qtd. Wht. Oak
1,000	"	3/4 No. 1 C&B Pln. Wht. Oak
2,624	"	3/4 FAS Sap Gum 13/17"
2,152	"	3/4 Select Sap Gum 3/12
8,573	"	3/4 Select Sap Gum 12" & up
470	"	5/4 Select Sap Gum
15,000	"	12/4 No. 1 C&B Hard Maple
15,000	"	4/4 No. 2 Basswood

PERCY E. HEENEY

202 Weber Chambers, KITCHENER, ONT.

Hardwood Lumber

Wire collect, or write for delivered prices on any or all of the following DRY STOCK

100,000'	4/4 No. 1 Com. & Btr. Sap Gum
92,000'	8/4 No. 2 Com. & Btr. Sap Gum.
69,000'	4/4 No. 1 Com. & Btr. Plain Red Gum.
36,000'	8/4 No. 1 Com. & Btr. Qtd. Red Gum.
12,000'	3/4 No. 2 Com. & Btr. Plain Oak.
119,000'	4/4 No. 1 Com. & Btr. Plain Oak.
60,000'	4/4 No. 2 Com. Plain Oak.
68,000'	5/4 No. 1 Com. & Btr. Plain Oak.
29,000'	5/4 No. 2 Com. Plain Oak.
16,000'	8/4 No. 1 Com. & Btr. Plain Oak.
160,000'	4, 6, 8, 10 and 12/4 No. 2 Com. & Btr. Soft Elm and Soft Maple.
90,000'	4 and 8/4 No. 2 A&B Com. Poplar.
75,000'	8, 10 and 12/4 No. 1 Com. & Btr. Poplar.
75,000'	4/4 No. 2 Com. & Btr. Basswood.
120,000'	4, 8 and 10/4 No. 2 Com. & Btr. Sycamore
150,000'	4, 5, 6 and 8/4 No. 2 Com. & Btr. Beech.
200,000'	4, 5, 6 and 8/4 Sound Wormy Chestnut.

The Woodruff-Powell Lumber Co.

South Bend, Indiana

J. R. EATON & SONS, LIMITED

MANUFACTURERS OF HIGH GRADE WOOD PRODUCTS

Wood Turnings, Hardwood Dowels, Turned Table Legs, Kitchen Tables, Kitchen Cabinets, Oak Extension Tables, Oak Library Tables, "Empire Brand" Hardwood Flooring in Maple, Birch, and Plain or Quarter Cut Oak, Solid Pine and Veneered Hardwood Doors.

A Large Factory equipped with up-to-date machinery is at your service to furnish "WHAT YOU WANT"— WHEN YOU WANT IT."

YOUR ENQUIRIES SOLICITED

Orillia Ontario Canada

The Talge Mahogany Co.

INDIANAPOLIS, INDIANA

BURLS

MAPLE WALNUT OAK REDWOOD

MAHOGANY

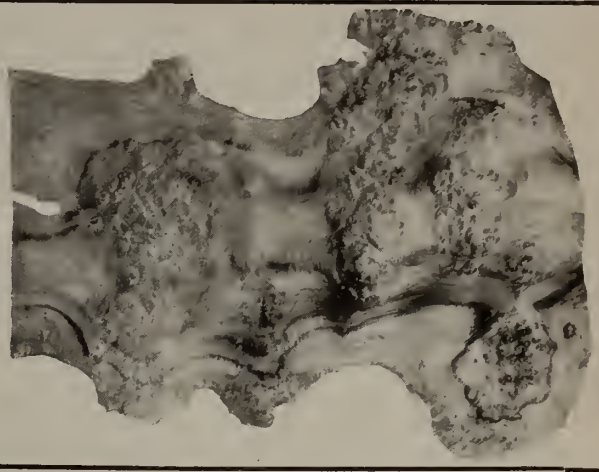
PENCIL STRIPE MEDIUM STRIPE BROKEN STRIPE
MOTTLE DRAWER BOTTOMS CEDAR FOR BOTTOMS

WALNUT VENEER

CURLY LEAFY STRIPE STUMPS BURL PLAIN

OAK VENEER

SAWED QUARTERED SLICED QUARTERED
PLAIN SLICED DOOR STOCK



F. T .DOOLEY, President. T. E. JONES, Secy.-Treas

F.T. Dooley Lumber Co.

Inc.

MANUFACTURERS and WHOLESALERS of

SOUTHERN HARDWOODS

Plain and Quartered Oak
Cypress, Gum, Ash
Soft Maple and Elm

Send us your inquiries

Memphis ∴ ∴ Tennessee

Chas. F. Luehrmann Hardwood Lumber Co.

Manufacturers and Wholesalers of

Hardwood and Yellow Pine Lumber

Office and Yard: 148 Carroll St. St. Louis, Mo.

Hardwood and Yellow Pine for Immediate Shipment from Stock

Complete Stock of Built Up Panels
3 and 5 Ply—Carried in Stock at St. Louis

FIR DRAWER BOTTOMS
FIR DOOR PANELS

Write us for our Stock and Price List

Aromatic Tennessee Red Cedar

CAR LOAD LOTS
OR LESS

Earthman Lumber Co.
Murfreesboro, Tenn.

Quality plus Service

AT RIGHT PRICES

Let us quote you on concave chair seat, turned office, piano, restaurant and bath-room stool tops.

Solid table tops, cabinet work; iu fact woodwork of all description.

Algoma Wood Products Co.
ALGOMA, WIS.

The Arrow Lumber Co.

Manufacturers and Wholesalers of

West Virginia Hardwoods and White Pine

Oak Timbers Our Specialty

PARKERSBURG, W. VA.

Mills: Raleigh, W. Va. Natural Well, Va.

McLEAN MAHOGANY & CEDAR CO., INC.

American Hardwoods

WE SOLICIT YOUR ENQUIRIES

742 Ellicott Square, Buffalo, N.Y.

Upham & Walsh Inc.

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Chicago

Northern and Southern Hardwoods

We make a Specialty of

Oak, Gum, Elm, Maple Birch and Basswood.

We solicit your inquiries regarding lumber of any kind

The Bacon Lumber Co.

HARDWOODS:

OHIO and INDIANA
KENTUCKY and WEST VIRGINIA
NORTHERN BIRCH and MAPLE
SOUTHERN GUM, COTTONWOOD

306 Ulmer Bldg., Cleveland, Ohio

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The following books are offered at special prices subject to previous sale:

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Seasoning of Wood; A Treatise of the Natural and Artificial Processes Employed in the Preparation of Lumber for Manufacture, with Detailed Explanations of its Uses, Characteristics and Properties, by Joseph Wagner. Published by D. Van Nostrand Co., in 1917. 274 pages, illustrated. Price $3.00.

"The Kiln Drying of Lumber," a Practical and Theoretical Treatise, by Harry Donald Tiemann, M.E., M.F. Just published, by J B. Lippincott Co. 316 pages, illustrated. Price $5.00.

The Woodworker Publishing Co., Limited

345 Adelaide Street West, Toronto, Ont.

Burns & Knapp Lumber Co.

Manufacturers of

Southern Hardwoods

Plain White and Red Oak, Dimension Oak, Hickory, Ash, Chestnut, Poplar, Basswood, Walnut, Maple, Beech, Butternut.

CONNEAUTVILLE, ——————— PA.

We list below, items of our own manufacture, band sawn, that we are in a position to ship promptly.

1/2", 5/8, 3/4, 4/4, 5/4, 6/4 & 8/4 Quartered White Oak

3/4, 4/4, 5/4 & 6/4 Qtd. Red Oak

5/8, 3/4, 4/4, 5/4, 6/4 & 8/4 Plain Oak

4/4, 5/4, 6/4, & 8/4 Sound Wormy Oak

5/8, 4/4, 5/4 & 6/4 Plain Sap Gum

4, 5, 6, 8, 10 & 12/4 Qtd. Sap Gum

4, 5 & 6/4 Plain Red Gum.

4, 5, 6, 8, 10 & 12/4 Qtd. Red Gum

4, 5, 6 & 8/4 Tupelo Gum.

5/8, 4, 5, 10 & 12/4 Ash.

5/8, 4, 5, 6, 8, 10 & 12/4 Elm.

5/8, 10 & 12/4 Maple.

4, 5 & 6/4 Cottonwood.

MAY BROTHERS Office and Band Mills: MEMPHIS, TENNESSEE

WHEELER - TIMLIN LUMBER CO.

WAUSAU, Wisconsin.

You cannot beat the Birch for an all round wood for the furniture manufacturer. We have BEAUTIFUL BIRCH in all standard thicknesses from 4/4″ to 10/4″ and all grades. Write us for delivered prices.

Mills at DORCHESTER, Wis., and WITTENBERG, Wis.

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We offer for prompt shipment from Louisville, Ky., where cars are more plentiful and embargoes less stringent than at other points, the following:

5,000	5/8	1s and 2s
80,000	5/8	No. 1 Common
50,000	5/8	No. 2 Common
40,000	4/4	Saps and Selects
150,000	4/4	No. 1 Common
30,000	4/4	No. 2A Common
40,000	5/4	No. 1 Common
17,000	8/4	No. 2 Common A & B
250,000	4/4	Mill Run
16,000	5/4	Mill Run

This Poplar is Kentucky and Tennessee mountain stock. It's soft textured, shows good widths and lengths and is nicely graded.

WE CAN SURFACE OR RESAW

North Vernon Lumber Mills

NORTH VERNON, IND.
LOUISVILLE, KY. DYERSBURG, TENN.
WRITE FOR COMPLETE LIST AND PRICES

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Band Mills: LAKE PROVIDENCE LA.
Southern Office: MEMPHIS, TENN.
Bank of Commerce Bldg.
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MANUFACTURERS

Plain Red Gum
Quartered Red Gum
Plain Sap Gum
Quartered Sap Gum
Cottonwood, Cypress
Tupelo, Ash, Elm, Oak

CHARLES O. MAUS
Canadian Representative

American Hardwood Lumber Co.

St. Louis, Mo.

Large stock of—

Dry Ash, Quartered Oak
Plain Oak and Gum

Shipments from — NASHVILLE, Tenn., NEW ORLEANS, La., and BENTON, Ark.

WARREN ROSS LUMBER CO.

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13,000′	4/4/ 1s&2s Bataan Mahogany	12,000′	8/4″ No. 1 Com. Walnut
		7,000′	8/4″ No. 2 Com. Walnut
5,000′	5/4″ to 16/4″ 1s&2s Bataan Mahogany	15,000′	4/4″ 1s&2s Pl. Red Oak
		4,000′	5/4″ 1s&2s Pl. Red Oak
25,000′	4/4″ 1s&2s Cherry	4,000′	6/4″ 1s&2s Pl. Red Oak
12,000′	4/4″ No. 1 Com. Cherry	20,000′	8/4″ 1s&2s Pl. Red Oak
5,000′	6/4″ 1s&2s Cherry	20,000′	4/4″ No. 1 Com. Pl. “
5,000′	8/4″ 1s&2s Cherry	4,000′	5/4″ No. 1 Com. Pl. “
2,000′	8/4″ No. 1 Com. Cherry	4,000′	6/4″ No. 1 Com. Pl. “
100,000′	4/4″ to 2″ No. 1 Com. & Btr. Beech	10,000′	8/4″ No. 1 Com. Pl. “
		15,000′	4/4″ 1s&2s Poplar S.N.D.
1,500′	5/4″ Select Walnut	3,000′	5/4 1s&2s Poplar S.N.D.
1,500′	8/4″ 1s&2s Walnut	3,000′	8/4″ 1s&2s Poplar S.N.D.

Direct mill shipments, etc.
Let us quote you.

American Black Walnut

Enjoys World Wide Appreciation

In spite of most unfavorable rates of exchange, excessive ocean freight tariffs, and limited financial resources Europe wants America Walnut and is now buying. Europeans know walnut is the finest cabinet wood grown, and rightly refuse to consider substitutes.

Virtues of Walnut should be fully recognized on this continent as every phase of the cabinet wood situation today points out the advantage of featuring American Walnut.

All American Walnut is good but Iowa really affords the best.

We are prepared to supply you with
Walnut Lumber and Veneer

Des Moines Sawmill Company

Des Moines, Iowa

Boland Lumber Company

Murray Bldg., Grand Rapids, Mich.

Manufacturers and Wholesalers Northern and Southern Hardwoods

Northern Woods:

Ash, Basswood, Beech,
Birch, Hard Maple,
Quartered Maple,
White Maple, Soft Maple,
Soft Elm, Rock Elm.

Southern Woods:

Cherry, Chestnut,
Cottonwood, Cypress, Gum,
Hickory, Magnolia,
Oak, Poplar, Sycamore,
Walnut, Willow.

Please send us your inquiries and it will be a pleasure to quote you and describe our stocks

Subscribers' Information Form

Many letters reach us from subscribers enquiring where a certain machine, a certain kind of lumber or veneer, or some other class of goods, can be obtained. We can usually supply the information. We want to be of service to our subscribers in this way, and we desire to encourage requests for such information. Make use of this form for the purpose.

"CANADIAN WOODWORKER"
345 Adelaide St., West, Toronto

Date.....18..

Please tell us where we can procure .....

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Name .....

Address .....

American Lumber & Mfg Co.

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AMERICAN WHITE-YELLOW PINE TOP NOTCH REGISTERED AMERICAN AND HARDWOOD LUMBER

MILLS: MAXTON, N C PAXTON, FLA. LENOX, KY IDAHO-OREGON MINNESOTA

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At our Lenox Kentucky Mill, we have on hand 5 Million feet of Band Sawn Hardwoods which are available for immediate loading. Send us a list of your requirements.

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You Receive Service with the Other Material You Buy Then Why Not With Lumber?

So that you may get greatest economy and satisfaction in your use of lumber, we have arranged to furnish you with technical service, by adding to our organization the following gentlemen, late of the Forest Products Laboratory, Madison, Wisconsin:

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This service is yours to command WITHOUT CHARGE.
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CINCINNATI, OHIO

St. Francis Basin Hardwoods
Tennessee Aromatic Red Cedar

For November and December Shipment
"Dry Stock"

100,000′	4/4″	No. 1 Common & Selects—Sap Gum.
50,000′	4/4″	No. 2 Common, Sap Gum.
50,000′	6/4″	No. 2 Common, Sap Gum.
50,000′	4/4″	No. 1 Common & Selects, Red Gum, Plain.
75,000′	4/4″	No. 2 Common, Red Gum, Plain.
35,000′	5/4″	No. 1 Common & Selects, Red Gum, Plain.
25,000′	6/4″	No. 1Common & Selects, Red Gum, Plain.
50,000′	6/4″	No. 2 Common, Red Gum, Plain.
75,000′	4/4″	No. 1 Common & Selects, Oak, Plain.
50,000′	4/4″	No. 2 Common, Oak, Plain.
50,000′	4/4″	Sound Wormy, Oak.
30,000′	4/4″	2″ to 5½″ Strips, Quartered White Oak.
100,000′	5/4″	Log Run, Elm.
100,000′	8/4″	Log Run, Elm.
13,000′	4/4″	Log Run, Maple.
13,000′	8/4″	Log Run, Maple.
25,000′	10/4″	Log Run, Maple.

We also have a good supply of other items in Hardwoods.
Write us for information and prices delivered to your plant.
Note: CEDAR, carload and less. Also mixed with Hardwoods.

GEO. C. BROWN & COMPANY

General Office, - MEMPHIS, TENN.

BAND MILLS, PROCTOR, ARK. LAKE VILLAGE, ARK.

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The way Walnut comes to us

COMING AND GOING

One constant stream of American Black Walnut from "Stump to Consumer" flowing through a steady, reliable and satisfactory channel.

"Geo. W. Hartzell"

Logs in the rough coming in Veneers and Lumber of the highest quality going out daily year in and year out covering a period of 35 years.

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No Order too large, no Order too small to receive the close and careful attention it is our custom to give. That is a great part of our business, serving our customers.

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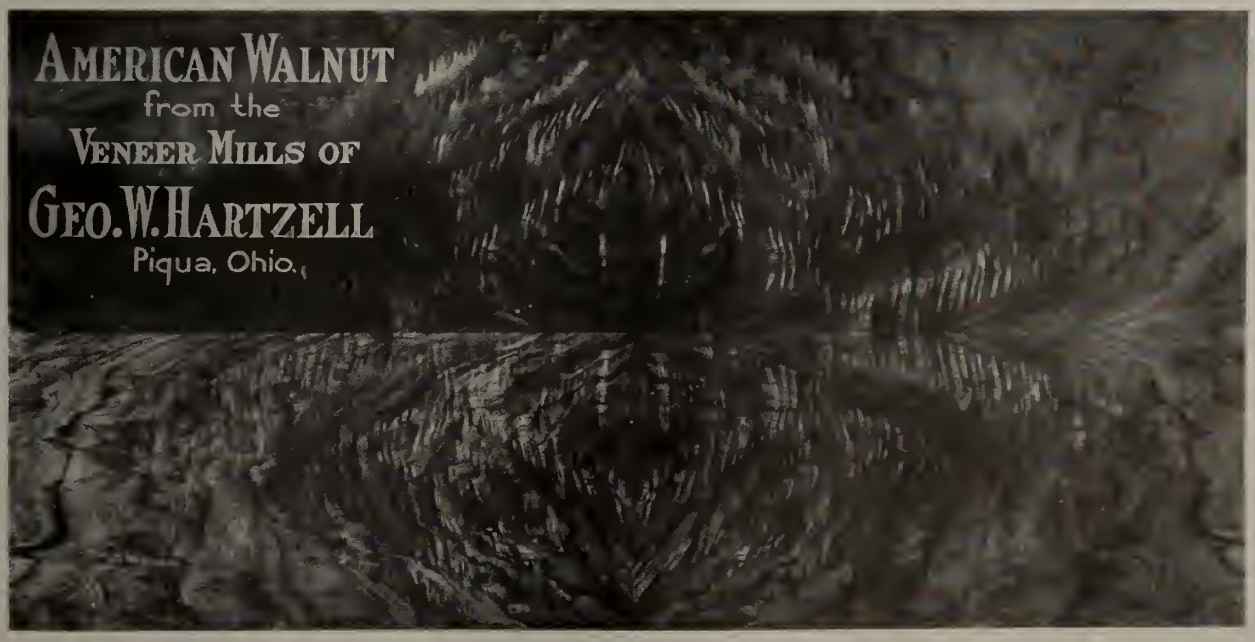

The way it goes to our Customers

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Oak

Poplar

Gum

Memphis Band Mill Co.

"Quarter-sawn White Oak Headquarters"

Memphis, Tenn., U.S.A.

DRY AND PARTLY DRY STOCK

Ready for Shipment

Your inquiries will bring very prompt quotations. You can depend on straight grades, quick service, and well manufactured lumber.

RED GUM

11219	ft.	8/4 FAS Qtd.
36728	"	8/4 No. 1 Common Qtd.
3870	"	6/4 1sts & 2nds Qtd.
880	"	6/4 No. 1 Com. & Sel. Qtd.
5500	"	5/4 1sts & 2nds Qtd.
14850	"	5/4 No. 1 Com. & Sel. Qtd.
1820	"	4/4 No. 1 Com. & Sel. Qtd
77464	"	6/4 1st&2ds
441589	"	6/4 No. 1 Com. & Sel.
87180	"	6/4 No. 2 Common
2527	"	5/4 1sts & 2nds Figured
31290	"	5/4 1sts&2ds
310732	"	5/4 No. 1 Com. & Sel.
4400	"	5/4 No. 1 C. & B. FAS No. 1 C.
52881	"	5/4 No. 2 Common
42511	"	4/4 1st&2ds
195140	"	4/4 No. 1 Com. & Sel.
3070	"	4/4 No. 1 Com. & Btr. Figured
173491	"	4/4 No. 2 Common
13421	"	4/4 No. 3 Common
37986	"	3/4 1sts&2ds
38280	"	3/4 No. 1 Common
8700	"	3/4 No. 2 Common

SAP GUM

22000	"	8/4 No. 1 C. & B. Qtd. FAS No. 1 Com.
6700	"	8/4 No. 2 Common Qtd.
3600	"	8/4 1sts & 2nds Plain
5680	"	8/4 No. 1 Com. & Sel.
14120	"	8/4 No. 2 common
307495	"	6/4 1sts&2ds
595540	"	6/4 No. 1 Com. & Sel.
131072	"	6/4 No. 2 Common
8500	"	6/4 No. 3 Common
167570	"	5/4 1sts&2ds
63825	"	5/4 No. 1 Com. & Sel.
353014	"	5/4 No. 2 Common
45026	"	5/4 No. 3 Common
12502	"	1x18" & up panel & No. 1
11472	"	1x11 & wider 1sts&2ds
67109	"	4/4 9-12" Box Boards
77440	"	4/4 1sts&2ds
402047	"	4/4 No. 1 Com. & Sel.
208134	"	4/4 No. 2 Common
134919	"	4/4 No. 3 Common
48163	"	3/4 1sts & 2nds
38530	"	3/4 No. 1 Common
8669	"	3/4 No. 2 Common

ELM—GREEN

95244	"	10/4 Log Run No. 2 Com. Btr.
26941	"	8/4 No. 2 Com. & Btr.
12100	"	6/4 No. 1 Com. & Btr. FAS No. 1 Common
1500	"	6/4 No. 2 Com. & Btr.
15360	"	1" to 3" No. 2 Com & Btr.

COTTONWOOD 50% FAS

1 car 4/4 Log Run 30% No. 1 Com. 20% No. 2 Com.

OAK

6342	"	4/4 1sts & 2ds. Qtd. Red
31273	"	4/4 No. 1 Com & Sel Qtd. Red
5814	"	4/4 No. 2 Com. Qtd. Red
2519	"	4/4 No. 3 Com. Qtd. Red
2895	"	4/4 1sts&2ds Qtd. White
9012	"	4/4 No. 1 Com. Qtd. White
4196	"	4/4 No. 2 Com. Qtd. White
1293	"	4/4 No. 3 Common Qtd. White
3450	"	10/4 No. 1 Com. & Btr. Red FAS No. 1 Com.
4500	"	10/4 No. 2 Com. Red
50352	"	4/4 1sts & 2ds Plain Red
166121	"	4/4 No. 1 Com. & Sel Red.
70410	"	4/4 No. 2 Com. & Sel. Red
27241	"	4/4 FAS Plain White
87420	"	4/4 No. 1 Com. & Sel White
62099	"	4/4 1sts&2ds Mixed
123675	"	4/4 No. 2 Com. Mixed
11221	"	4/4 No. 3 Com. Mixed
140921	"	4/4 Sound Wormy

La CYPRESS

7150	"	10/4 No. 1 Common
3100	"	8/4 1sts & 2nds
9460	"	8/4 Select
3960	"	8/4 Shop
5830	"	8/4 No. 1 Com.
17995	"	6/4 Select
4000	"	6/4 to 12/4 Dog Bds
12670	"	5/4 No. 1 Common
11200	"	5/4 No. 2 Common
14620	"	5/4 No. 2 Pecky
12450	"	4/4 Selects
12600	"	4/4 No. 1 Shop
39401	"	4/4 No. 1 Common
43917	"	4/4 No. 2 Common
56260	"	4/4 Pecky
13425	"	4/4 No. 2 Boxing

La WHITE ASH

6019	"	16/4 No. 1 C&B No. 1.
34340	"	10/4 No. 1 Com & Btr. FAS
7980	"	8/4 1sts & 2nds (Dry)
4200	"	8/4 No. 1 Com. & Btr. FAS No. 1 Com.
22200	"	8/4 No. 2 Common
5100	"	6/4 1sts & 2nds
16011	"	6/4 No. 1 Com. & Sel.
14835	"	6/4 No 2 Common
28370	"	5/4 No. 1 Com. & Sel.
10050	"	4/4 No. 2 Common
43546	"	4/4 No. 3 Common
13292	"	4/4 Sound Wormy

ARKANSAS YELLOW PINE—AIR DRIED

196292	"	4/4 No. 2 Common
6-8-10-12"		Widths No. 3 Com.

PECAN—DRY

4500	"	8/4 Log
4500	"	8/4 Flitches
2000	"	6/4 No. 2 Com. & Btr.

ABERDEEN LUMBER COMPANY, Pittsburgh, Pa.

PORTLAND, Oregon,
N.W. Bank Building

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Car Material
Railroad Stock
Industrial Lumber

Catering to the unusual in
Size—Length—Quality—Quantity

Duncan Lumber Co. Ltd.
Manufacturers and Wholesalers
VANCOUVER, - - B.C.

American Black Walnut

ON HAND *in our* STORAGE YARDS *ready for* IMMEDIATE SHIPMENT

1,000,000 feet of 4-4 Bone Dry American Black Walnut, 7 inches and up wide.

CHERRY

500,000 feet of 4-4 Bone Dry Cherry, 7 inches and up wide.

FRANK T. SULLIVAN
Main Office, 600 Ellicott Square Bldg.,
BUFFALO, - N.Y.

STORAGE YARDS; BUFFALO, N.Y. and DAYTON, OHIO.

Wake-up, Mr. Furniture Man!
Walnut is Plentiful!

AMERICAN WALNUT

"The Cabinet-wood Superlative"

Bureau Drawers That Slide

(and slide easily) after 200 years of service.

Try the drawers of an old piece of Walnut furniture—no matter how old, nor of what grade of workmanship. They slide easily—if they are Walnut. That is because Walnut doesn't shrink nor swell with the variations of temperature and humidity, and doesn't warp nor twist nor misbehave in any way—never a bit.

The supreme beauty of Walnut, in addition to the above qualities (and plus its "workability" and its "carvability"), accounts for the world-old supremacy of Walnut as a cabinet-wood—and its price permits its use in *every grade* of furniture that the careful buyer is likely to ever consider.

It will help you in your furniture buying to *know all about* American Walnut. (The furniture man will respect your discrimination, and you may be sure he will honestly give you what you want. He knows the facts—and is glad that you do.)

Don't fail to WRITE NOW for the WALNUT BOOK—edition de luxe—which will come by return mail with our compliments—and our confidence in your appreciation of it.

AMERICAN WALNUT MANUFACTURERS' ASSOCIATION
Room 1019, 616 S. Michigan Blvd., Chicago

ALL BRANCHES OF THE FURNITURE TRADE

are feeling strongly the Effects of the series of tributes to our American Walnut which are running continuously in most of the Best Publications in America. Above is an example.

There are still a few Furniture Houses in the Country

who are giving some of their better-posted competitors a great advantage over them with the Best Trade. WHY? Simply because they "heard somebody say" that American Walnut was getting scarce. Let them ask us for THE FACTS! (See address above.)

The
Probst Lumber Co.

Manufacturers—Hardwoods
White and Yellow Pine

Wagon, Chair and Implement Stock.

Railroad Timbers, Ties and Switch Ties.

Cincinnati, Ohio

Dimension Stock

2 cars 2 x 2 —19" Clear Oak Squares.
1 " 1½ x 1½—30" Clear Oak Squares.
3 " 2 x 2 —30" Clear Oak Squares. Green
2 " 2 x 2 —30" Clear Oak Squares. Dry.
1 " 2 x 2½—5' Clear Oak Squares.
1 " 2 x 2 —14 & 16" Clear Oak Squares.
½ " 2⅓ x 2½—30" Clear White Oak Squares.
½ " 3 x 3 —30" Clear White Oak Squares.
1 " 2 x 2 —30" Clear White Oak Squares.
1 " 1 x 4" & wider—43", 46", 49" & 55" Qtd. White Oak, clear one face, two edges.
1 " 1 x 4" & wider—18", 25" & 37" Qtd. White Oak, clear one face.
1 " 1⅝ x 1⅝—19 to 28" Clear Oak Squares.
1 " 1½ x 1½ and 2 x 2—19 and 28" Clr Oak Sqs.

1 " 2 x 2 —19" Clear Gum Squares.
2 " 2 x 2 —30" Clear Gum Squares.
1 " 2 x 2, 2½ x 2½, 3 x 3—30" Clr Red & Sap Gum.
1 " 2½ x 2½—30" Clear Gum Squares.

1 " 2 x 2 —20" Tupelo Gum Squares.
1 " 2 x 2 —30" Tupelo Gum Squares.
1 " 2 x 2 —34" Tupelo Gum Squares.
1 " 2 x 2 —36" Tupelo Gum Squares.
1 " 2 x 2 —45" Tupelo Gum Squares.
1 " 2 x 2 —48" Tupelo Gum Squares.

1 " 2 x 2 —32" Clear Soft Elm Squares.
1 " 2½ x 2½—30" Clear Soft Elm Squares.

1 " 1½ x 1½—38" Clear Ash Squares.
1 " 1½ x 1½—42" Clear Ash Squares.
1 " 2 x 2 —40" Clear Ash Squares.
1 " 1½ x 1½—15 to 42" Clear Ash Squares.
1 " 1½ x 1½—15 to 24" Clear Ash Squares.
1 " 1½ x 1½—16 to 30" Clear Ash Squares.

1 " 2½ x 2½—30" Clear Soft Maple Squares.
1 " 2 x 2 —12 to 18" Hard Maple Squares.

1 " 1 x 1 —48" Clear Beech and Oak Squares.
2 " ⅞ x ⅞ —32 & 48" Clr. Birch & Maple Sqs.
3 " 1 x 1 —18 to 40" Clr. Birch & Maple Sqs.

24M Pcs. 1⅛ x 1⅛ & 1¼ x 1¼—54" Clear Beech Squares.
7M Pcs. 1⅛ x 1⅛—36" Clear Beech Squares.
12M Pcs. 1⅛ x 1⅛—72" Clear Beech Squares.
12M Pcs. 1½ x 1½—30" Clear Beech Squares.
5M Pcs. ¾ x ¾—18 to 72" Clear Beech Squares.

2 Cars 3 x 7 —10' Yellow Pine Pole Stock.
2 cars 3½ x 7½—12' Yellow Pine Pole Stock.

We are pleased to offer the following choice band sawn stock for prompt shipment. Phone, wire or write for delivered prices.

QUARTERED WHITE OAK

30M	4/4	FAS
75M	5/4	FAS
200M	4/4	No. 1 Com.
100M	5/4	No. 1 Com.
200M	6/4	No. 1 Com.
75M	8/4	No. 1 Com.
12M	4/4	No. 2 Com.
15M	5/4	No. 2 Com.
14M	6/4	No. 2 Com.
8M	6/4	No. 3 Com.

QTD. WHITE OAK STRIPS

100M	4/4	C&B 1½-3½
11M	5/4	C&B 1½-3½
4M	6/4	C&B 1½-3½

PLAIN WHITE OAK

15M	4/4	FAS
15M	5/4	FAS
25M	6/4	FAS
250M	4/4	No. 1 Com.
50M	5/4	No. 1 Com.
100M	6/4	No. 1 Com.

QUARTERED RED OAK

4M	4/4	FAS
50M	5/4	FAS
10M	6/4	FAS
85M	4/4	No. 1 Com.
100M	5/4	No. 1 Com.
20M	6/4	No. 1 Com.

PLAIN RED OAK

75M	4/4	FAS
40M	5/4	FAS
80M	6/4	FAS
200M	4/4	No. 1 Com.
100M	6/4	No. 1 Com.
150M	5/4	No. 1 Com.
10M	4/4	No. 2 Com.
10M	5/4	No. 2 Com.
12M	6/4	No. 2 Com.
200M	4/4	No. 3 Com.
40M	5/4	No. 3 Com.
30M	6/4	No. 3 Com.

SOUND WORMY OAK

150M	4/4	
75M	5/4	
50M	6/4	

QUARTERED RED GUM

15M	4/4	FAS
14M	6/4	FAS
30M	8/4	C&B
20M	4/4	No. 1 Com.
7M	5/4	No. 1 Com.
7M	6/4	No. 1 Com.
150M	8/4	No. 1 Com.

PLAIN RED GUM

30M	4/4	FAS
10M	4/4	C&B
30M	4/4	No. 1 Com.
25M	5/4	No. 1 Com.
5M	6/4	No. 1 Com.
75M	4/4	No. 2 Com.

QUARTERED RED GUM
(Sap no defect)

150M	6/4	C&B
300M	8/4	C&B
200M	10/4	C&B
150M	12/4	C&B
100M	4/4	No. 1 Com.
8M	8/4	No. 2 Com.
8M	10/4	No. 2 Com.
5M	12/4	No. 2 Com.
4M	10/4	No. 2 Com.

PLAIN SAP GUM

2M	4/4	wd bx bds
20M	4/4	FAS
30M	5/4	FAS
150M	4/4	No. 1 Com.
90M	5/4	No. 1 Com.
70M	6/4	No. 1 Com.
150M	4/4	No. 2 Com.
50M	5/4	No. 2 Com.
70M	6/4	No. 2 Com.
30M	4/4	No. 3 Com.
6M	6/4	No. 3 Com.
100M	8/4	No. 3 Com.
15M	12/4	No. 3 Com.

ASH

100M	10/4	C&B
40M	12/4	C&B
75M	5/4	No. 1 Com.
35M	6/4	No. 1 Com.
30M	5/4	No. 2 Com.
20M	5/4	No. 3 Com.

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15M	4/4	FAS
15M	4/4	wide FAS
200M	4/4	No. 1 Com.
30M	4/4	No. 2 & 3 Com.

CYPRESS

15M	4/4	Shop
18M	6/4	No. 2 C&B

ELM

30M	4/4	No. 2 C&B
150M	8/4	No. 2 C&B
100M	10/4	No. 2 C&B
50M	12/4	No. 2 C&B
15M	12/4	No. 2 C&B

TUPELO GUM

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250M	4/4	C&B
6M	5/4	C&B
12M	6/4	FAS
2M	6/4	No. 1 Com.
50M	4/4	No. 2 Com.

POPLAR

20M	4/4	No. 1 Com.
30M	4/4	No. 2 Com.

MAPLE

15M	4/4	No. 2 C&B
30M	10/4	No. 2 C&B

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4/4" 1sts & 2nds 13" & up .. ..100,000'
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ELM
4/4" Log Run .. .. .. 40,000'
5/4" Log Run .. .. .. 50,000'
6/4" Log Run .. .. .. 6,000'
8/4" Log Run .. .. .. 30,000'
10/4" Log Run .. .. .. 30,000'
12/4" Log Run .. .. .. 30,000'

PECAN
8/4" Log Run .. .. .. 50,000'

MAPLE
4/4" Log Run .. .. .. 30,000'
5/4" Log Run .. .. .. 6,000'
10/4" Log Run .. .. .. 15,000'
12/4" Log Run .. .. .. 35,000'

PLAIN RED GUM (FIGURED WOOD)
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5/4" 1sts & 2nds .. .. 8,000'

PLAIN RED GUM (PLAIN WOOD)
4/4" 1sts & 2nds .. .. 50,000'
4/4" No. 1 Common & Selects .. ..100,000'
4/4" No. 2 Common .. 75,000'
1 1/8" No. 1 Common & Selects 13" & up.. 12,000'
5/4" No. 1 Common & Selects .. .. 10,000'
5/4" No. 2 Common .. 20,000'
6/4" 1sts & 2nds .. .. 8,000'
6/4" No. 1 Common & Selects .. .. 30,000'

QUARTERED RED GUM (PLAIN WOOD)
4/4" 1sts & 2nds .. .. 20,000'
4/4" No. 1 Common & Selects .. .. 25,000'
5/4" 1sts & 2nds .. .. 3,000'
5/4" No. 1 Common & Selects .. .. 15,000'
6/4" 1sts & 2nds .. .. 15,000'
6/4" No. 1 Common & Selects .. .. 9,000'

QUARTERED RED GUM (SAP NO DEFECT)
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4/4" Boxboards 13-17". 75,000'
4/4" 1sts & 2nds .. .. 50,000'

PLAIN RED OAK
4/4" 1ts & 2nds .. .. 30,000'
4/4" No. 1 Common & Selects .. .. 60,000'
4/4" No. 2 Common.. 75,000'

PLAIN WHITE OAK
4/4" 1sts & 2nds .. .. 30,000'
4/4" No. 1 Common & Selects .. .. 75,000'
4/4" No. 2 Common .. 50,000'

QUARTERED WHITE OAK
4/4" Log Run .. .. .. 50,000'
5/4" Log Run .. .. .. 20,000'
6/4" Log Run .. .. .. 10,000'

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Vol. 20 **November, 1920** **No. 11**

Courage, Judgment and Aggressiveness

This special furniture number of the "Canadian Woodworker and Furniture Manufacturer" is a fitting momento for the most successful year ever experienced by the furniture industry in Canada. During the first months of 1920 the furniture factories were literally swamped with orders, and though operating to capacity were not able to cope with the volume of business offered. In the last few months the demand for many of the better lines has not been so strong, but should this quietness continue until the end of the year it is not likely to reduce the lead over other years secured in the earlier part of the season. Not all furniture factories have been affected by the lessened demand, as those making cheap and medium-priced lines and plants devoted to such specialties as desks and office furniture, church furniture and fitments, and store fixtures are working to capacity.

The furniture manufacturers are optimistic with regard to the future of their industry and have adopted an aggressive policy. True, conditions are quiet, and even uncertain, at the present moment, but there are many bright spots. One is that the retail trade is doing a fair volume of business but buying only sparingly. This is due to a certain extent to the fact that many retail dealers were well stocked, especially in certain lines, and that some of the larger stores have adopted a non-buying policy.

The national advertising campaign launched by the Furniture Manufacturers' Association a few weeks ago should be very beneficial to the furniture industry. The effects of publicity work of this kind are cumulative rather than immediate and by the spring of 1921 the furniture trade should be steadily gaining ground. Again, certain indications point to easier money. This should have a stimulating effect on building operations, which in turn will mean that more furniture will be required.

It is expected that when the different furniture manufacturers issue their new price list, toward the end of December, an attempt will be made to guarantee that the prices will not be changed for, say, a six-month period. This would be a very wise move, as not only would it stabilize the market but it should tend to reassure those dealers who have refrained from buying because they anticipated a drop in prices. The new lists will show reductions in many lines and increases in others, so that probably the present price level will be maintained. In the raw material market such items as lumber, glass and finishing materials have dropped in value, while other lines like furniture hardware, coverings and packing materials are stationary or slowly rising. As the price of furniture was never based on the peak of the raw material market, there has not yet been any change in manufacturing costs that would warrant or justify a material reduction in furniture prices.

The trying, uncertain period through which we are passing, though likely to be of short duration, is such as to test the fortitude of the strongest. Boundless courage is required so as not to be stampeded into hasty action—calm, business-like judgment to take full advantage of every turn of the market and earnest aggressiveness to seize and make the most of all opportunities. These qualities, together with faith in the future of Canada, can lead to but one result—Prosperity.

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Art and Utility in an Appropriate Sphere

The Successful Co-ordination of Design and Craftsmanship Illustrated in Some Examples of Jacobean Furniture from the New Provincial Parliament Buildings at Winnipeg

"Every work of Art shows that it was made by a human being for a human being."
"Art is thoughtful workmanship." —*W. R. Lethaby*

IN a brief but noteworthy contribution to the Annual Furniture Number of The Canadian Woodworker last year*, the author advanced a special plea for the originators, designers, and craftsmen of the present day. The purport of his observations was that the achievements of the past should be only an incentive to greater effort in the present, and that the furniture designers and cabinet-makers of our own day and generation were required to execute work just as exacting, just as original, and just as beautiful as "the finest work done by famous men of their industry whose names are now household words."

In the following pages we reproduce further examples of furniture which bears the hallmark of individuality in special work. Once more, our selection is from some of the special orders carried out recently by The Bromsgrove Guild (Canada), Limited, of Montreal, whose Managing Director, Mr. E. L. Wren, A. R. I. B. A., has kindly co-operated in the reproduction of the accompanying illustrations. Those of our readers who may be in possession of our Annual Furniture Number of 1919 will be interested in comparing the illustrations reproduced on pages 75-77 of that issue with those shown herewith.

As examples of skilled workmanship in the application of sound principles of design, the furniture illustrated herewith is noteworthy. The illustrations are sufficient to show that the most exacting requirements of woodcraft and design can be fulfilled within our own borders, and that in the field of the woodworking industry, Canadian craftsmanship more than holds its own.

The Speaker's Chair, Provincial Parliament Buildings, Winnipeg.—A dignified and ornamental example of Canadian design and workmanship. Note the detail of the Manitoba coat-of-arms.
(This illustration is referred to as Fig. 8 in the accompanying article.)

The illustrations shown on the opposite page are all pieces selected from the carved oak suites installed in the Minister's private offices at the Provincial Parliament Building at Winnipeg. It may be mentioned in passing that this is one of the finest public biuldings erected in Canada during recent years. It was designed by the well-known English architect, Mr. Frank W. Simon, F.R.I.B.A.

In keeping with the requirements of a building of this character all the installations were required to measure up to a very high standard. Particularly was this so in the case of the woodwork and special furniture.

The excellent class of work installed in the Parliament buildings at the progressive Western metropolis is shown in the accompanying illustrations. The examples are of special interest to us in this Number, as they are carried out in the Jacobean style.

Possibly the outstanding point to note in the illustrations is that while the general principles of Jacobean design have been faithfully adhered to, no degree of utility whatever has been sacrificed to making a pedantic copy of the antique. The trend of opinion is increasingly in favor of impressing upon the modern designer that in originating new furniture in old styles, he should do so only so far as it is possible to make really useful furniture—furniture designed primarily to serve a useful purpose; and that the slavish imitation of old pieces, regardless of the uses to which the furniture is to be put, has resulted in productions unsuited to modern requirements, and can only be considered a setback in the furniture maker's art.

These observations will serve to introduce a brief description of the furniture illustrated on the opposite page.

In Fig. 1 we have a magazine table designed on correct and pleasing lines. This is a very practical piece of furniture and is quite true to style. The dimensions are 7 ft. by 2 ft. The fine carved pedestals are particularly worthy of note. The centre table shown in Fig. 2 is 4 ft. in diameter and is of similar design.

Distinguishing characteristics of correct design and finished workmanship are found in the Minister's

*Some Notes on Art in Relation to Furniture, By G. S. L.

Fig. 1.—A magazine table, designed on correct and pleasing lines.

Fig. 2.—Centre table, 4 ft. in diameter, of similar design.

Fig. 3.—Minister's desk, of Jacobean design—embodying all the adjustments of modern times.

Fig. 4.—Sofa, 7 ft. 6 in. long, with carved rail and feet to match. Covered in Canadian blue Spanish leather, Madrid finish.

Fig. 5.—Another pleasing example of the Jacobean style—a side-table.

Fig. 6.—Large bookcase—an effective expression of art, craft, and utility.

Fig. 7.—Desk comprising part of the Council Room furniture—built in sections of three.

Noteworthy Examples of Furniture in the New Provincial Parliament Buildings at Winnipeg

desk, shown in Fig. 3. While this desk retains the true character of the Jacobean, it embodies all the adjustments and accessories of modern times. While in all essentials it retains the character of the style chosen, it provides all the facilities required by the modern office specialist, even to the provision of a deep filing drawer for the care of the Ministerial correspondence. The carving is an attractive feature, as are also the panelling and brass drop-handles.

Fig. 9.—Council Room furniture—table for centre space, richly carved with lions' heads on trusses.

The inviting nature of the sofa shown in Fig. 4 will make this piece a favorite with the legislators of the Western Province. The length of this sofa is 7 ft. 6 ins. The carved rail, with feet to match, enhances its beauty, and effects the desired combination of art and utility. The sofa is covered in Canadian blue Spanish leather, in Madrid finish.

The two remaining examples call for little comment. They are finished examples of a special class of furniture. Both the side-table, shown in Fig. 5, and the large bookcase, shown in Fig. 6, follow the true Jacobean style. The carved details of both pieces are well interpreted. The lines are clean and simple, and the detail is attractive and interesting without being unduly ornate.

Passing from these examples, we come to the remaining illustrations, which are selected from the council room furniture at the Winnipeg Parliament buildings. These pieces are of walnut and are all hand-carved. They were designed by the architect of the building, Mr. Simon, and, as in the case of the other examples, they were made by The Bromsgrove Guild (Canada), Limited.

An outstanding example is the Speaker's chair—Fig. 8, reproduced on the first page. This chair is covered in blue leather and the carving is picked out in gold. The detail of the Manitoba coat-of-arms is a noteworthy feature.

The desks (Fig. 7) are built in sections of three or more, with a separate swivel chair for each member—numbering sixty in all.

The table for the centre space (Fig. 9), which is richly carved with lions' heads on trusses, is a particularly successful interpretation of its kind.

The Value and Application of Standards

Distribution of Information Through an Association—Lead to Greater Co-operation —Access to Same Set of Standards—Vast Benefit to Industrial World

By James J. Martindale*

(Last of series)

All lines of industry should be standardized and the standards kept in some central bureau for distribution as requested. Chair factories, furniture factories, phonograph cabinet factories, carriage factories, etc., should have made available for them the essential standards applying to their particular line of industry.

The war has eliminated a great deal of the old foolish jealousy between plant and plant in the same industry. The necessity to lick the Hun brought about a common use of plant experience, custom and methods never before experienced. Let us continue this good condition and in benefiting all industry benefit each member of that line of industry.

By further and more intelligent co-operation. Money has been saved by making deliveries from a number of distributing stores by means of one delivery system. Ford dealers in Detroit have a central purchase bureau where all accessories are purchased. They have saved money in having a unified and common purchase control.

It is to be expected, if practical methods are used, that the taking over of the Grand Trunk System in Canada will benefit the old Intercolonial and save money by lessening the administrative burden on the Intercolonial and obtaining better prices on purchases due to greater purchase volume. The merging of all army controls into that of Foch was one of the reasons for the decline of German power. Time, much effort and money was undoubtedly saved by the functioning of one head rather than the confused and unrelated action, as to time and purpose, of a number of army heads.

Why should a chair factory in Owen Sound, Ont., spend its money and time in setting up standards of accomplishment when last year a chair factory in Ottawa obtained standards on practically the same kind of output? A phonograph cabinet shop in Kitchener and a similar shop in St. Thomas, as well as other phonograph cabinet shops, should each have access to the same set of standards. This condition should be brought about by a central association spending the money furnished pro-rata by each contributing member of the association to obtain the essential standards of operation on the variety of work common to practically all plants.

These standards should be filed in the bureau's office—charted where possible, and ready at all times upon call, for distribution to members. Thus can industry be standardized and an association made to render a practical service perhaps never before achieved.

Today, shops in large cities render monthly reports as to their labor turnover to a central bureau. This bureau compiles all these various turnover figures and sends out a complete report to each contributing firm. These shops are of quite a dissimilar nature, yet the reports are most useful in the big problem of handling help.

To carry the idea still further—it would be an excellent plan to show up each month a statement of standard and actual hours for each plant in an industry. The good to the industry as a whole and each listed plant would be marked. Friendly rivalry would be developed. Old ways would be continuously bettered. New methods would be frequently introduced. All would benefit. The worker—the employer—the consumer.

*James E. Morrison Co., Industrial Engineers, Detroit.

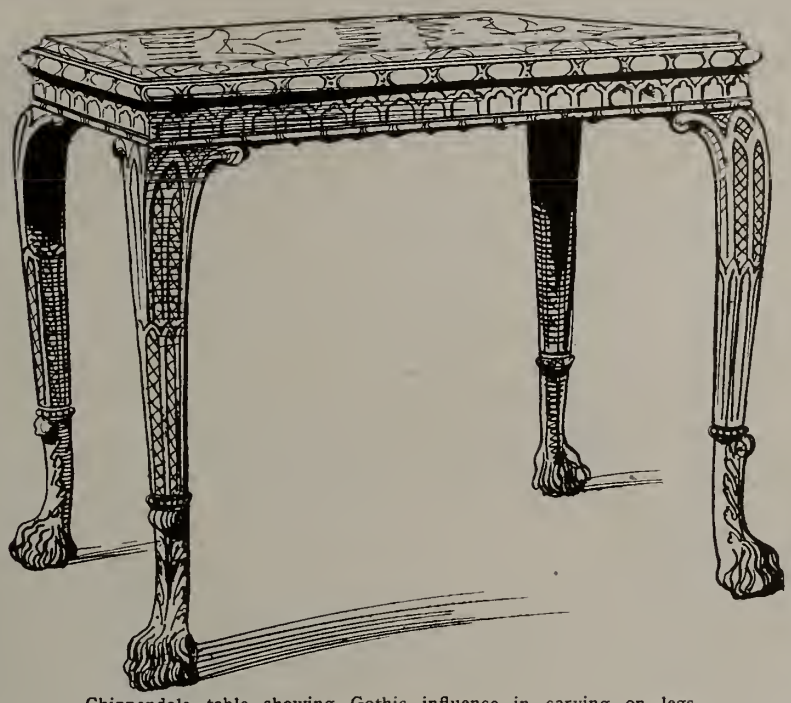
Thomas Chippendale, the Master Designer

Product of His Hands Almost Perfect in Symmetry and Proportion—Delicate Carvings Chief Form of Ornamentation—Noted Particularly for His Chairs— Some Fine Examples of Chippendale's Work

By H. C. Williams

With the dawn of the age of mahogany came Thomas Chippendale, a carver and master cabinetmaker, who has left a name which has become a trade term to mark a certain style in furniture.

His designs were especially adapted to the new wood, relying solely upon the delicate carving for ornament and rejecting all inlay. The material used by Chippendale and his school was the splendid mahogany from the great untouched forests of Spain, which were producing at that time, lumber, the like of which in dimension and quality is now unprocurable; and at that time many a fight ensued and many lives were lost in shipping the stolen mahogany to England to supply the demand for furniture.



Chippendale table showing Gothic influence in carving on legs.

Previously the greater styles of furniture which were left for the examination of posterity were made, mainly, for the use of the wealthier classes, although in Jacobean days, settles and chairs, especially the Yorkshire and Jacobean types were in more common use, and the homely pieces of Queen Anne suggest less luxurious surroundings.

Chairs Probably Best Examples

In 1754, Chippendale published the first edition of his book entitled "The Gentlemen's and Cabinetmakers' Director," and in it he says "My designs are calculated to improve and refine the present taste, and suited to the fancy and circumstances of persons in all degrees of life." His book of designs, as may naturally be supposed, was not greatly bought by working classes, but several copies were distributed in the north and other parts of England, so that local cabinetmakers began at once to fashion their furniture after his styles.

Chippendale based his designs on Chinese Gothic and Louis XIV. and XV. work. The "frets" and "traceries" found in his pediments, friezes, chair legs and backs, and his pagoda cabinets are the direct result of the Chinese influence. The Gothic was not successful and he did not follow it to any great extent, so that his style may be termed "Chinese French."

Of all his furniture, his chairs are the best known, the four noted examples being the "Lattice," "Ribbon," "Ladder" and "Wheatsheaf. The last named he evidently borrowed from the Queen Anne chair. Chippendale revolutionized the styles and for the first time in the history of the manufacture of furniture in England, all European makers turned their eyes to that country in admiration of the style in vogue there; and of course in search of new designs.

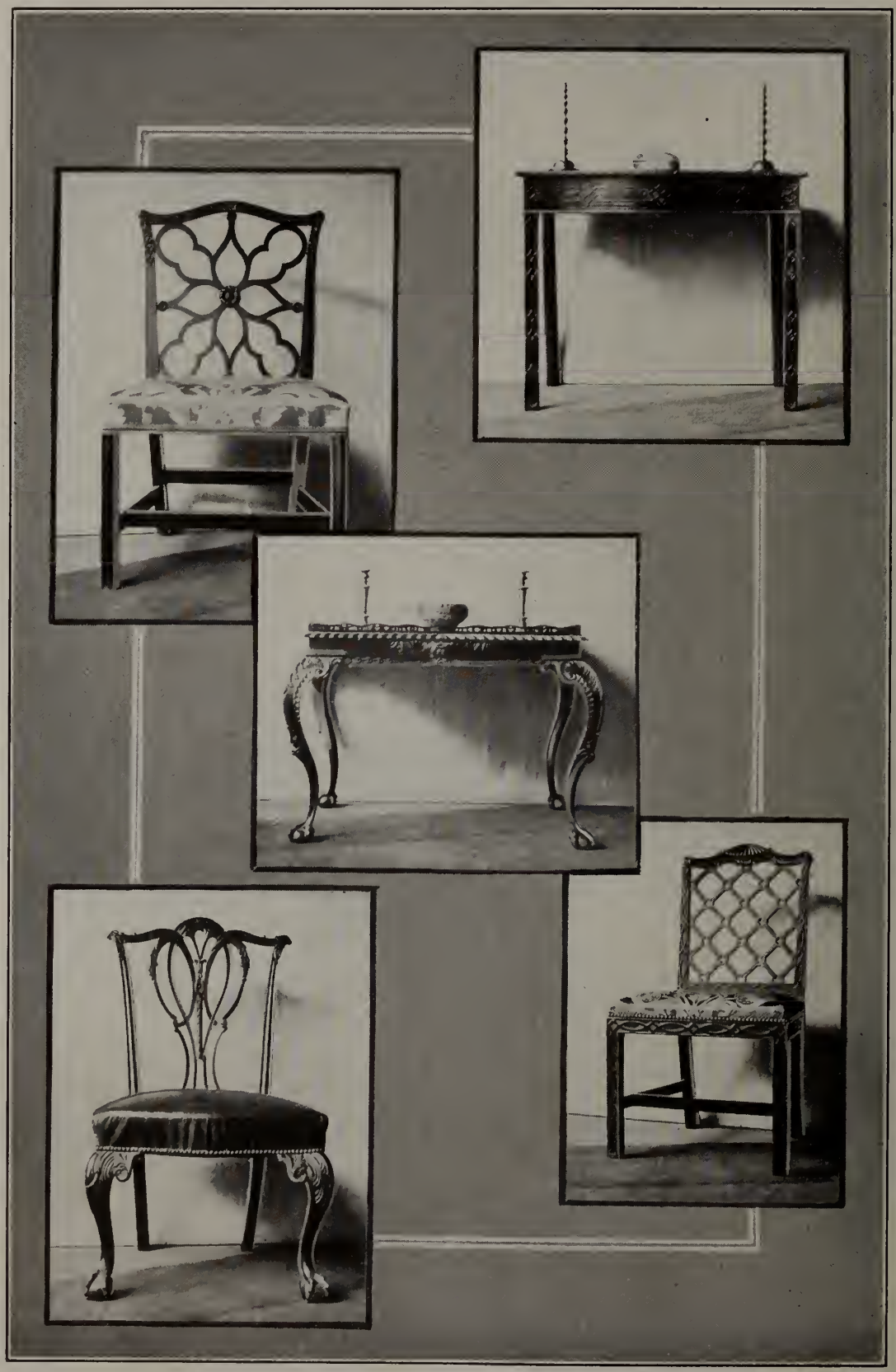
It is supposed that Sir William Chambers, the architect of Somerset House, whose fondness for Chinese ornaments produced quite a rage, and who built the pagoda in Kew Gardens, London, gave Chippendale another source of inspiration.

Hastily glancing at some of Chippendale's work, it might appear that originality was not his strong point. The claw and ball feet were not his own, he borrowed them, together with the wide seats from the Dutch or from earlier English furniture under Dutch influence. His style also shows the Louis XIV. French decoration, and in his ribbon back chairs he uses the Louis XVI. ornamentation. But Chippendale was the most perfect adapter England has ever produced; his adaptation became original under his hand. He was the Prince of chair makers; his chairs were never unsymmetrical; he knew the exact proportion of ornament that the structure would gracefully bear. The splats in chairs he made himself are of such accurate dimension in relation to the open spaces on each side that his touch alone betrays the hand of the master which was absent in the imitations of his followers.

Although his chairs were so greatly sought after on account of their great beauty of design, he made many other objects of furniture. The mirrors he designed are wonderful examples of fine wood carving. Bureau bookcases, card tables, settees, sideboards and ornamentals were made by him. These tend to show, by the diversity of technique, that there were several people at work carrying out his designs.

Shows Gothic Influence

A very beautiful Chippendale table, dating about 1750, is shown in the accompanying sketch. This has a drop-in marble top, which is an early feature of Chippendale's work. It is exceedingly effective, but unfortunate because of the great weight it gave to the table. Nothing could be finer than the skillful way the Gothic carving has been adapted to the shape of the cabriole leg. The pearl carved rings with



Beautiful examples of Chippendale's work, showing exquisite detail and proportions

the curled-over leaves below, finished on the lion's-paw feet, are quite an inspiration.

Ladder-backed chairs was another Chippendale line which appeared to have been unusually attractive. Two types are shown herewith, one in which the cross-rails are pierced and interlaced, and the other shows a plainer design of cross-rail. This latter armchair is a particularly good example of Chippendale's work. The edges of the legs, arms, back and top-rail are ornamented with a small, prettily-carved rope pattern. The set which this chair represents is a rare and noteworthy one.

A beautifully carved Chippendale chair and table

The chair with the elaborately-carved ribbon back is in walnut. This suggests a craftsman other than Chippendale, but, however, is a good copy of Chippendale's first ribbon-backed chairs. These created great satisfaction and were much sought after when first designed. The photo of the beautiful chair shown in the lower left hand corner of the large illustration is one of a pair of genuine Chippendale chairs. It has the wheatsheaf-design back, is covered with pig-skin and has hand-carved cabriole legs, with claw and ball feet. These chairs, together with the heavily-carved table, in centre, were bought from a collection in Bath, England, by the Thornton-Smith Co. of Toronto. This carved table is a splendid example of Chippendale's work, showing strongly the French influence. The Gothic fretwork, which surrounds the top, is also typical of his work.

A type of lattice-backed chair is shown with fretwork carving on legs and sides. This fretwork design is very characteristic of a large part of Chippendale's work. He also employs the lattice back in many different forms. The other chair, with rosette in centre of back, shows a strong Gothic influence in the shape of the pierced frets. This chair has a very pretty rope pattern running along the outside edge of the back. The small side table shown was another of Chippendale's favorites. It has the serpentine front. The nulling on the edge and the fretwork design on the legs, sides and front, are of great decorative value.

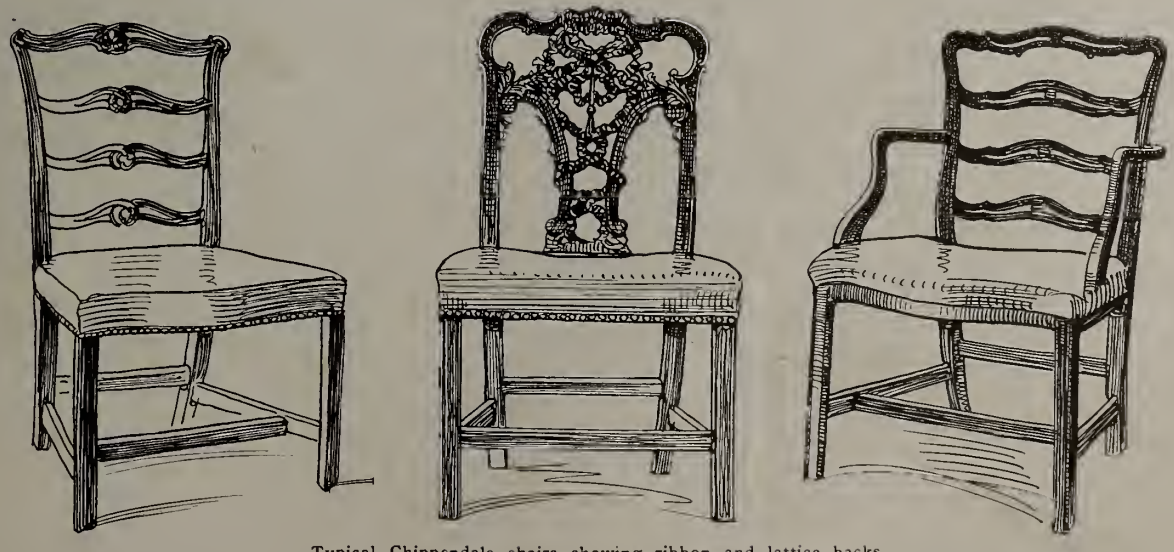
Another attractive chair and table is illustrated. The chair is one of a set of twelve which, with the table, formed part of the contents of an old English residence. The chairs are in mahogany, with claw and ball feet and are upholstered in green leather. The table is also in mahogany, with cabriole legs and claw feet. Both are tastefully ornamented with well executed and appropriately designed carving. The table top consists of two slabs of marble, one on top of the other. As intimated previously marble tops are found on many of Chippendale's tables.

Chippendale is credited, by many, with being the greatest of all the old designers. His influence is plainly seen in several of the succeeding periods.

Furniture Manufacturers to Meet

A sectional meeting of the Furniture Manufacturers' Association was held in Toronto, Nov. 2nd and 3rd. Detailed cost figures, dealing with the different grades of furniture, were presented by the cost accounting department. Present costs do not warrant any marked reductions in furniture values. It is expected that many of the manufacturers will issue new price lists the latter part of December. These will probably show slight reductions on certain items, while on other lines, in all probability, higher prices will prevail.

It was decided to hold a general meeting some time during the latter part of November, the date not having been set definitely.



Typical Chippendale chairs showing ribbon and lattice backs.

Beautiful effect secured with well matched oak veneers

Old English chairs in oak, beautifully carved.

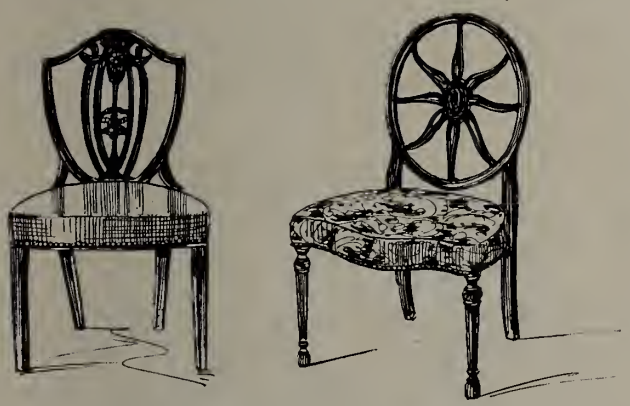
Courtesy "American Hardwood Manufacturers' Association."

Simplicity as Expressed in Furniture

Lightness and Daintiness Characterize Productions of Hepplewhite—His Chairs Particularly Noteworthy—Features and Details of This Style of Furniture

By M. N. Wright

A style of furniture very popular at the present time is that fashioned after the designs introduced by George Hepplewhite in the latter part of the Eighteenth Century. Some of these were published in book form in 1790 by A. Hepplewhite & Co. (The "A" standing for "Alice," wife of George Hepplewhite, who died about 1786.) The Hepplewhites did not claim that their designs were original, for in the preface to their book they say, "Our judgment was called forth in selecting such patterns as were most likely to be in general use



Hepplewhite chairs in ribbons and wheel or oval backs

and in exhibiting such patterns as were necessary to answer the end proposed and convey a just idea of English taste in furniture for the home."

In these designs, which include chairs with pierced backs, bookcases, sideboards and bureaus, the influence of Chippendale and certain Dutch craftsmen is very evident. The individuality of Hepplewhite's style is of a lighter and more elegant fashion to which French finesse and Adam spirit contributed their influence. His might well be termed "a school of elegance and utility." Extreme lightness characterizes the most of his work, in fact he often sacrificed strength to lightness, and were it not for the fact that his furniture was built of Spanish mahogany, a very close-grained tough wood, it could not have stood up under ordinary usage. The results achieved in this paring away were extremely attractive.

Partial to Inlays and Carvings

The firm of Hepplewhite & Co. were among the first to introduce painted or japanned furniture (a process different from the lacquer or Vernis Martin) into England. Under Sheraton this painted furniture developed into an emulation of the fine work of Watteau, Greuze and others.

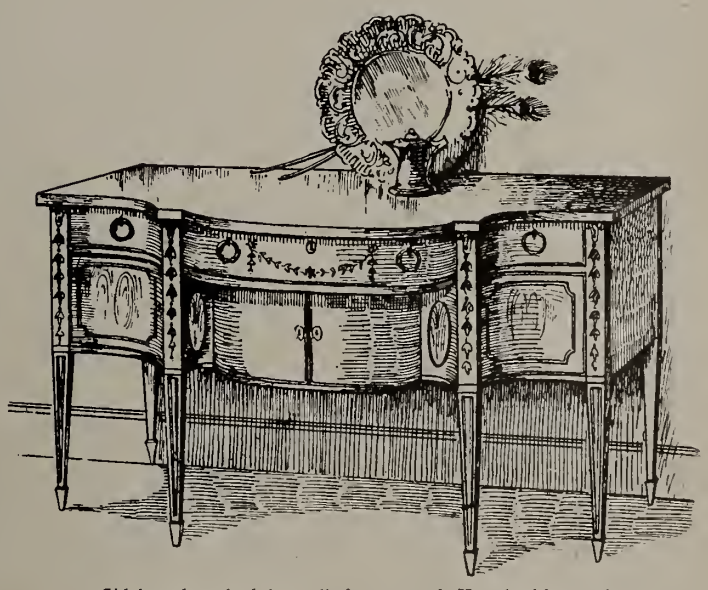
Hepplewhite was fond of inlays and carvings. His furniture is largely inlaid, with panels in the most beautiful wood and the edges usually banded. There is an absence of mouldings on the fronts of doors, drawers and similar places. A certain proportion of his product was partly painted and partly inlaid and the Prince of Wales' feathers are often found carved on the centre of the chair backs or japanned upon the splats. This japanning was a kind of painting peculiar to the East, but was not lasting in its effect.

His chairs are particularly noteworthy and are, perhaps, the most famous of all his furniture. They are usually distinguished by their oval and shield-shaped backs, but the wheel-shape, heart-shape and straight-back were also used by him. Carved lotus and bell flowers often appeared on the backs of these chairs. The sketches included show a number of typical Hepplewhite backs, including heart shape, Prince of Wales' feathers, shield-back and wheel or oval back. The Hepplewhite chair arm, including the support, is always curvilinear, being very similar to the forms appearing in Louis XV furniture, but much more slender and graceful.

Proportion and Simplicity

Some of the characteristics of Hepplewhite's style are the straight leg with spade foot, bell flowers in swags or rows, the shell, the draped urn, the lotus and the Prince of Wales' feathers. He was given to festoons and tassels in his draped work and the stripe was his favorite seat cover. This latter feature indicates that he kept abreast of the French fads and fancies. It might be well to state here that Hepplewhite seldom upholstered the backs or arms of his chairs. Sometimes he attached small pads to the arms. These were so small as to be almost ridiculous, resembling closely small pincushions.

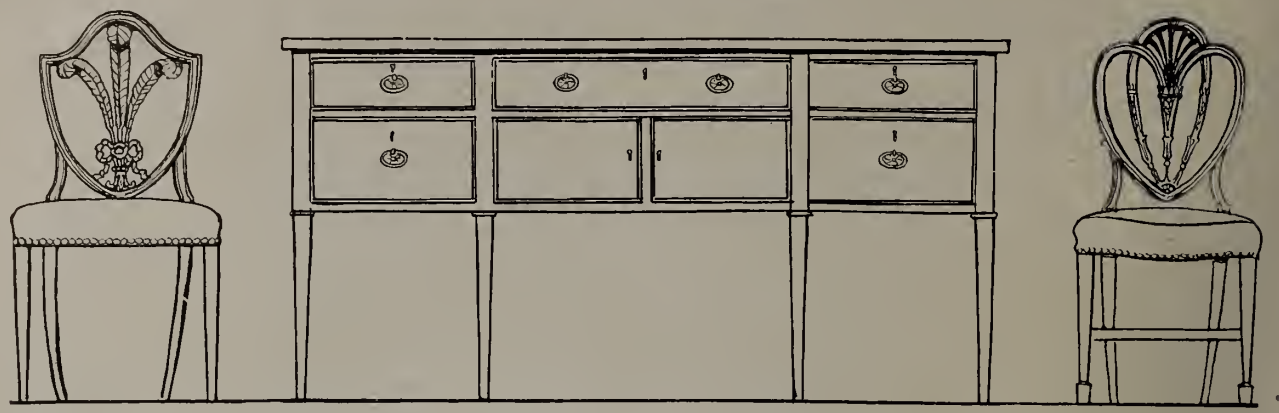
The sideboard illustrated has a perfectly straight front and is without inlay of any kind. A simple cock beading runs around the drawers and doors. The legs



Sideboard embodying all features of Hepplewhite style

are tapering but without the spade foot so common to Hepplewhite's work. The handles shown are typical of those used by the designer himself. The beauty of this piece lies in its proportions, simplicity of detail and the elegance of its lines. Proportion is rather an indefinable quality, but is that which gives the subtle charm to many of these old pieces. This sketch is the exact replica of an old model and has been reproduced by the Thornton-Smith Co. of Toronto.

The smaller sideboard shown embodies many of the typical Hepplewhite features, such as the slender tap-



Prince of Wales' feathers — An excellent design in Hepplewhite sideboard — Shield back chair

ering leg terminating in the spade foot, the festoons and swags of bell flowers and the general air of lightness he gave to all his pieces. The concave ends, as embodied in this piece, are typical of this designer. This is in contra-distinction to Sheraton, who usually made the end section of his sideboards convexed.

Hepplewhite's sideboards generally contained one long centre drawer and a shorter drawer at each end. Beneath these were usually deeper drawers or cupboards. However, Hepplewhite himself made many pieces which did not conform to this rule. The legs of these sideboards were sometimes plain and then again were ornamented with a fall of bell flowers in satin-wood and terminating in the spade foot.

The name of Hepplewhite is included by many with those of Chippendale and Sheraton as being among the foremost interpreters of the spirit of the late Eighteenth Century.

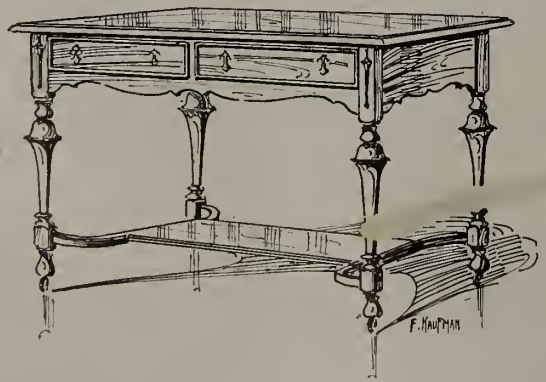
The Style Known as William and Mary

Might be Termed Transitional Peeiod—Development of Furniture in Solid Walnut —Influenced by Jacobean and Dutch Style—Turnings Used to Good Effect

By J. F. Clarke

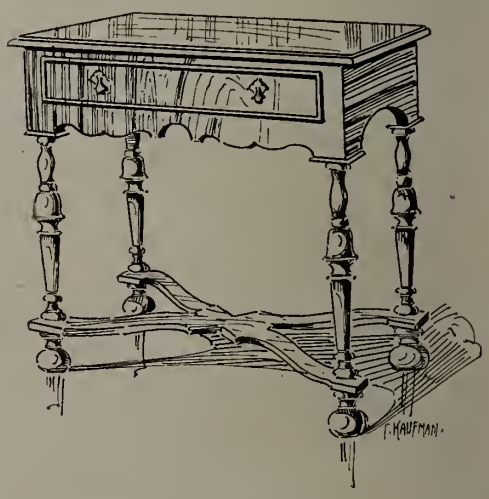
THE reign of William and Mary, 1689-1702, was notable for the great change made in the design, material and construction of furniture, owing largely to the introduction of foreign ideas by the Dutch craftsmen who were brought over by the King and his followers. This movement in art and design, English craftsmen were compelled to follow and in a manner it prepared the way for the more homely style of Queen Anne.

The beautiful English Renaissance created by Sir Christopher Wren, under the patronage of the King and Queen of the time, became the essentially English style of interior decoration associated with that period.



Modern Adaption of William and Mary

The walls of the rooms were laid off into dado and filling and then subdivided into large panels with bevels, sometimes very elaborately carved. Architraves, cornice mouldings and freizes were all executed in oak and beautifully carved. Doorways and over-mantels seemed to have received special care. In the best examples of the former, richly-carved architraves and pediments, supported by elaborate trusses, were used. High



Early English table in William and Mary style

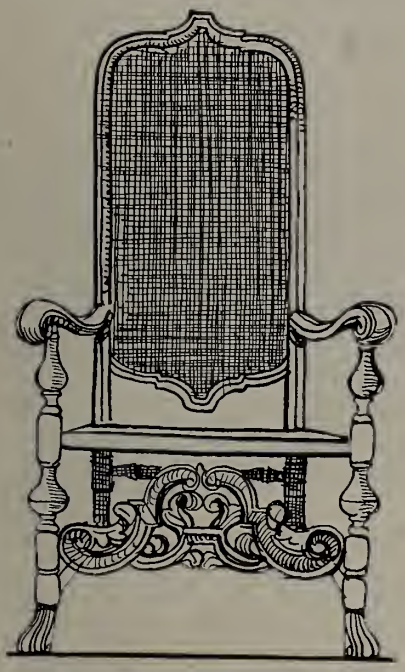
relief festoons of flowers and fruit exquisitely carved with limewood by the famous Grinling Gibbons, used as frames to pictures, mirrors or panels, comprised most of the over-mantels.

Marquetry as Means of Decoration.

In the early part of William and Mary's reign furniture was made of oak veneered with Italian walnut, banded with other woods and decorated with burl and

marquetry in naturalistic patterns or birds and flowers —the tulip being extensively used.

The use of marquetry was becoming more general. This commenced with the decoration of small objects such as clocks and similar articles. It differed from earlier marquetry in construction, which consisted of cutting spaces and fitting in pieces of different woods



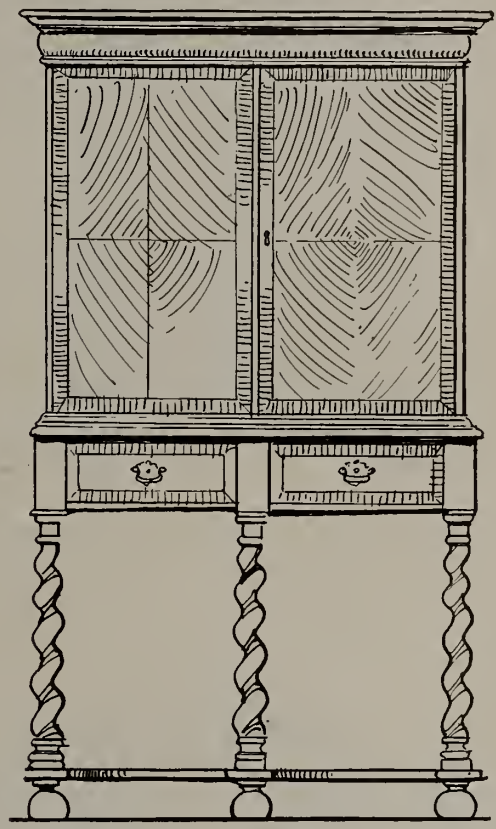
Typical chair of William and Mary period

or materials, whereas the newer method was to lay down pattern and background together as a veneer. This, of course, necessitated large flat surfaces in the furniture to be decorated.

At first the marquetry was confined to Italian arabesque and birds, somewhat later developing into the bold, Dutch style, as mentioned above. These two styles amalgamated later in the reign of William and Mary and developed finally into a series of fine acanthus scrolls and geometrical patterns of lines and burls. The presence of jessamine in the marquetry either in ivory, bone or hollywood indicates that the piece belongs to the William and Mary period.

This period might well be called a transitional period as it serves to link the Jacobean with the Queen Anne. The influence of the earlier English style and of the imported Dutch workmen is clearly seen. The Flemish chair, with cane seat and back, which was a feature of the late Jacobean furniture, was further developed. Another Dutch innovation, which was beginning to make itself felt about this time, was the cabriole leg. To a certain extent this revolutionized the design of the chair, table and chest of drawers.

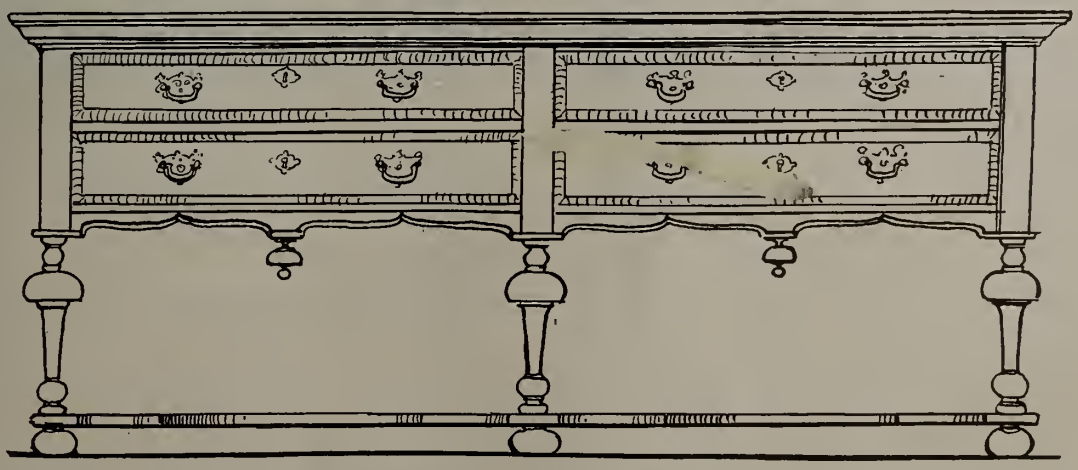
The furniture of this period developed into the glorious creations of the age of solid walnut. At the time it became very fashionable to collect china, consequently furniture had to be adapted to accommodate



Cupboard in William and Mary with tapered twist turnings

the new class of ornament. Cabinets were made to take vases, beakers and blue bowls in their shelves. The plain walnut card-table and the beautiful Dutch grandfather clock were also introduced in William and Mary's time. Lacquered furniture was another importation of William's from Holland, many eastern

(Continued on page 127)



William and Mary side table typical turnings

Two beautiful pieces from the Warwick suite of the Canada Furniture Manufacturers, Limited, Woodstock, Ont.

Queen Anne dressing table manufactured by the Meaford Manufacturing Co., Limited, Meaford, Ont.

A well designed cabinet from the Strathroy line.

Beautiful Chippendale buffet. Strathroy Furniture Co., Limited, Strathroy, Ont.

Two attractive pieces from the line of the Jacques Furniture Co., Limited, Kitchener, Ont.

Some Notes from a Designer's Sketch Book

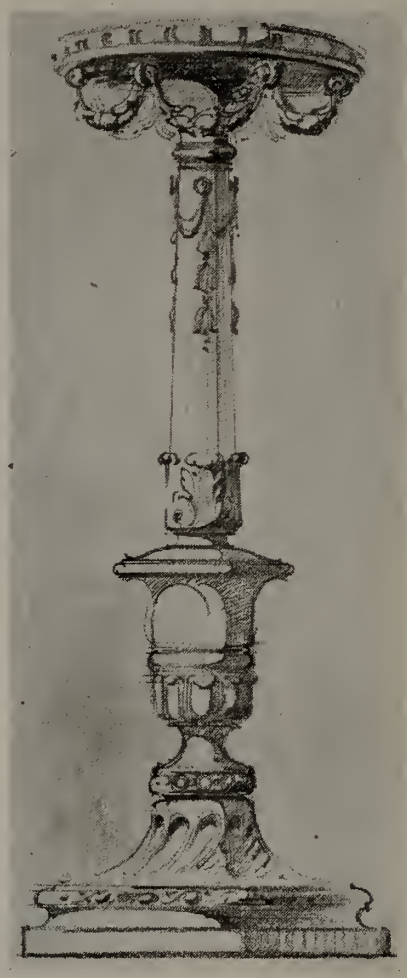
Together with a Reference to Spanish Renaissance

By G. S. L.

[The majority of our readers will recall with pleasure the article entitled "Some Notes on Art in Relation to Furniture" by G. S. L., which appeared in the Annual Furniture Number of the Canadian Woodworker and Furniture Manufacturer, last November. We are glad to be able to include in this year's special issue another article from the same gifted pen. The author, whose modestly forbids his name being used, is a well known designer of the creative order—one who has designed the furniture and interiors of many of our most noted structures. Recent commissions executed by him include the special woodwork and furniture for the Parliament Buildings at Ottawa and Winnipeg.—The Editor.]

Apart from consecutive and sustained studies and independent of the well-known styles and periods, one is constantly running across curious and unusual examples of designs, and the following types culled from notes made many years ago, may be of interest. It must be understood that these sketches are not to scale and that only the form and character of the examples have been considered.

A simple but rare type of Egyptian chair—from British Museum—is indicated in Figure 1, an interesting feature being the upholstery on seat and back. The flat painted decoration would be picked out in very definite blues, reds, yellows, etc. The general characteristics show a prototype of the Greek, the Pompeian and the Empire periods.



The equivalent of our modern lamp stand. Fig. 13.

A sketch of a very old Runic chair, from a model in the South Kensington Museum (date unknown), is illustrated in Figure 2. The main purpose of a chair is here well understood and the construction is sound and honest. The Celtic type of interlacing enrichment as against the plainness of the structure shows a proper sense of proportion and restraint—altogether a beautiful design. It could be well adapted to modern requirements—for hall or country-house furniture, say, with a little touch of gold and color to give it interest. It is a pity that these Runic and Celtic types and forms of carving and decoration are not more fully understood and developed. The flat interlacing strap-work would lend itself to an immense variety of treatments, and for carved work would not incur any wastage of material.

An Italian walnut chair, illustration 3, dating about the 17th century, from the South Kensington Museum, in which there is a sweetness of proportion and honesty of design. How few designers would have been content to leave the lower portion of the straight, back legs untouched, and note how the plain wooden seat and open space enhances the richness of the upper part of the back. Although these chairs are usually in walnut, I have seen them executed in oak, fumed and waxed only, with great success. A pancake cushion of leather is an improvement for comfort, but the wood seat has more character.

Our next illustration, Figure 4, is a Flemish chair in walnut, 1660, from the South Kensington Museum, and is a fine example of a folding chair, sturdy, but not coarse. The plain cowhide seat offsets the rich arcading and turned work on the back, and both seem properly balanced by the simple yet effective treatment of the legs.

A fine old example of the English Settle, first half of the 17th Century, is shown in figure 5. It is of oak with elm panels. The manner by which the somewhat top-heavy back is balanced by the massive legs is very clever. If the back is reduced in height or the legs made thinner, it will at once be seen how well thought out is this simple problem in balance. Doubtless the back was made high for some definite purpose, and if not the great Francis Bacon shall defend it, for he says: "There is no excellent beauty, that hath not some strangeness in the proportion." Perhaps his Lordship himself sat on this very seat. It has something of his character.

An illustration of a type of chair that used to be common in the north and midlands of England, especially in Yorkshire and Derbyshire, is found in sketch No. 6. Most examples are more ornate than the one here shown, which is sometimes called a "Cromwellian" chair. Nothing could be simpler and its austerity and efficiency would surely have satisfied the great Protector.

It may seem something of a shock to jump from Cromwell to Louis XIV., and one hardly expects to find the severity and simplicity indicated by the sketch (Fig. 7). This example is from the Musee des Arts Decoratifs, Paris. The arms are supported by turned members, but the lower parts of the legs are very cleverly changed into octagonal forms. Possibly the upper part of the back is somewhat out of harmony, yet experience shows that it is risky to take from or add to these old models. They always have the knack of seeming just right. Types very similar to this are to be found in the English, Italian and later French Renaissance.

In figure 8, we have a prototype of our modern lamp stand. It is also of Louis XIV. origin, in walnut, richly carved and guilded, very ornate and advanced in character as compared to the Louis XIV. chair, but it is dignified and well proportioned and stands with a sense of security, which cannot be said of all lamp stands. The remaining sketches are of

Illustrations from designer's sketch book.

Fig. 1—Rare type of Egyptian chair with upholstered seat and back.

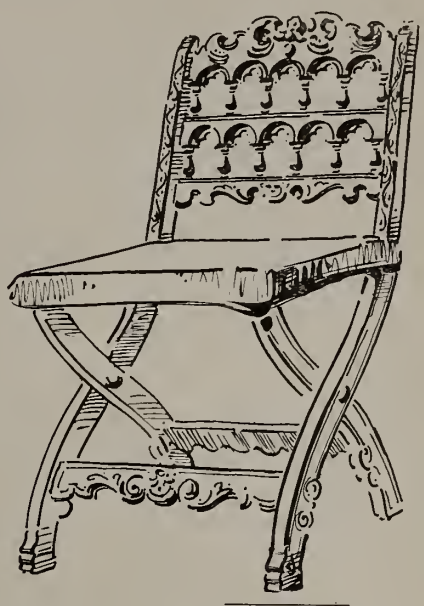


Fig. 4—Flemish chair, in walnut, dating 1660.

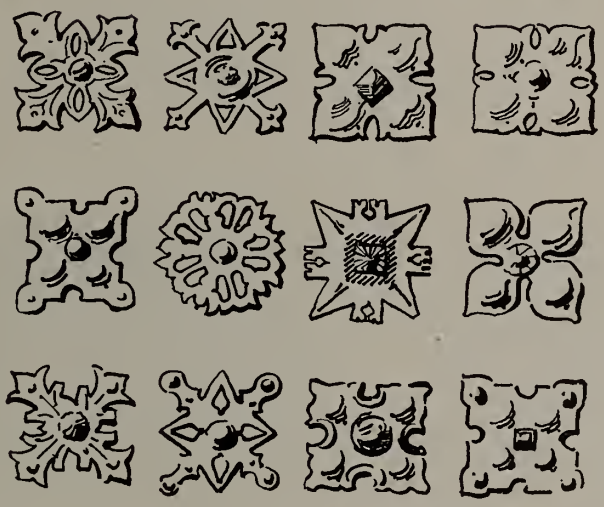


Fig. 15—Examples of nail-heads used by old Spanish craftsmen.

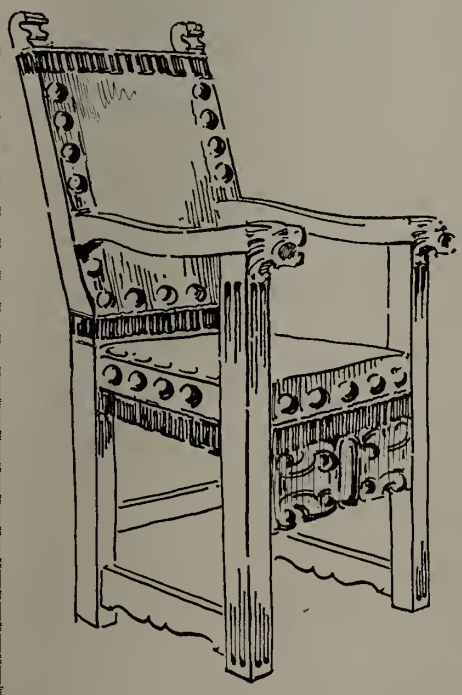


Fig. 9—Spanish Renaissance chair embodying simplicity and sturdiness.

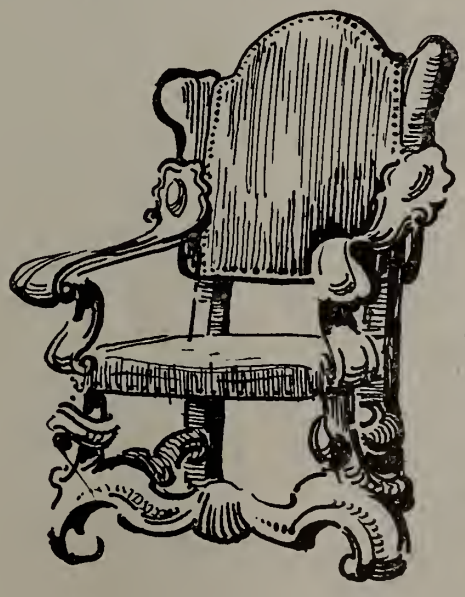


Fig. 11—Quaint old 17th Century chair from Salamanca.

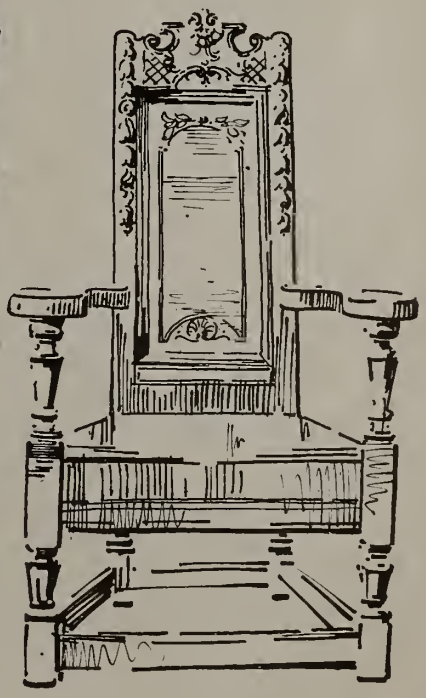


Fig. 7—Louis XIV. chair. Note how legs are changed to octagonal form.

Spanish Renaissance furniture, of which not a great deal is known. Indeed until the last 20 years little was known of Spanish Renaissance architecture. Andrew H. Prentice, the English architect, made a tour through Spain and is responsible for a splendidly-illustrated book of measured drawings dealing with the architecture and ornament of early Spanish Renaissance, and this work must be consulted by any designer at all interested in the subject. Indeed it is absolutely essential that a designer should have a thorough knowledge of the architecture and interior decoration of a style or period before he can attempt a proper understanding of the furniture or equipment of that style.

Simplicity and sturdiness is embodied in the type of Spanish Renaissance chair shown in figure 9. Seat and back is in leather, with the very large nails common to this period and heavy fringe trimmings. It is taken from South Kensington Museum.

The tenth illustration shows us a superior and beautiful Spanish chair from the South Kensington Museum, in carved chestnut, seat and back of embossed and incised leather, "Cordova Leather," and again the large Spanish nail-heads giving a very rich and grandiose effect. Spain was famous for its decorated leather and the best work came from Cordova. Cordova leathers became known the world over in those days. The early leather workers would imitate brocades upon their leather, using beaten silver and all the brilliant colors applied in oils or tempera. Beaten gold was used later.

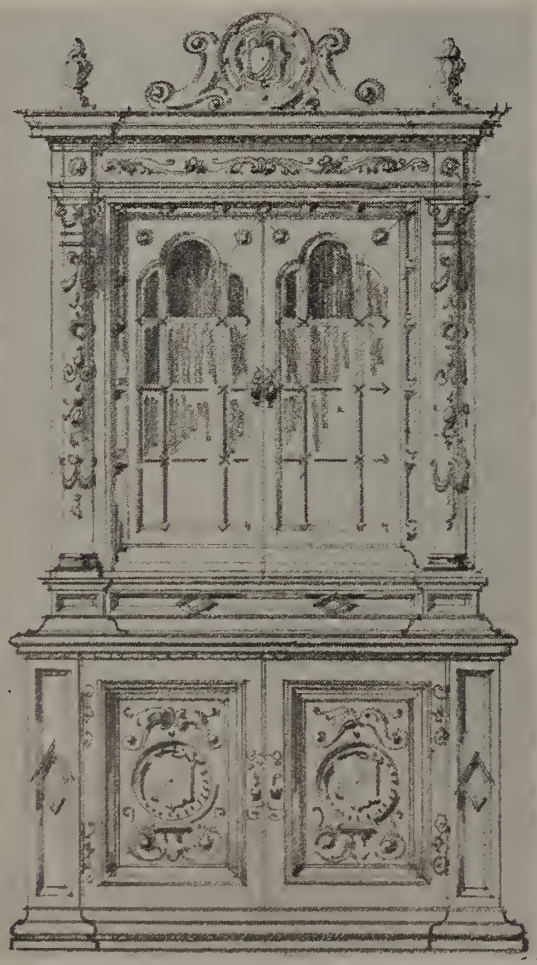
Salamanca was the place of origin of the curious old 17th Century chair found in the eleventh sketch, and while the lines are hardly sound in principle, yet there is a quaintness and character to the piece that arrests attention.

The true Spanish Renaissance style lends itself particularly well to cabinets, calling for rich and massive treatment, and figure 12 is an example of a book-case cabinet in this style. The enrichment and grandeur of these pieces do indeed recall the glories of old Spain, and furniture of this magnificence demands a proper setting.

The equivalent of our lamp stand is shown in figure 13. Its richness of detail and grace, with stability, speak for themselves.

Another example of the Spanish Renaissance cabinet is found in sketch 14, the doors of which show a very interesting and characteristic treatment by the use of ornamental nail-heads.

There are endless and beautiful specimens of these nail-heads, a few of which are shown in figure 15. The old Spanish craftsman excelled in all forms of metal work, as in fact they showed mastery in all arts and crafts, and a study of any of the work of ancient Spain will enrich the mind of a serious student.



Book-case cabinet in Spanish Renaissance style. Furniture of this magnificence demands a proper setting. Fig. 12.

Spanish Renaissance cabinet showing interesting and characteristic treatment of doors. Fig. 14.

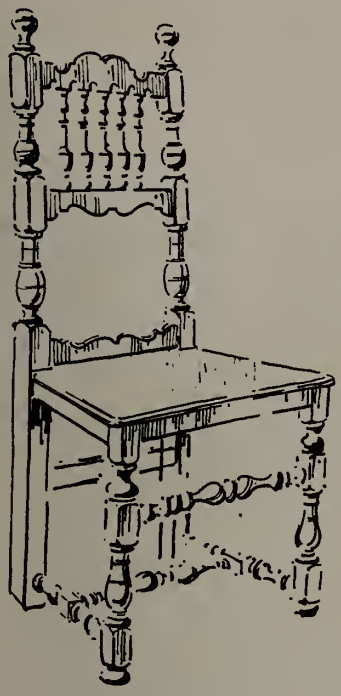
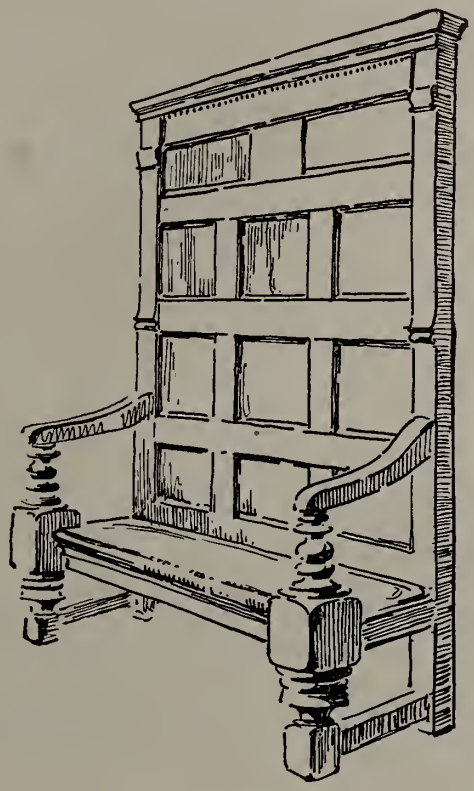


Fig. 3—A 17th Century Italian chair in walnut.

Fig. 5—English settle, first half 17th Century. Fine example of good balance.



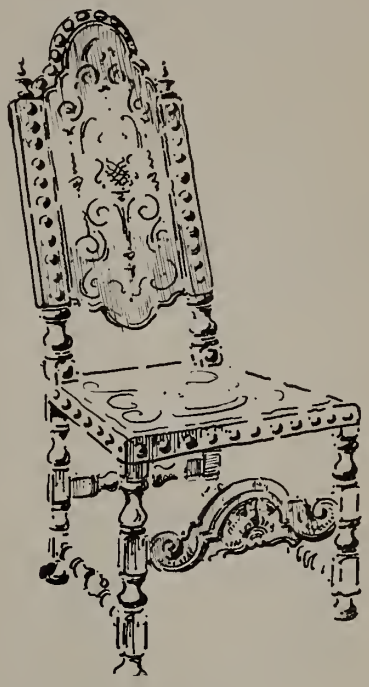


Fig. 10—Beautiful Spanish Renaissance chair in carved walnut.

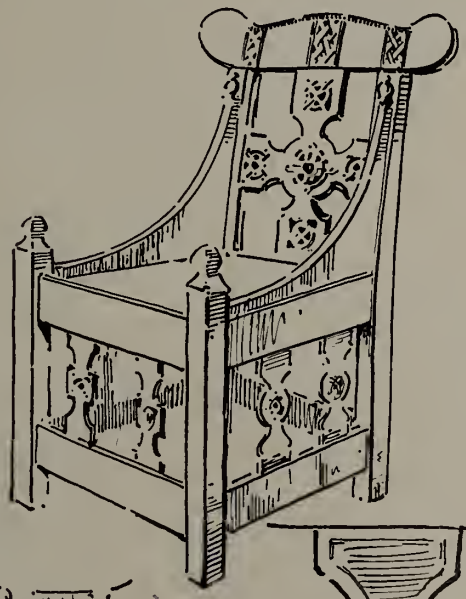


Fig. 6—An early English chair — sometimes called "Cromwellian."

Fig. 8—Prototype of modern lamp stand, in Louis XIV style.

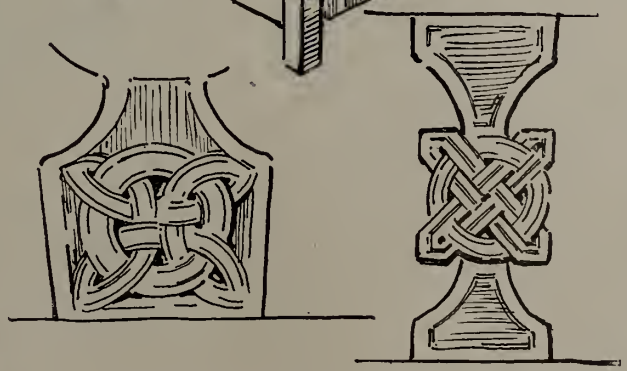
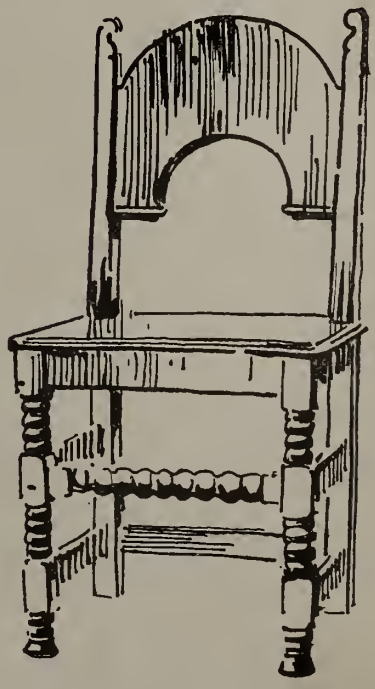


Fig. 2—Runic chair—could well be adapted to modern requirements.



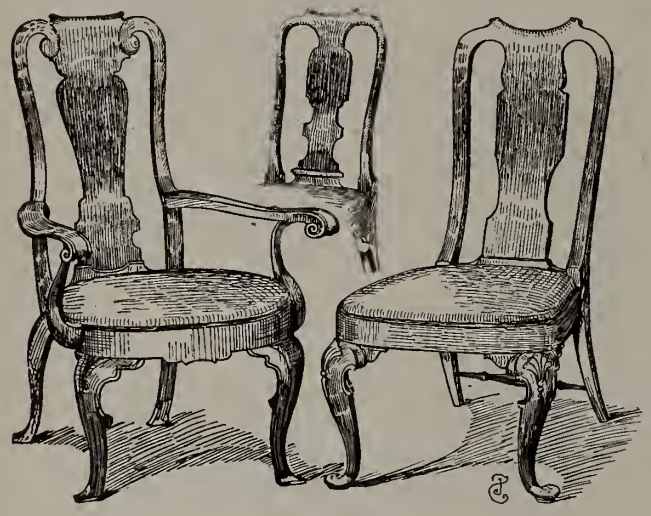
Features Embodied in "Queen Anne" Style

Influenced Largely by Dutch Design—Development of Cabriole Leg—Adapted to Many Kinds of Furniture—In Strong Present Day Demand

By C. Theodore Eichelsdoerfer*

THE style termed "Queen Anne," starting in the reign of William and Mary, and, outliving the sovereign whose name it perpetuates, was still popular throughout the reign of George I and practically the whole of that of George II.

The Dutch influence with which "Queen Anne" types are pervaded entirely revolutionized the furniture styles of the early and late Stuart times. Chairs in "Queen Anne" styles began to be shaped in accordance with the anatomy of the human frame and



Queen Anne chairs with typical backs and legs.

became not only more graceful, but infinitely more comfortable.

Cabriole Legs Become Popular

The chair first claims attention and, as the leg was the feature that underwent the greatest change, it may be mentioned here that the "cabriole" leg, which was imported from Holland, had been originally copied by the Dutch from French examples. This leg was adapted to the various positions it had to occupy, and was not only used for chairs, but for sofas, low seats and was also introduced into cabinet work, where the carcase part is raised from the ground. Here the whole leg becomes heavier in appearance than when used in chairs. Then again, when used as a table leg it was elongated, but still retained the "cabriole" form.

In "Queen Anne" furniture of the less expensive variety the "cabriole" leg was not enriched in any way, but, relied for its effect on the outline alone. The carver soon found in it a feature on which his work might be fittingly employed and we first saw the curve at the top of the leg terminating in a simple scroll. The toe, also, now began in a crude way to resemble the paw of an animal.

Carving Employed to Advantage.

On what is termed the knee or upper curve part of the leg a "shell" was sometimes carved, and, later, further elaborations followed till the knees became very ornate, and the claws, instead of merely resting on the floor, were made to grip a ball of wood. Sometimes the toe took the form of a "hoof" and occasionally the animal's paw was omitted altogether, the leg terminating at the toe in a "spoon-shape" or an enriched scroll resting on a small cushion or block of wood. Later, "Chippendale" took the "Queen Anne" forms and elaborated them considerably till the whole leg was covered with attracting enrichment.

The seats of chairs of this period are seldom, if ever, retangular, but are narrower at the back than the front; very frequently, too, the plan of the seat is curvilinear.

The easy chair came into vogue at this period and much more attention was paid to the support of the head and shoulders of the occupant. The well-known Windsor chair put in a first appearance and so eminently comfortable was it found, that it has remained popular down to the present day.

In "Queen Anne" chairs too, the work of the upholsterer was requisitioned. Until this time loose cushions had been employed on the hard seats. The fully upholstered or "stuffed over" grandfather chair, now made its appearance. The arms of such chairs are in many cases set back from the front of the seat to allow for the ample folds of the early Georgian Dresses.

"Queen Anne" and Georgian are more or less synonymous terms, the fact being, that with the advent of William Mary the Dutch forms were introduced, and so strong was their influence that the style was continued well into the time of the Georges, and Chippendale's early work was to a certain extent a highly ornamented "Queen Anne" type.

The "Queen Anne" tall-boy like the rest of the

A very attractive Queen Anne desk

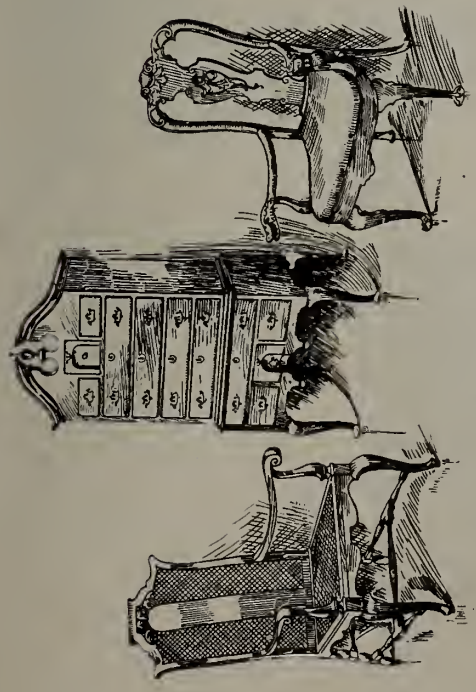
furniture of the period is fitted with the "cabriole" leg.

Drop handles were largely in use. These are exceedingly comfortable to the user, besides possessing considerable artistic merit.

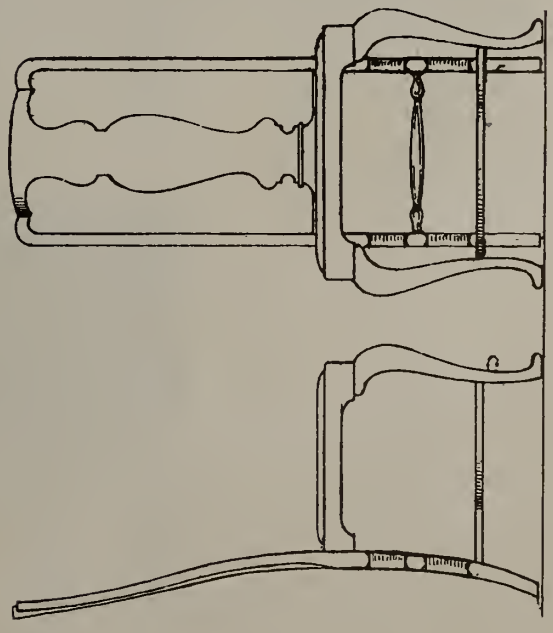
The woods employed in the manufacture of the earlier types of "Queen Anne" furniture in England, were chiefly oak, walnut, beech, and chestnut, but on the introduction of mahogany in 1742, it was, as soon as its merits were once appreciated, very largely used. Satinwood inlay too is occasionally found. For the present day demand of "Queen Anne" style furniture, mahogany and walnut are used almost exclusively.

*Consulting designer, Shelbyville, Ind.

A Dignified Queen Anne high-boy



Chairs and cabinet Queen Anne style.



Outline of Queen Anne chair showing lines of back.

Dining table from McLagan suite

SPLENDID EXAMPLES OF

Cheffonier in Queen Anne from the Meaford line

An attractive dressing table by the C.M.C.

Serving table from the Strathroy line

CANADIAN CRAFTSMANSHIP

Queen Anne suite in walnut by the McLagan Furniture Co., Limited, Stratford, Ont.

Architectural Design Adapted to Furniture

Adam Bros. were Architects Rather than Cabinet Makers—Furniture Designed to Suit their Interiors—Inspiration Drawn from Classic Arts—Their Work Marks Transition Period in Furniture Styles

By Walter Wrench, Montreal, P. Q.

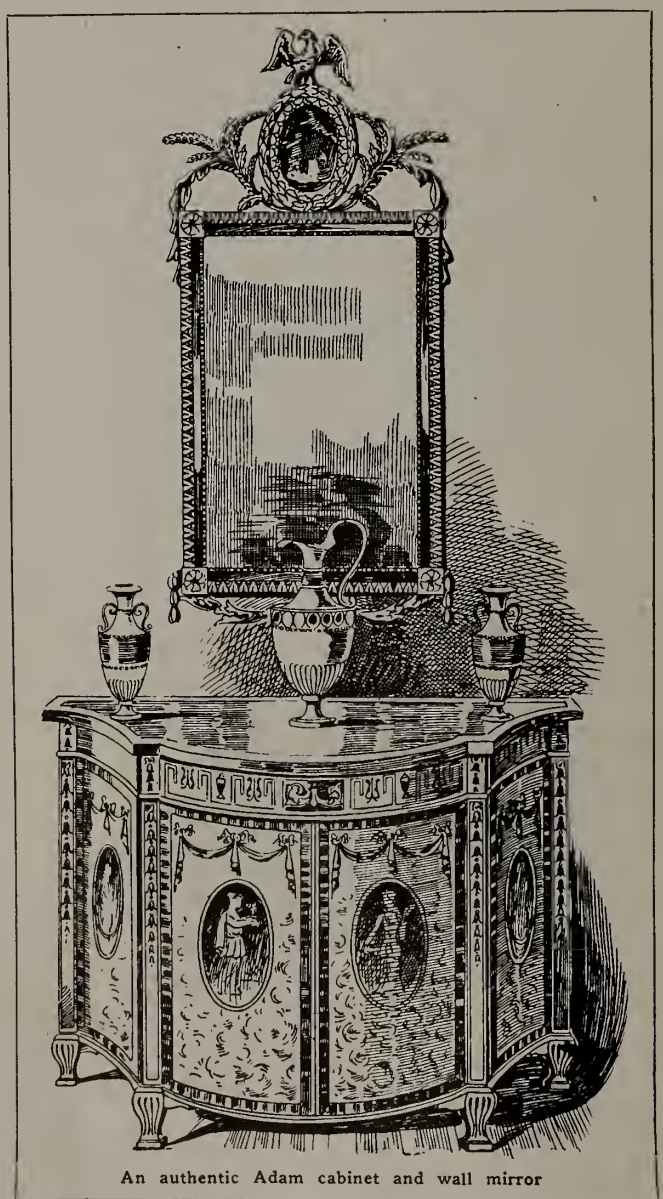
TO Robert and James Adam, sons of a Scottish architect, and lovers of beautiful furniture, we owe the style designated by their name; a style which has stood the test of time, and has today a large measure of popularity, a popularity which shows no indication of abatement. Robert was undoubtedly the master mind of the partnership, his brother, the business man of the two, while an artist of merit, had not the genius which characterized the younger man.

In order to appreciate the influences which served to mould the Adam ideals of decoration, a brief resume of the education and studies of Robert must be undertaken. He was educated in the University of Edinburgh, where he obtained the rudiments of the profession of architecture, later proceeding to Italy, he became a pupil of a French architect of note. In due course he obtained the degrees of F.R.S. and F.S.A. Whilst in Italy he paid particular attention to the classic forms of architecture and decoration, as handed down in the old, original examples, always with the purpose of mastering the pure motifs which underlie the classic Roman and Grecian styles. The rediscovery of the Neopolitan citys of Pompeii and Herculaneum had centered the attention of the civilized world upon ancient architecture and there can be no doubt that Robert, realizing this, determined to turn the trend of fashion to account.

French Influence Felt

That he was influenced to a great extent by French artists is certain, since he numbered one of them as an instructor and many as his friends. As his style is contemperaneous with that of Louis XVI. it is but natural that we find many specimens of his which directly reflect the best forms of design then being popularized in France. He published his first volume on Italian art in 1764, following this work nine years later with the second, devoted almost wholly to Pompeiian forms and decorative motifs.

First and foremost, the Adam brothers were architects, (Robert Adam was appointed architect to George III), and secondly decorators and designers. Their architectural triumphs are many, among the most famous being the Adelphi, Sir Watkin Wynn's house and Harewood House. The designing of furniture came to them as a natural sequence, a desire to fabricate furniture strictly in keeping with the classic architectural style they had adopted. It is imperative then for the modern designer to realize the fundamental principles which underlie their furniture designs, — that is that they are the expression of classic proportions and motifs applied to furniture.

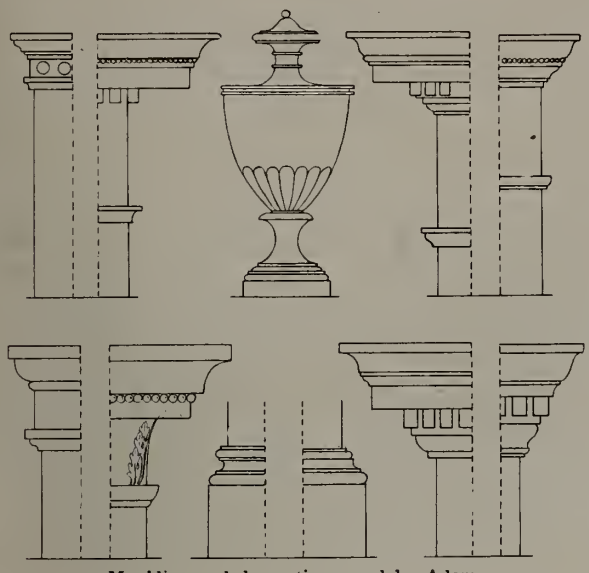


An authentic Adam cabinet and wall mirror

The Adams were architects and decorators who had turned to furniture designing in order to carry out the spirit of their inspiration in the furnishings which were to be used for the embellishment of interiors of their creation. They were not furniture makers, as were Chippendale and Sheraton, since they did not themselves manufacture furniture—it was made for them by the leading cabinet makers of the time, in London and elsewhere.

High Prices Paid

As illustrating the lengths to which the Adam brothers went to ensure perfect harmony in the interiors they carried out, let it be mentioned that it was their common practice to design, not only the furniture, but also the rugs, tablecloths and silverware to be used in the ensemble. The smallest detail was not overlooked to obtain a complete and harmonious whole, even the fabrics used for the purpose of upholstering being designed in their studio. To follow out a scheme to such detail naturally required much money, and it is certainly true that prices paid for furniture and decora-



Moulding and decorations used by Adam

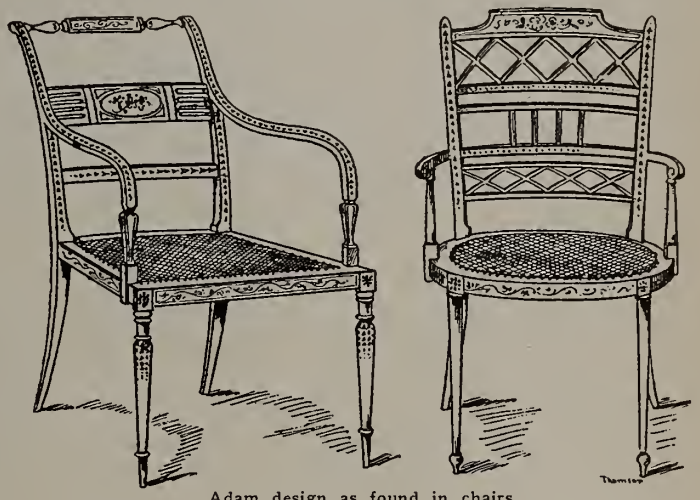
tive accessories in this era were such as are rarely paid to-day.

Lightness and Spirit of Refinement

A spirit of refinement characterizes all their work, a spirit of grandeur and dignity. The mouldings they developed were light, the members small and skillfully placed to show to best advantage under whatever lighting conditions confronted them. They made use of many of the geometric forms used in the classic styles, such as octagons, hexagons, ovals, circles and lozenge shapes. Greek and Roman vases and urns were often utilized, as also were grotesque figures and rams heads cleverly adapted in their designs, with very graceful effect. Painted panels, oval, circular and lozenge shape by Angelica Kaufman, Antonio Zucchi and Pergolesi, are to be found on many speciments of Adam furniture and in examples of a somewhat later date, Wedgewood plaques and friezes inset. Wedgewood was quick to see the possibilities of the style of the Adam brothers, as applied to pottery, and his creations, so popular to-day, followed as a result.

Carving was used as the principle form of decoration, with composition ornament as a substitute, where much repetition of the same motif occurred, as in embellished mouldings. Inlay was resorted to sparingly as a form of enrichment as Robert Adam seems rather to have preferred to simulate inlay with painted forms, obtaining at the same time thereby the same effect and a greater latitude in design.

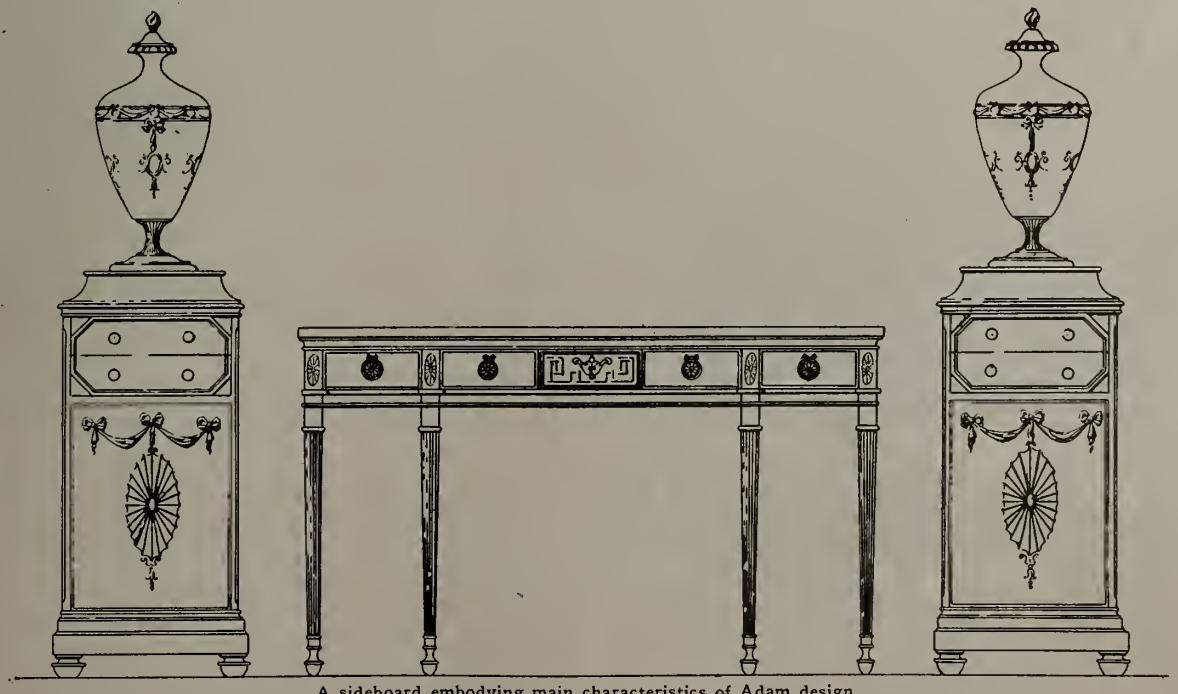
The application of veneer was skillfully planned to obtain the best results from the natural beauty of the



Adam design as found in chairs

woods used and these were the days when finely-figured woods were more common than in our own day. Mahogany was the lumber in which the finest speciments of the Adam style were made. Satinwood and Harewood also served in some cases, but for the most part only in the lighter forms of furniture, such as used in the drawing room.

The real artist in Robert Adam is evidenced in the



A sideboard embodying main characteristics of Adam design

magnificent effects obtained by him in painted furniture. By this is meant, not that furniture of his which was decorated with painted motifs, but that which was painted over its entire surface. This he frequently resorted to, to produce harmonious interiors, carrying out his wall tints in slightly deeper shades in the furniture. The carvings of such pieces were blended in with color, not necessarily of the same tone as the surface tint, but in perfect color accord with it. Mouldings, flutings and beadings were also blended in this way with very delicate and pleasing results.

The Adam brothers produced every variety of furniture. Their sideboards have a particularly stately and dignified appearance and it is this characteristic that I have endeavored to impart to the interpretation of this style illustrated herewith. The pedestal ends and knife box urns are a feature inseparable from their types. The legs of the table itself are intended to be turned and beaded, although these could be square tapered with a moulded foot, and still be quite appropriate.

Chairs as designed by Robert Adam were of many types, mainly of the rail back variety, although samples are found in which a cane panel forms the back, in such cases the seats also being caned. Usually, however, Adam seems to have preferred upholstered seats, covered with appropriate fabrics, for these types far outnumber all others, both as shown in his original designs and in authentic specimens preserved to-day. Legs of furniture in this style were either square moulded or turned, the turned legs showing great care in proportion and the spacing of members for the best effects. Fluting or beading served to enrich these members except where left plain to be decorated with painted motifs.

Since candles were the sole means of illumination in this era Adam gave much thought to the means of disposing them to the best and most artistic advantage, which he did by means of candleabra, girandoles, and brackets of beautiul conception. The explanation of the enormous framed mirrors used in conjunction with console tables by Adam, is found in the application of his principles of lighting,—it being intended to intensify light by reflection.

A Skillful But Little Known Designer

Designs of Hepplewhite and Sheraton Influenced by This Craftsman—Made Furniture for Every-day People—Plain in Ornament and Given to Curved Lines

By H. H. Rolphe.

A contemporary of Sheraton and Hepplewhite, though not so well known a cabinet maker and designer, Thomas Shearer by name, produced a line of furniture bearing the stamp of his individuality and genius. While the name of Shearer may not be so well known, it is claimed by some that the furniture of both Hepplewhite and Sheraton show the effect of Shearer's style. As one writer puts it, "whether Shearer influenced Hepplewhite or Hepplewhite Shearer is a question for which we are not likely to find a definite answer, yet a considerable portion of the Sheraton style was founded on Shearer lines. The presumption is that if a man of such decided personality as Sheraton was affected by Shearer, Hepplewhite was no less indebted to this great but forgotten designer."

An attractive tea wagon by the F. E. Coombe Furniture Co.

Shearer, however, had his limitations and they are strongly marked. No contemporary designer, not even Sheraton at his best, can be held to have surpassed him in the combination of daintiness and simplicity, but he was far behind both Sheraton and Hepplewhite in the application of the more florid form of ornament. What he may have considered his masterpiece is a sideboard, the first of its kind, so far as dated sideboards go, to be really a sideboard and not a sideboard table with drawers introduced. It may or may not have been the first attempt to combine a sideboard table and the pedestals and vases which went with it into one article, but it certainly is first as regards date of publication. Its interest is, however, more historical than artistic. It effectually disposes of the idea that we are indebted for the sideboard proper to Sheraton.

Characteristics of His Style.

Shearer's furniture is thought by many to be inclined to be solid and heavy. The ornamentation is usually simple and easily carried out. A characteristic of many of his pieces is the serpentine front; in fact he tried to introduce the "ogee" or reverse curved line wherever possible. Thus some of his pieces contained very few straight lines. One would probably be correct in saying that he aimed to produce good substantial furniture for every-day use and for every-day people.

The accompanying illustration shows a reproduction of a Shearer sideboard by R. W. Folkes of Toronto. Mr. Folkes is a lover of that which is beautiful in the work of the old furniture designers and takes great delight in strictly following them both in design and construction. It will be noticed that while the proportions and general effect is pleasing, curved lines predominate in this sideboard.

In producing this piece Mr. Folkes followed the methods and construction of the old-time cabinet

A fine example of a Shearer sideboard

maker. It is what might be termed a true reproduction. The work is all done by hand, the joints are either dovetailed or mortised and tenoned; in fact, there are not any nails used in its construction. The doors and ends of the pedestals are curved or hollowed and in construction are crossbanded with crotch veneer on solid mahogany. The top, back and other heavy pieces are all made from solid wood. The curves are secured by making parallel grooves in the mahogany core and inserting small wedges. The dimensions of the sideboard are 7 feet 4 inches long, 25 inches wide and 30 inches high.

The doors are centre hung on special swivel hinges. Owing to the curve in the ends of the pedestals and the shape of the doors themselves, this is practically the only way they would swing.

Beautiful Veneer Used.

The ornamentation is very simple, consisting of small wheel scroll carvings, raised reeds and cockle-shell, together with carved lions' feet and simple carvings at the top of the pilasters. The beautiful crotch veneer in the panels and the crossbands on the rails and stiles, together with a crossband border on the top, all add to the attractiveness of the piece.

Shearer was also noted for his tables. His style generally speaking, resembles that of Hepplewhite. Sheraton admired him so profoundly that much of his style is founded on, or influenced by, this little known designer.

No Snbstitute for Hickory or Ash

No substitute has been found for the high-grade hickory and ash required by handle makers and the vehicle and agricultural implement industries. The supplies came principally from the South where the most accessible supplies have already been cut. So scarce has the supply become that large firms are literally combing the territory to secure material. It is said that five years more will see the end of the supply of the northern upland ash, which is preferred to the swamp-grown variety of the lower Mississippi Valley.

The Stvle Known as William and Mary

(Continued from page 113)

craftsmen having been brought to that country to teach their art. The claw and ball foot was also introduced from China. This was taken from the old Chinese symbol of the dragon's foot holding a pearl, and was used to a very large extent by the Dutch cabinet-makers.

Turnings Modern Feature.

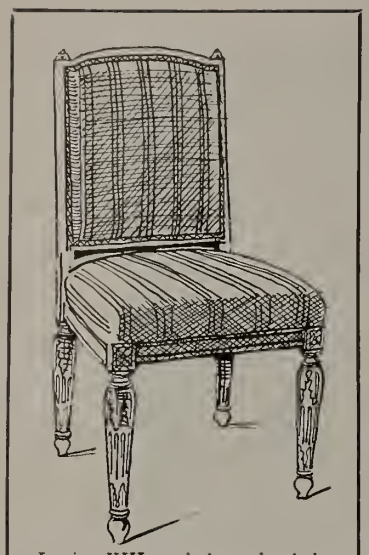
The modern adaptations of William and Mary furniture are made usually in walnut and feature largely the turnings which were used in that period. The most familiar of these is the well-known turning embodying the inverted cup. This has come to be a sort of earmark of furniture of this period. When well executed and made true to form, these go to make up prices that are very attractive.

A glance at the accompanying sketches will show that there is a wealth of material, for our modern designers, in the furniture of William and Mary. The twist turnings are supposedly a feature of the Jacobean style; yet here we have a beautiful walnut cabinet, in true William and Mary style, with twist turnings. There is this difference, however, the Jacobean twist is usually slender and the same size from top to bottom, while the William and Mary twist tapers. This is shown clearly in the illustration, the original of which is in the possession of The Thornton Smith Co. of Toronto.

Comparison of Modern Design.

The chair and the sidetable include the more familiar turnings. The chair is influenced strongly by the Flemish style. It has cane seat and back and carved oak frame. The sidetable is in veneered walnut and is typical of the furniture of that time.

Would one be safe in saying that many of our modern adaptations are an improvement over the old designs? Take the two tables illustrated in this article. The higher table shows a typical William and Mary design while the other table is a modern adaptation. In proportion, daintiness of line, detail and general attractiveness the latter piece compares more than favorably with the earlier design.

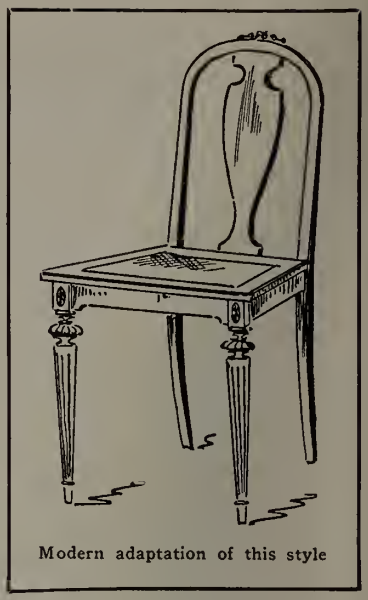


Louis XVI upholstered chair

Continental Styles of Eighteenth Century

Louis XVI. Period Influenced By Rediscovered Classics— Return to Attractive Lines and Simpler Ornamentation— Distinguishing Characteristics of Style of Furniture

By F. G. Fry



Modern adaptation of this style

The style of art and architecture known as the Louis XVI. was developed by the French in the early 50's of the 18th century, during the latter part of the reign of Louis XV. It was at this time that the buried cities of Pompeii and Herculaneum were first being excavated and the whole art world was influenced by the many classic treasures which were unearthed.

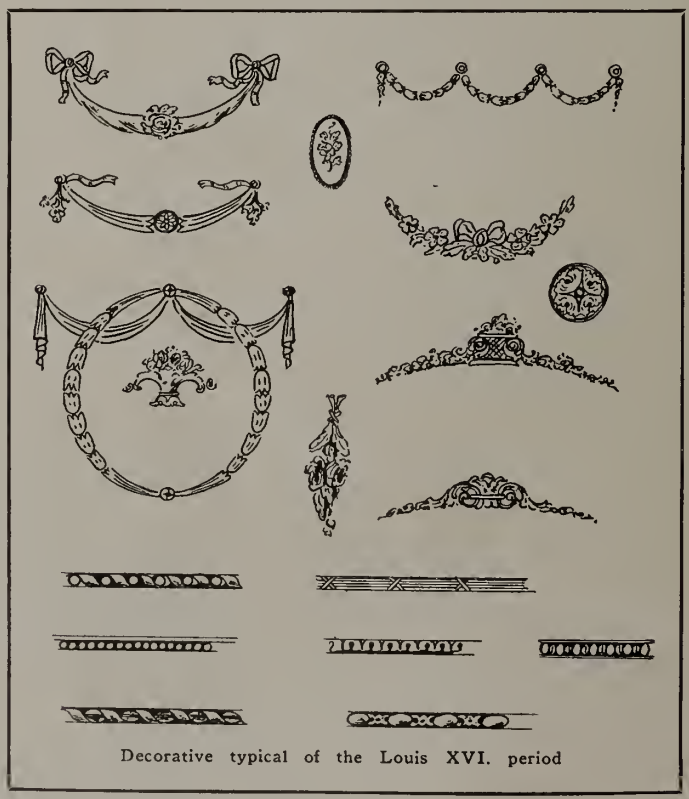
The demand for something different existed at that period, the same then as it does to-day. This newly-discovered art met with ready approval. Mme. de Pompadour, the king's favorite, was in a marked degree responsible for the popularity of the new art in France. She, being a lover of the beautiful and of an artistic temperament, foresaw the possibilities which lay in the classical lines of the new treasures and had several rooms of the palace re-decorated and special furniture made carrying out the inspiration and character of the rediscovered style.

Rococo Style Passes

The popular interest for this type of decoration increased and the designers and artisans of the time began to substitute its simple and quiet lines, in all branches of art, for the flourishing and unsymmetrical curves of the Rococo or Louis XV. style, which had been the prevailing design in art of the day in France.

It was not until during the reign of Louis XVI., who ascended the throne after the death of his grandfather, Louis XV., that the new style reached its highest state of development. Therefore it became known as the Louis XVI. style.

During the French revolution art, as well as most everything else, was destroyed, but the love of the French for fine things would not be downed. The enthusiasm for the designs in furniture and the forms of decoration for which the Louis XVI. style was responsible was carried on into the reign of the Emperors and, with modifications, became known as the Emperois or Empire.



Decorative typical of the Louis XVI. period

Some of the Features

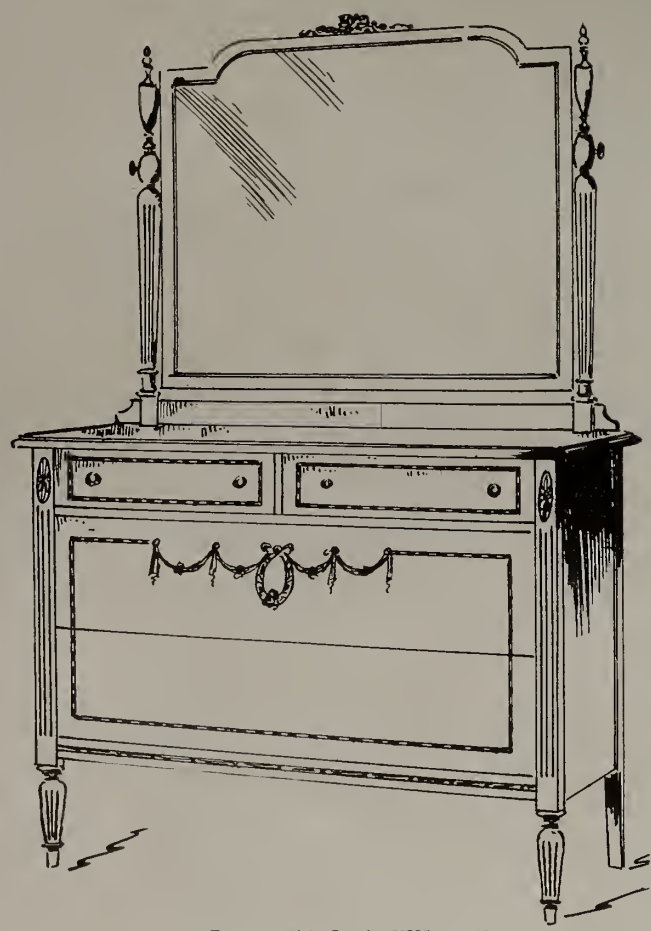
Furniture of the Louis XVI. period is readily recognized by its straight classical parallel lines and carvings. As we are dealing only with furniture we will confine ourselves to its characteristics, entirely. The legs are usually turned and fluted. Sometimes plain turned, with carvings of drops or swags draped around them. The flutes are occasionally filled with quills or bell flowers. Beading on the posts, around drawers and panels is another characteristic feature.

The carvings, which are used freely, include flowers, leaves, floating ribbons, bow knots tying flowers, festoons of flowers and leaves. Vases filled with flame flowers, fruits or a pine cone serve as a form of decoration. Carvings of different musical instruments, such as the flute, pipe, drums and lyre are used.

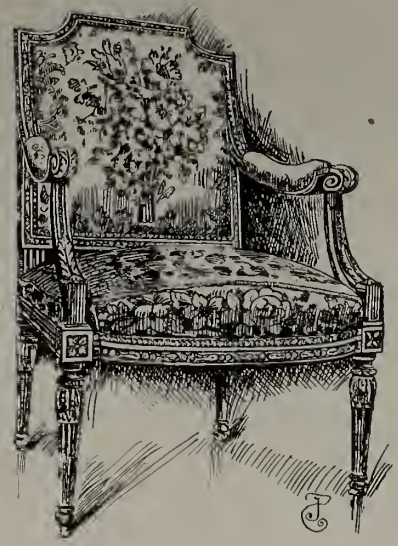
Marquetry and Inlaying

Marquetry or inlay with woods of various colors is employed, to a certain extent. The objects inlaid are the same as the carvings, and make a good treatment for panels. Hand decoration or paintings of nature studies and scenes are used on plain silk coverings for upholstered goods, as well as on wood and surfaces.

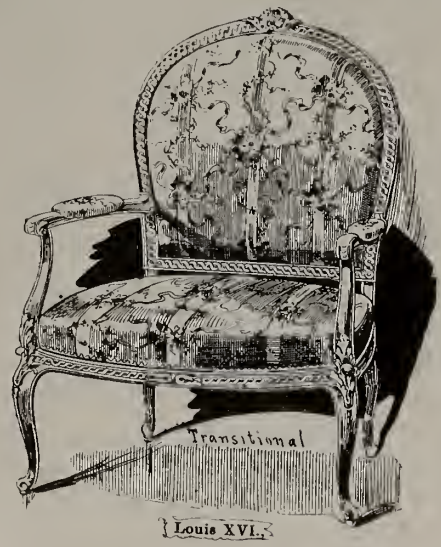
Wedgewood cameos are sometimes encrusted on drawer fronts and panels. These are found mostly on enameled goods. Mouldings are a great decorative



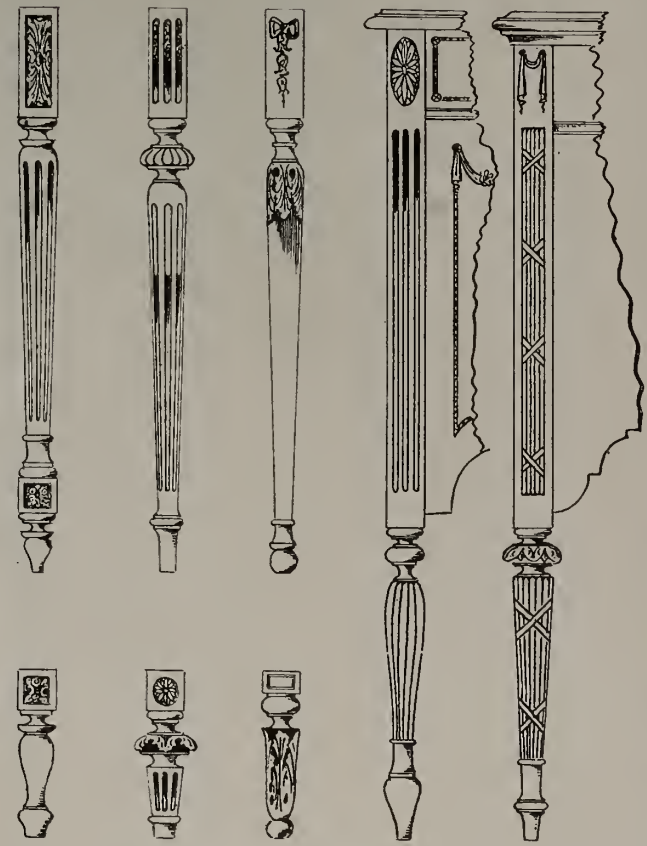
Bureau with Louis XVI motif



An attractive Louis XVI. Chair



Transitional style Louis XVI period



Designs of legs for Louis XVI furniture

factor. These are either plain shaped or of the pressed or carved variety, which include conventionalized flowers, leaves, twisted ribbon, reeds cross tied, a series of pearls or beads and combinations of these various features

Mahognay and Walnut Popular

The woods commonly employed in producing Louis XVI. furniture are mainly mahogany and walnut, finished in their distinctive finishes. A great deal of the more decorative furniture of this style is gilded and enameled in light shades of grey, green, blue, cream and rose. The most popular enamel finish, today, is old ivory with the carvings and metal trimmings decorated in colors or antiqued. The enameled furniture is usually placed in bedrooms, sunrooms and breakfast nooks. For enameling it is not necessary that mahogany or walnut be used, but any hard, close-grained wood, such as birch, that will not show a figure through the finish, may be utilized.

The metal pulls and other trimmings are suggestive of the decoration used and are finished in bronze, antique gold and silver or any other finish that the designer thinks will suit his product or that is typical of the style and blends with the finish of the furniture.

Handsomely Decorated Coverings

Silk damask, figured cretonnes, and tapestries featuring the decorative subjects together with velvet velours, plain or figured are correct coverings for Louis XVI upholstered pieces. As stated above hand paintings of characteristic subjects on plain silk of heavy texture and light colors are used for chair and sofa backs and on cushions of the more elaborate pieces of this style.

In the above article I have tried to bring out the distinguishing characteristics of our modern adaptations of the Louis XVI. style so that when one man sees furniture in this design it will be recognized and when one hears this furniture described one will have a proper conception of its appearance. The illustrations shown will help in this regard.

(Mr. Fay is a consulting designer, Grand Rapids, Mich.—The Editor.)

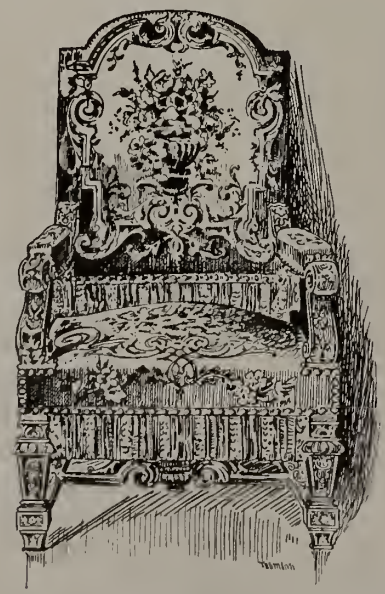
1643—In the Days of Louis XIV—1715

Greater Attention to Design and Decoration—Marquetry Executed by Andre Charles Boulle very Popular—How This Form of Decoration is Worked Out

By H. L. D.

An important chapter in the history of furniture-making is formed by the three styles known as Louis XIV, Louis XV and Louis XVI. The furniture of the Louis XIV period was characterized by bold effects, good execution and lavish decoration. That of Louis XV was of the rococo school when beauty of detail and excessive ornamentation were considered of greater importance than balance and proportion, while Louis XVI marks a return to simpler designs and a more restrained use of ornament.

The ascension of Louis XIV to the throne is said to have marked a new era for decorative arts in France. The monarch and his followers, including the nobility, went in for fine arts and luxurious surroundings. Every encouragement was given to artists, artisans and skilled craftsmen of all kinds, with the result that the furniture, decorations and furnishings of that period were raised to new high levels and skilled craftsmen were classed with artists and sculptors. Vast sums were expended for specially-designed furniture and interiors, and the more distinguished cabinet-makers of the day worked under royal patronage. A large part of the furniture produced was destroyed during the revolution but enough remains to show the trend in style and design.



Beautiful example of Louis XIV chair before curve leg became feature

Buhl or Boulle Marquetry

Probably the most distinguished cabinet-maker of that period was Andre Charles Boulle. He was a man of many talents, artist as well as craftsman, but his fame rests chiefly on a unique form of marquetry, now known as Buhl or Boulle, inlaid in brass and tortoise-shell which he used extensively.

Furniture made by Boulle was often ornamented by massive mountings of gilt-bronze. Many of the Louis XIV cabinets and other pieces were ornamented with figures in light relief,—birds, scrolls and ornamental mouldings standing out from the decorated or boulle surface.

The process used by this craftsman is not generally known or appreciated by the modern cabinet-maker, so that a brief description of the method followed should be of general interest. The design is worked out in detail, full size, from the original sketch, upon a sheet of tortoise-shell, which had been made ready. Such portions of the design as were to be worked in brass, were cut out. The same idea was followed on the brass, the design being worked out and the brass cut away where the tortoise-shell was to appear.

The sheet or tortoise and the sheet of brass, thus prepared, were pressed together. If the work had been

done accurately the pieces should fit snugly together, making good tight joints. A heavy solution of strong glue was brushed thoroughly into the crevices or joints between the brass and shell and then a piece of paper was laid on one side and the work placed away to dry

Louis XIV chair showing transitional period.

and set. When hard, the inlaid piece is laid on the foundation and the paper cleaned off. The boulle work is now ready for scraping, rubbing and polishing.

The engraving of this surface is one of the most delicate and important parts of the work. The design is, to use a technical term, "blind," until the skilled hand of the engraver gives it life and form. When the engraving is completed, a black pigment, like thick ink, is rubbed into the lines left by the engraving tools, thus bringing up all the details of the design.

Boulle work may be done in black, red or brown, and at times it is enriched with other colors, as blue or green. This colored effect is usually secured by coating the surface underneath the veneer, allowing the shade to show through the lighter portions of the tortoise-shell. Sometimes the shell was lined with gold leaf, thus securing a very beautiful effect. Some of the designs worked out were very elaborate and intricate.

Gradual Change in Style.

In the early part of Louis XIV's reign, the style of furniture was influenced by that which had preceded it. The acanthus leaf, executed in low relief, was the other form of decoration. These features, however, underwent a gradual change, so that toward the latter part of this monarch's reign, endless foliation replaced the severer handling of the acanthus leaf and the furniture produced conformed more closely to the rococo outlines.

The woods in demand at this period were chiefly ebony, walnut and with such rare species as sandal, tulip and kingswood for panels to give color and variety. Onyx, porphry and lapis lazuli were resorted to, to embellish some of the richer articles and the whole ornamented with ormolu frames and mounts. This form of ornamentation was carried a step further during the reign of Louis XV.

The accompanying illustration shows a very fine example of a Boulle (Buhl) table; really a museum piece. This table is on display on the floor of Irwin's Limited, Montreal, P.Q.

A very fine example of Boulle (Buhl)—nearly a museum piece—on display on the floor of Irwin's, Limited, Montreal, P. Q.

Period Furniture

Every manufacturer of furniture can use this interesting information

Monarch	Date	Period
Elizabeth	1558 to 1603	"Early Renaissance" "Elizabethan"
James I	1603 to 1625	"Jacobean" "Louis XIV" "William and Mary"
Charles I	1625 to 1649	
Commonwealth	1649 to 1660	
Charles II	1660 to 1685	
James II	1685 to 1688	
William and Mary	1689 to 1702	
Queen Anne	1702 to 1714	"Queen Anne"
George I	1714 to 1727	"Rococo or Louis XV"
George II	1727 to 1760	—Chippendale's work about 1754
George III	1760 to 1820	Hepplewhite's work about 1789 Work of Robert and James Adam about 1790. Sheraton's work about 1791 "Louis XVI"
George IV	1820 to 1830	"Colonial" in America strongly influenced by English, especially by Queen Anne Style.
William IV	1830 to 1837	
Victoria	1837 to 1901	"Empire" "Early Victorian"

Personal Element in the Furniture Factory

Knowledge, Initiative, Tact and Character as Important as Modern Equipment, Good Buildings and Efficient Men

By Furniture Manufacturer

IT must often have been noticed even by the most casual observer, that in the furniture manufacturng, as in many other lines of endeavor, one firm is successful, and another fails; that one concern always appears to be busy and prosperous, whereas some other is continually in "hot water." It is the purpose of this article to try and point out one of the reasons of this discrepancy, and to show why in some cases at least, where the same amount of capital is invested, the same physical conditions such as plant, buildings and location are enjoyed, that a great difference in results is experienced because the head of the concern, in one case, is a good one, and in the other case is not, or in other words, because of the difference in the personality of the management.

So far so good, few will dispute what has been said, the evidence on all sides is too obvious and too conclusive, and so in order to be of any practical use it will be necessary to indcate a few of the qualities which constitute a "good head," and how they may be cultivated.

Knowledge is Power

In the first place he should have knowledge, that is, knowledge of his business. The manager or head of a furniture factory who does not know the difference between and differing properties of vegetable and animal glue, that cannot tell by looking at it if the oak he buys is soft and easy to work, or hard and liable to check, that has not acquainted himself with the advantages of the moist air system of drying, as opposed to the hot blast system, and so on, is handicapped on the technical side of his business and should take steps to improve himself. Something that may be done by any intelligent man in a few months. So in the practical part, if he does not know what a machine is capable of doing, or how veneer can be laid in the best manner both with regard to matching, taping and jointing, as well as in the actual pressing; or the actual saving of say a compressed air rubber, over hand rubbing methods, he should do his best to improve his knowledge in this respect. Something that will take longer and require more persistent effort than acquiring technical knowledge—and perhaps not quite so vital as he can depend more upon his superintendent for this end of the business, and he will be well repaid.

Knowledge of the commercial side of his business, comprises knowing what and where to buy. What, where and how to sell. Experience, to some, is a teacher of these things, but common sense and good judgment are essential and, unfortunately, are harder to acquire. However, as it is the writer's wish to say something helpful, he would suggest that price lists of lines bought or likely to be bought be filed carefully for ready reference, that future conditions of the market for all these lines be carefully considered at regular intervals, that probable requirements of all principal lines of purchase be estimated periodically and so forth. As regards the what, where and how to sell, while this is of first and vital importance, it is so much a matter of judgment and varies so much with different circumstances that it is hard to point out to the admittedly inferior manager, if there be such, just what to do, beyond a suggeston, that whatever lines he makes, he makes them well, that he sells only reputable, reliable firms and that he depends upon the merit of his goods, and their suitability to his market more than upon price cutting to his customers or large commissions to his salesmen.

Now I find that this is an immense subject which I have tackled and so far I have only spoken of knowledge as one of the necessary qualifications in a manager of equal and of even greater importance. Many a manager has all the necessary knowledge without being an unqualified success. Integrity—or dependability is more vital. Initiative—or progressiveness— is as vital. Tact, and the ability to inspire confidence, both in his customers and his employees is also essential, and also character, comprising courage under difficulties and self-restraint in prosperity is indispensable to the really successful man.

Dependability.—Do you know of a firm of which it is said by the trade, "their goods give us no trouble," "they keep their promises of shipment," "they never misrepresent," "their correspondence is prompt," "they never sell 'retail' and so on?" If you know such a firm the chances are that you know of them as being fairly prosperous. Needless to say a reputation such as this is only acquired if the head is a dependable man.

Initiative Very Desirable

Iniative.—"A" The head of one furniture manufacturing concern is always planning "something new," his goods are up to date, his machinery is the most modern, his men are working piece work at big wages, (and his production warrants it), his fire protection is first class, etc. "B." The head of another concern has adopted a policy of "let well enough alone," and "that machine is too good to scrap," etc. It would be a pretty safe bet that "A" will be more prosperous than "B" some day, if not yet.

Tact, and character, are two such intangible, indescribable qualities that to write about them in such a way, in an article like this as to enable any reader to improve his stock of them seems hopeless, but it appears to me that tact often consists of an ability to use one's imagination, to see the other man's point of view as well as your own, and it is certainly the lack of this capacity that has caused many a misunderstanding and disagreement, and consequently the lack of success in furniture factories, as well as other places.

Character, courage, self reliance, persistence, determination and honesty. A firm's success has many a time depended on the amount of character possessed by those in authority. This is so obvious that no more need be said, so I will conclude by quoting from a poet who was perhaps too extreme in his opinion, but who had a nice idea:

"Life is mostly froth and bubble,
Two things stand like stone—
Kindness in another's trouble,
Courage in your own."

Publicity Campaign Gains Momentum

Publicity Work Commencing to Show Results—Retail Dealers Co-operating in Gratifying Manner—Let Xmas, 1920, be Furniture One

By R. G. Wells

Like a ball rolling down a hill, seemingly pushed by invisible hands, gains momentum at every revolution, so the Better Furnished Homes Campaign of the furniture manufacturers, aided by the retailers and the Canadian press, takes on added momentum with each passing day. And it is only beginning. The work which has been done is already showing returns, but fuller effects of the campaign should be felt before many months have passed.

The following extracts taken from letters sent in by furniture retailers, give some indication of the attitude of the average dealer:

> "We will surely make a point of running an advertisement along similar lines with each appearance of the Home Furnishings Bureau's ad. We have had many people speak of the opening announcement, and think that in a very short time we will feel good results from this campaign."—Ontario Furniture Co., Ltd., London, Ont.

> "We are very much impressed with the magnificent advertisements which appeared in the "Herald." The educative talk in these ads was good and could not help but be suggestive to anyone contemplating home furnishings. We intend to run special ads. in connection with every appearance of your advertisement." —Nova Scotia Furnishing Co., Limited, Halifax, N. S.

> "We believe this advertising will benefit the local trade considerably."—Harris & Barry, Limited, Ottawa.

> "We realize that this campaign will benefit all furniture retail dealers, and intend to take full advantage of it. We wish to express our appreciation of the fact that this campaign is designed and carried out to help us sell more and better furniture." — Echenberg Bros., Sherbrooke, P. Q.

> "We greatly believe in your campaign and as dealers will co-operate with you in your splendid advertising."—Crown Furniture Co., Limited, Quebec.

One of the most gratifying features of the work is this attitude of the retail dealers and the way they have fallen in with the campaign. One would think they had been waiting for some such opportunity. They have not only linked their advertising with that of the Home Furnishing Bureau, but are making attractive window displays in which they feature the campaign slogan and, in some cases, show copies of the advertisements which have appeared, and, in other ways aiding the good work in every manner possible. Letters received from several of the daily papers bear this out. They state that since the advent of the advertising campaign they have carried more retail furniture advertising than ever before.

This co-operation is necessary to the success of the campaign, and it will be fostered and encouraged in every way possible. The Home Furnishings Bureau will soon be prepared to supply advertising copy and cuts to dealers who will make use of them. Later on attractive window display cards and other forms of cards and circulars will be distributed. A number of lectures on "Home Furnishing," illustrated with lantern slides will, probably, be prepared and placed at the disposal of the dealers. A series of illustrated articles, dealing with different phases of home furnishing, has been secured, which will be given to daily and farm papers for publication.

A result, which, probably, was not considered, but which may have a far-reaching effect, is that this move on the part of the Canadian furniture manufacturers has aroused the interest of the American furniture men in the publicity campaign which they had planned. It is anticipated that the American furniture makers will launch a comprehensive publicity scheme in the near future. The effect of this will, undoubtedly, be felt in Canada, for a certain proportion of the advertising will be placed in publications which circulate in Canada, so will, in a sense, supplement the work of the Home Furnishings Bureau.

That the general public are reading the advertising which is appearing is clearly evidenced by the requests for catalogues, booklets on home furnishing and similar information which have been received by the Bureau. These indicate that a buying interest is being aroused. Requests of this nature are answered courteously and complied with, as far as possible, and the writer referred to the retail dealers in their vicinity. In addition, many retailers have written in, stating that they have made sales which were directly traceable to the advertisements which have appeared.

An effort is to be made to create a greater interest in furniture for Christmas gifts. Three large advertisements, carrying a Christmas message, have been prepared, the first of which will appear shortly, as a part of the Christmas campaign. This is certain to have the full support of all dealers. There does not seem to be any reason why Christmas, 1920, should not be a furniture Christmas.

Mr. William Cawkell
Toronto, Ont.

The Man Behind the Furniture Manufacturers' Association

Attractive hallway finished in plain oak

TWO ATTRACTIVE INTERIORS IN OAK

The dignity and beauty of oak for the private office.

Courtesy "American Hardwood Manufacturers' Association."

General view of the factory of the St. Thomas Cabinets, Limited, St. Thomas, Ont.

Efficiently Organized St. Thomas Plant

New Labor-Saving Machines Installed—Careful Check of Lumber and Spoiled Work—Special Forms and Jigs—Output Includes Built Up Panels and Phonograph Cabinets

AN organization that bids fair to put St. Thomas on the map, as far as the woodworking industry is concerned, is the St. Thomas Cabinets, Limited, of St. Thomas, Ont. This concern, which is backed and guided by tried and tested business men, has been in existence only about twelve months, yet has succeeded in what is known as "making history."

Only a short year and yet much has been accomplished. A suitable plant has been procured, equipment purchased and installed (with deliveries as they are, no small task in itself), an efficient organization

An "American" planer installed in the St. Thomas Cabinet's plant.

got together and trained; cost-finding and factory systems installed; patterns, jigs and forms made and production entered on on a large scale. As an example of the difficulties with which they had to contend, production was being held up due to the slow delivery of a glue spreader, which had been ordered. What did the manager do but board the train for Rushville, Ind., spend several days there hastening the completion of the machine, and then brought it back with him by express. It cost over $400.00 for express, but saved many weeks of valuable time.

The equipment installed is new and modern, embodying the latest ideas in woodworking machinery. Most of it was selected from the well-known line of "American" equipment (American Woodworking Machinery Co., Rochester, N.Y.) which is handled in Canada by the Garlock-Walker Machinery Co., Limited, of Toronto. Some of the principal pieces installed are an American No. 25 straight edging saw, 3-drum endless bed sander, No. 4 band resaw, 36-inch. planer with divided rolls, 2-spindle shaper, 8-inch moulder, tenoner and other smaller but none the less necessary machines. In the cabinet room the equipment consists of a Jackson-Cochrane revolving clamp carrier, 3 belt sanders and a drum sander.

It was found that owing to the difficulty experienced in securing satisfactory deliveries of veneers and panels, the most satisfactory way of insuring a dependable and adequate supply of this material was to equip a veneer department and manufacture their own. Accordingly a panel plant, consisting of a Jenkins veneer jointer, a Preston (Black Bros.) veneer taping machine, Farquhar hydraulic press, Francis glue spreader and Capital veneer cutter, was installed. This plant gives a daily output of about 2000 ft. of 3 and 5-ply material. Perkins vegetable glue is the adhesive employed in this department. This output is greater than their requirements so they have been disposing of the surplus to other panel users.

The lumber for the core stock, posts and mouldings, is all thoroughly seasoned before entering the breaking-out department, the drying being done in a Sturtevant compartment kiln. A Powers regulator was recently installed to automatically control the temperature in this kiln, and needless to say it is giving every satisfaction.

Lumber Carefully Tested For Dryness.

The stock is dried down to a moisture content of 4%. It may be of interest to note that in testing the lumber, the core and outside or shell are tested separately. They must both show the same moisture content before the material is taken from the kiln. This is an excellent idea. As explained in an article which appeared on page 49 of the March "Canadian Woodworker," a piece may have an average moisture content of 5 per cent. while the centre section itself might contain as high as 15 per cent. moisture. If such a piece were to be run into mouldings for phonograph tops or similar work warping would certainly ensue.

Another advantage of this method of testing is that should a test show too great a variation between the

core and shell, it would indicate that the air in the kiln was too dry, causing the outside to dry too rapidly. When this condition is found to exist, to prevent checking and case-hardening, the humidity of the kiln is raised. If the difference is very great, the stock might be subjected to steaming for a short period.

A careful check is kept on all lumber used. The material required for a part or any number of parts is known. Checking the amount of lumber required for a certain number of pieces against the number of feet brought in and cut up, gives the amount of wastage. This is carefully noted on the stock bill. All lumber is brought in on requisitions which are issued bearing the shop order number, covering that particular requirement. A lumber book is kept in which is entered all lumber received and all lumber billed into the factory. This serves as a perpetual inventory and gives at a glance the number of feet on hand covering any particular item.

Close Check on Spoiled Work.

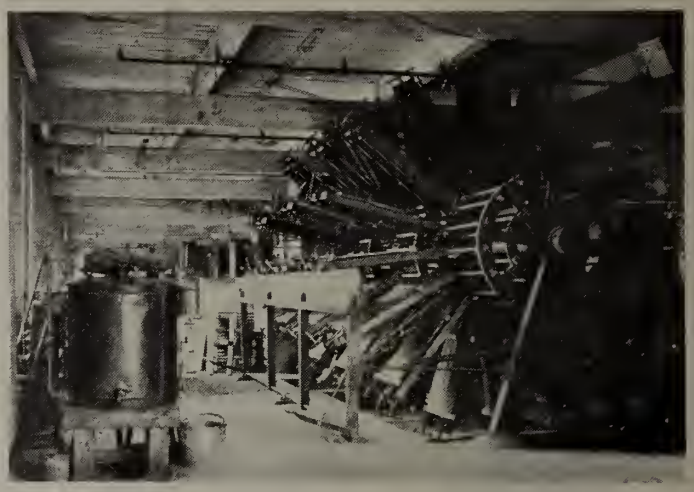
A close check is also kept on all material spoiled in process of manufacture. The different parts are checked between each operation. If some are missing or have been spoiled in the preceding operation, the trouble is located then and there. All parts for replacement can only be made on a special job order signed by the manager. This close check tends to prevent careless work, as a workman knows that he will have to account for all pieces lost or spoiled.

As soon as production was well under way, an exceptionally close check was kept on the individual cost of each part and even of each operation. This information was worked out into a set of what might be termed standard costs. These figures are used to check the costs on all succeeding orders. If the variation from basic cost is very marked, an investigation is made to determine the cause of the difference. Piecework is used to a limited extent. It has been found to work most satisfactorily. Production has been increased and the percentage of overhead lowered where it has been placed into effect.

Jigs and special forms are resorted to wherever possible in an effort to increase production, and at the same time keep manufacturing costs down to a minimum. Thus they have special forms for clamping up the covers and glueing up the gables and cases. Where edge veneering is required on the tops, the work is done on the revolving clamps. Forms are also used in the machine shop for such operations as shaping posts, sanding the back of cover mouldings and other similar work.

Modern, Well Lighted Factory.

The factory itself is a modern brick building containing about 80,000 square feet of floor space. At the present time only about 38,000 feet of this is utilized for the making of phonographs. As the volume of business increases, more of the space will be taken over. The building is long and comparatively narrow. This means that each floor is well supplied with natural light. The lower floor, where the machinery is installed, is a concrete floor which facilitates the move-

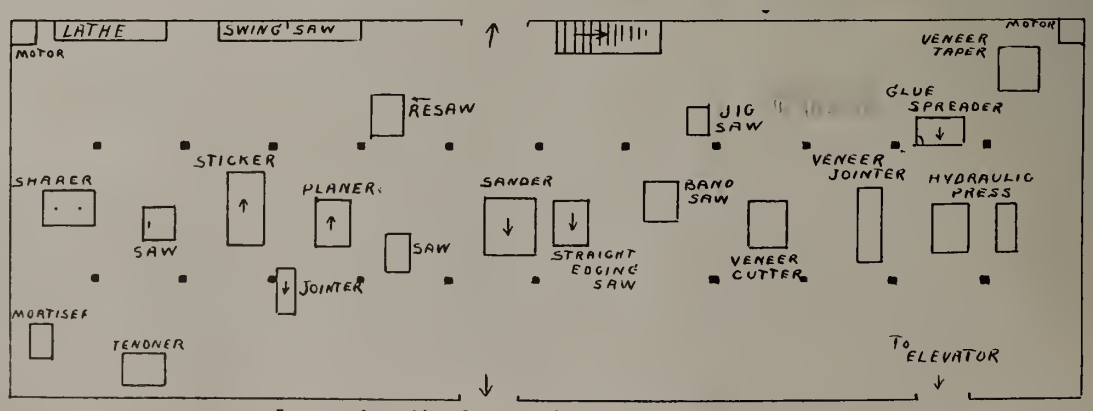


Jackson-Cochrane glue clamp in St. Thomas plant.

ment of stock by factory trucks. The shavings and sawdust are removed by a shavings exhaust system installed by the Toronto Blower Co. The fire risk is reduced to a minimum by an efficient sprinkler installation. About 135 men are being employed and the daily output runs around 40 complete cabinets as well as a number of built up panels.

The personnel of the St. Thomas Cabinets is as follows: B. F. Honsinger, president; Joseph Bone, vice-president and general manager; J. B. Woodhouse, secretary-treasurer; P. A. Honsinger and A. A. Ingram are also on the board of directors. Harry Woodhouse, who had charge of production at the Canadian Aeroplanes, is looking after this important phase of the work.

The automatic saw grinding machine saves the hand sharpener a lot of tedious work.



Layout of machine floor showing arrangement of equipment.

How Resaw Troubles May be Prevented

Shape and Depth of Teeth Important—Excellent Results when Properly Fitted—How to Make a Good Braze—Troubles Often Encountered

By P. E. Poole.

One of the more important points in the care and fitting of a band resaw is the shape, depth and spacing of the teeth. The teeth should be as short as possible and yet have room to chamber the sawdust. This will add to their strength and prevent their vibrating in the cut. A long tooth is sure to tremble when at work, and thus do rough sawing. The spacing of the teeth depends entirely upon the width of the material sawn and the feed carried. In resawing narrow strips a fast feee is carried, and fine-spaced teeth may be used. For general purposes teeth 1⅝ inches from point to point give a very good service. An 18-gauge saw may have teeth ⅜ of an inch deep; 19 and 20-gauge 5/16 inch; thinner than this ¼ inch or less. In filing the band saw the teeth must be of one length, so that each does its share of the work.

It is advisable to use a swage. The form of the swaged point is very important. The only part of the band saw blade which should come in contact with the material sawed must be the cutting edge, and this cutting edge should have clearance both in the direction of the feed and in the direction of the descent of the saw blade. Hence the swage used must form the tooth broadest at the extreme point. Otherwise the tooth must be side-dressed by hand or a pressuer side-dresser used. In fact, this is a good tool to use in any event, as by its use the swaged portion of each tooth may be brought into perfect shape. Do not use a side file.

Automatic Grinder Best Tool.

In filing, an automatic emery grinder should be used, as it will be found a tedious operation, where much resawing is done, to fit the saw blades by hand. It is also difficult to avoid square corners and if these exist fractures will be apt to start from them. The grade of wheel selected for the grinder should be given careful consideration. A hard emery has a tendency to burn the ends of the teeth. This results in a loss of temper or hardness and means that the tooth will not stand up or stay sharp as long as if the temper had not been drawn out.

It is probably unnecessary to say anything further about filing, other than to state that it is very essential, after the saw is filed, to examine each tooth and see that it stands perfectly straight, and that it has a perfect swage, namely sharp, keen corners with perfect clearance. If this is done the thinnest saw can be made to resaw perfectly the widest material. The saw blades will also be found to run a long while without resharpening, and, in short, any extra pains which are taken in fitting the band resaw blade will be repaid tenfold, both in quality of work done and in the quantity turned out before resharpening.

Troubles Often Encountered.

The matter of the setting, that is, the form of the swage, giving each tooth a keen cutting edge, and of keeping the saw straight in the back, are the most often overlooked, and these conditions have caused the users of band resaws a great deal of annoyance. In conclusion, finish up the fitting of the saw blade before attempting to run it.

The cracking of band saw blades is caused by some of the following conditions from overstraining or from vibration. Vibration may arise from any of the following causes: if the face of the wheel is out of true; if the wheels are out of balance; if sawdust and gum accumulate on the face of the wheels; uneven tension hammered in the saw blade. Then, too, the saw may be crystalized from too heavy blows with a hammer or from using sharp-faced hammers, or from the swage

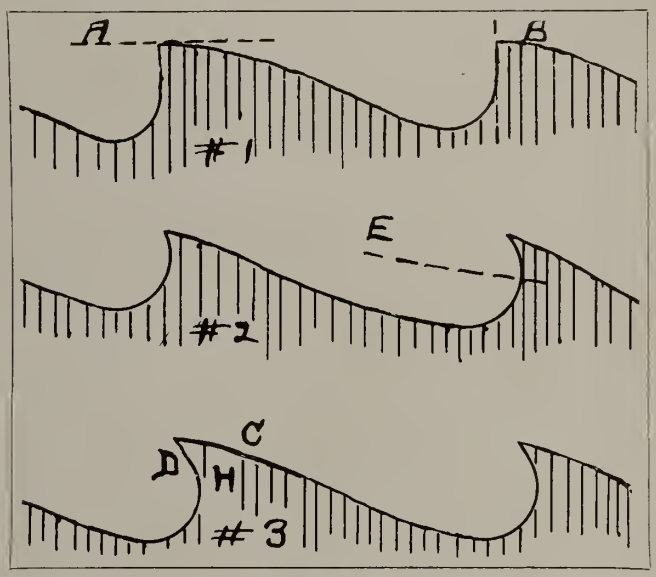


Fig. 1—No hook, rubs on back. Fig. 2—Not enough metal, weak tooth. Fig. 3—Good shape, plenty of hook.

of the tooth being of such form as to crowd the saw against the guides. The saw will also vibrate from insufficient strain. It is necessary that as near an even strain should be maintained on the saw blade as possible.

Hanging the Saw on the Machine.

See that the upper and lower wheels are adjusted one in line with the other. Place the saw blade in position, the teeth only projecting over the edge of the wheel. Raise the upper wheel and provide the proper strain for the saw blade. Turn the wheels slowly around by hand and train the saw so that it will maintain the proper position, namely, the teeth projecting half-inch beyond the face of the wheel. Do this by tilting the upper wheel. When the proper adjustment has been made, secure the shaft in this position and do not further adjust it vertically (i.e., tilt) so long as you have this saw in use.

As the saw blade becomes full or tends to crowd back on the wheel, counteract this by the use of the cross-line lever. This latter must not be abused, however, as a very slight adjustment is sufficient, "and the saw must not run in a twist." If the pitch or hook of the teeth is suited to the work done, and if the saw has been hammered or rolled to the proper tension, it will maintain its position firmly on the wheels with little or no use of the cross-line. A pitch or hook of the teeth which gives good results is about 5 inches to 12 inches in width of the saw.

The ends of the saw blades are first prepared by

filing a true taper, commencing back about ½ inch from the end and filing the saw thinner as it approaches the end, at which point it should be only the thicknes of a knife-edge, one end of the saw being filed from the outside and the other from the inside. This being done the saw should be placed on the brazing table, the back edge being brought abainst the back of the brazing table. This forms a straight-edge, and will bring the saw blade to a straight line. Now dust some powdered borax on the under edge of the saw blade, and after cleaning a piece of silver solder of the proper size slip this between the ends on top of the borax. Dust some borax as well on the silver solder. The saw now being in proper position, the ends lapping ½ inch, the brazing irons should be slipped one over and one under the saw, and the screws adjusted so that the saw blade, when clamped, lies in a perfectly level position. Now withdraw the irons, only loosening the screws enough to allow this and no more, heat the irons to a cherry red in a clean fire, again place them in position, and by means of the clamping screws firmly bring them to bear upon the saw blade. Leave in this position until cool, when the saw may be removed and the joint dressed and hammered the same as the rest of the blade.

Some filers prefer to use muriatic acid in place of borax; the effect is the same.

Getting Best Results from Saws

When a circular saw does not give satisfactory service the first thought is to lay all the blame on the manufacturer—especially if the saw is a new one. When this is done, the operator feels that he is relieved from all responsibility, so seldom makes any effort to see if he cannot find and remedy the trouble. An instance of this kind came to the attention of the writer not long ago in the case of a woodworker who had just

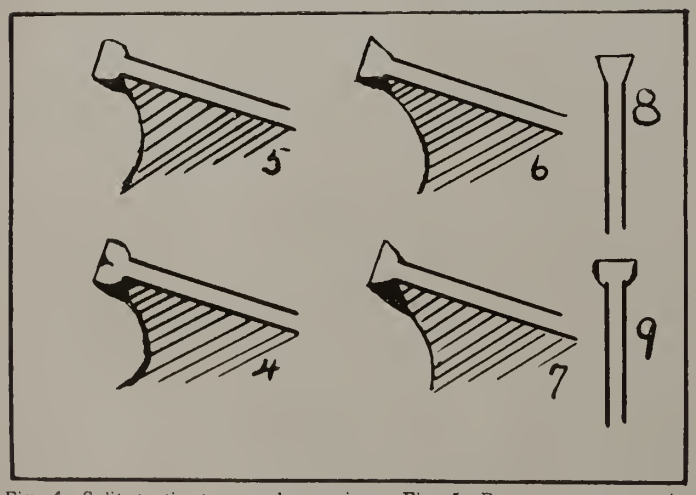
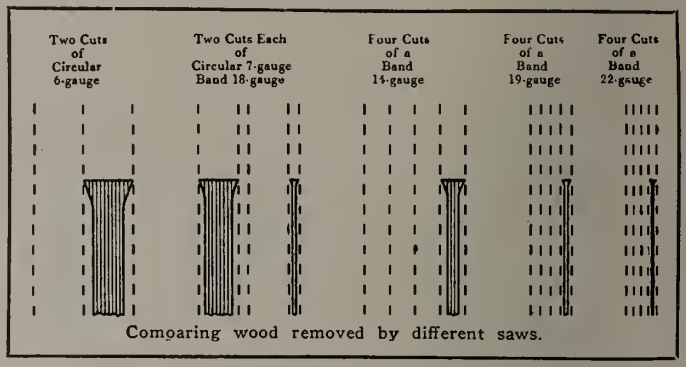


Fig. 4—Split tooth, too much swaging. Fig. 5—Poor shape, rounded corners. Fig. 6—Properly shaped and swaged. Fig. 7—Swaged too deep. Fig. 8—Keen cutting, excellent shape. Fig. 9—Poorly shaped and dressed.

received a new circular resaw. The saw was looked over and put on the machine and then the trouble started. It would not seemingly make a true cut. It snaked, wabbled, burned, in fact it did about everything that a circular resaw should not do.

Naturally the saw itself was at fault and a hurried call sent to the manufacturer. An expert was rushed out from the factory and about the first thing he noticed was the way the saw was swinging. To produce that high note, it must have been going at a good rate of speed. The speed was tested and found to be about twice as high as that advised by the makers and the speed at which the saw was designed to travel. Reducing the r.p.m. to normal had the desired effect. The operator of this machine did not know that carrying a speed in excess of that at which the saw was designed to run, affected the cutting qualities of the blade. His idea was high speed, high production.

Another instance of where a new saw failed to give satisfaction was that of another complaint recently


Two Cuts of Circular 6-gauge
Two Cuts Each of Circular 7-gauge Band 18-gauge
Four Cuts of a Band 14-gauge
Four Cuts of a Band 19-gauge
Four Cuts of a Band 22-gauge

Comparing wood removed by different saws.

made to a manufacturer. As usual, an investigation was made, for not only do the makers of saws wish to satisfy their customers but by investigating all complaints, a lot of new and valuable information is acquired. In this particular case, the purchaser of the saw had not given any information as to the exact nature of the work to be done, and in consequence the shape of the tooth on the saw sent proved to be altogether unsuitable for the work in hand. If proper information had been furnished in the first place, this trouble would not have occurred. The manufacturers of saws usually know what they are doing, and if consulted and their suggestions followed, the results are usually satisfactory.

Waste

By S. J. Faeder

A small word, but full of meaning; it can do a great deal of harm—in fact, so much harm as to break any business concern where waste continues to go on unchecked.

All of us should immediately concentrate to eliminate waste. The hardest kind of a job given to any of us becomes very easy, with a little planning and thinking of the best ways and means to do this job faster and better, so as to save time—and when you are saving time you are also doing away with waste.

In our own plant, with its many departments and so many hands, each and everyone of us should personally see to it that waste is handed a knockout blow—we can do it and we should do it. Can you imagine the loss, if for instance, one of our cutters should continually cut his covers a few inches too long, or if burlap, muslin, cambric, etc., is cut too large or even too small for any job.

Would you throw away your own money, or flitter away with your own time No honest and sane man would. So why throw away your employer's money or waste his time. All of us are being paid for our work, but none of us are being paid to make waste. Waste means ruin, and no employer could stand it very long.

Let us resolve to eliminate waste in every department, and each and everyone of us see to it personally that this waste should stop.—In Karpen Komment.

Is Enough Attention Given Dry Kiln?

Large Percentage of Troubles Due to Faulty Drying—Scarcity Air Seasoned Stocks Necessitates Improvement in Drying Operation—Method as Important as Kiln Itself—Moisture Content Governs Drying Conditions

By J. B. Mass*

TALKING with different woodworkers one often hears of new and expensive machinery being installed to accomplish certain results and, finally, after it is all done, the old trouble of imperfect product persisting. The cause of all this is, at times, never found out. I sometimes wonder how many times this investigation extends to the dry kilns and the dry kiln operator ? Seldom, if ever, for the simple reason that so few manufacturers know a great deal about what might be termed the very heart of their plants.

How long could a manufacturer of wood products stay in business without drying facilities, and yet how little attention is paid to the proper method of drying. In the good old days, that have now passed, lumber that was air seasoned for from one year to five years was very abundant and naturally was easy to get, but since the war period it has been practically impossible to obtain air-seasoned stock, unless it is seasoned in your own yards. How many manufacturers can afford to tie up their money in stock at the present high costs ?

It seems more logical to me that the manufacturer should install modern drying facilities so as to be able to dry his stock directly from the saw or the car, and at the same time get his lumber out in condition that far surpasses air seasoning and, in fact, puts the wood stock in as near perfect condition as anyone could hope for. It is then very evident that the money tied up in stock can be quickly turned over and a larger volume of business done on a smaller capital.

*Engineer, National Dry Kiln Co., Indianapolis, Ind.

Importance of Efficient Operation

But with all the advantages embodied in up-to-date driers, due to the untiring efforts of the dry kiln manufacturers, it is of little avail unless the dry kiln is under intelligent operation. Let us suppose that in one of the annual speedway events two cars of exactly the same horse-power, weight, etc., were entered, and that some driver who knew his business, (let us assume it is Ralph de Palma), were to drive one car, and that another man, absolutely unfamiliar with a motor car, and least of all, in racing this car, were to drive the second car; on which would you bet your money ?

The same is true in operating a dry kiln. Unless the operator knows his business—when to apply more heat, more humidity, more circulation; how to overcome this and that condition—he most certainly cannot attain the best results.

Now, in answer to this some manufacturer will say: "Why, So-and-So has run dry kilns for years; in fact, his father ran our kilns before he took hold of them; and certainly he must know what he is doing." Yes, he ought to know, if he has kept in touch with recent developments, but it often happens that he has not. Remember that in the past, when your stock

An installation of National Automatic Humidity Controlled Dry Kilns at the plant of the Ford Motor Co., Detroit, Mich.

reached the kiln it was so well air-seasoned that poor operation could not hurt it much any away, and the results were, and could not help but be, fairly good. To-day it is different, as stated before, and the result is that the man who, in bygone days ran the kilns is never suspected of being behind the present trouble. When trouble arises the cause is looked for in other parts of the factory, with the result that thousands of dollars are spent on new manufacturing methods and machinery, yet without sufficient return to justify this expenditure.

Necessary Features in Kiln-drying

Mr. Woodworker, look at your kiln and the operator. Old kilns that are lacking in some of the fundamental drying principles certainly have to be remedied by either remodelling them or installing an up-to-the-minute kiln which contains these principles. These principles, although being but few, in fact, only three, must be such that they follow the laws of physics, and for all of this must be under absolute control of the operator. Right here let us bring up our previous example of the automobile. Suppose we had all the power we wanted, but could not control it. It would be of little avail to have this power if, in emergency, we could not control it. Likewise with the kiln. Besides having the three principles which are necessary, these will not suffice unless we can use them to suit varying conditions.

Getting down to drying, will say that these three fundamental drying principles are: 1. Heat, in sufficient volume. 2. Circulation, and this in the right direction. 3. Humidity, and, besides sufficient humidity, a system that will humidify the whole kiln, rather than just a portion of the kiln.

These three fundamental principles go hand in hand with each other, and, if one is lacking, the other two are of little use. Let us suppose, for example, that we have a kiln which has ample heat, and secondly, that it has a means of humidifying the air, but that the second principle, or the circulation, is lacking. It can be clearly seen that when the heat is turned on it starts the moisture in the lumber to evaporating into the air, and, if this is taking place too quickly, we can control it by applying a certain amount of humidity to the air surrounding the lumber, and thus curtail the rate of evaporation—but air can hold only a certain amount of moisture within itself and this varies at different temperatures. Air with a high temperature can contain more moisture than it can at a lower temperature, and eventually the limit is reached, and it becomes saturated and precipitates its moisture, which falls back in a condensed form on the wall of the kiln, or on the lumber, the result being approximately little drying has been accomplished. If this moisture-laden air can be carried off by means of circulation into the outer air, you can see this is now getting to the point of accomplishing what you want, and that is to get rid of the moisture.

Why Flexibility is Desirable

In selecting a heating system it is a good idea to have the radiation divided into units, so that when a low heat is required it can be obtained by using only a portion of the heating surface, and, when greater heat is required, as the drying progresses, additional units can be applied, gaining the degree of heat required. A humidifying system, with piping divided into units, so that the steam is applied evenly throughout the drying space is considered a good feature. If this is not secured, one portion of the kiln may have ample humidity while the other portions do not get a sufficient amount, which will naturally put drying conditions slightly beyond the control of the operator.

Many will say "why need all this flexibility, as all we are trying to do is to drive some moisture from the wood?" In answer to this, I will say that although this, in general, is what we are aiming to do, at the same time there is more than one kind of moisture to evaporate, and I will try to explain what the different kinds are:

Wood is made up of cells—some simple, some complex; some running in one direction and some in others, depending on their several functions in the life of a growing tree. Some cells are in the living portion of the tree, as in the spring or sap wood; others have passed from the active stage into the inactive, and are now what is known generally as the heart wood. These cells are filled with the tree's excretions, and naturally become harder or more dense the older they are.

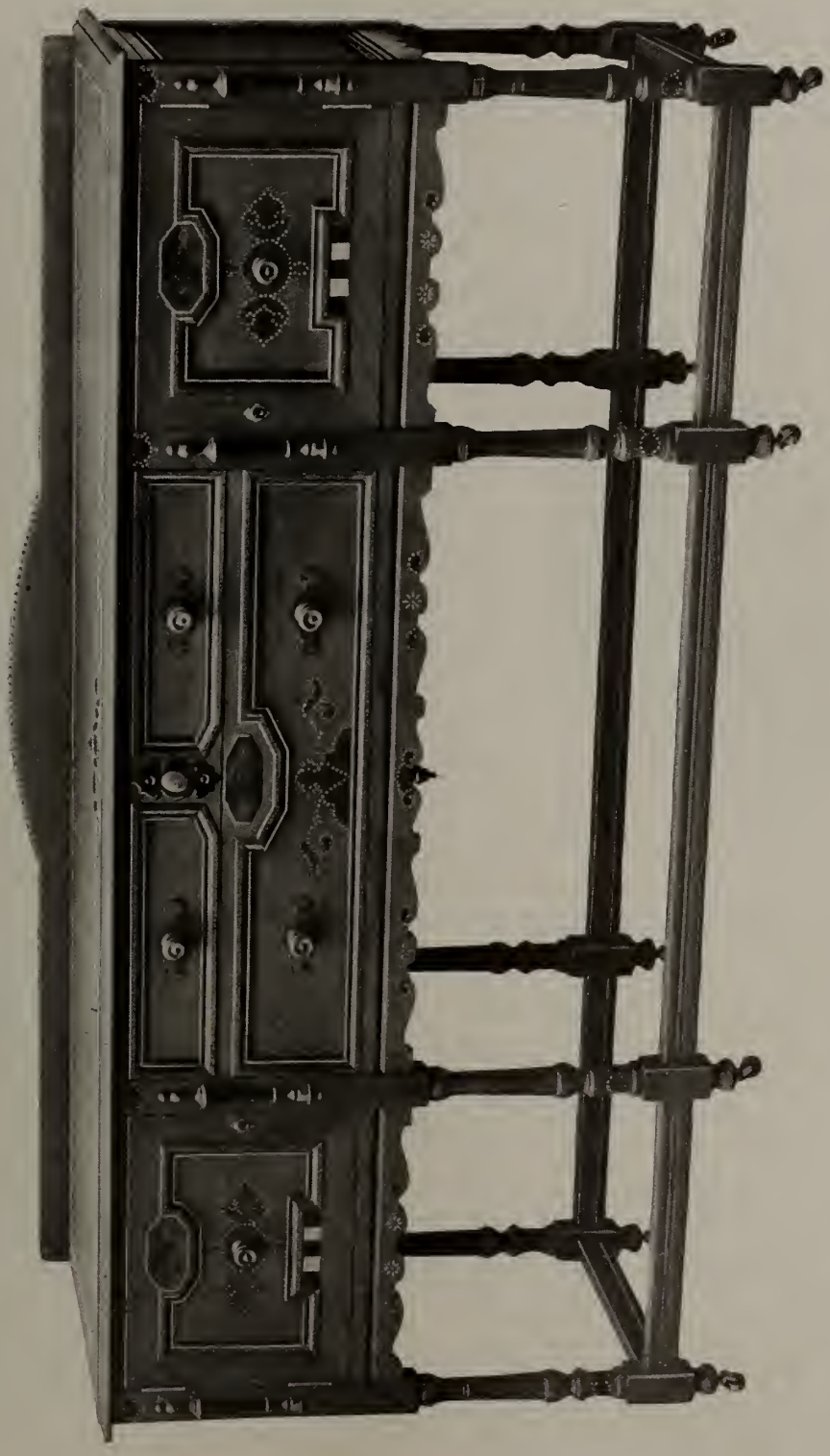
Now, in the cell cavity and in the spaces between the cells we find a liquid or water that is known as "free water," and, secondly, the cell walls, not being solid or compact membranes or tissues, as is generally supposed, are minute particles held together by surface tension with a film of water which is scientifically known as hygroscopic moisture. From experiments, as a rule, that moisture above 25 to 30 per cent. is the free water and below that is the hygroscopic moisture, or, in other words, at about 25 to 30 per cent. of moisture content we get the fiber saturation point.

Moisture Content Governs Drying Conditions

In drying this green wood, the operator must make moisture tests to determine the best conditions under which to start the drying, and at intervals through the drying period he must also make moisture and case-hardening tests to determine what heat, humidity, and circulation to carry at all periods of the drying. After the free water is eliminated and the hygroscopic moisture begins to come off, the result is a drawing together of the cell walls and in the aggregate a shrinkage of the piece being dried.

The operator must know when the water is evaporating too quickly from the surface of the piece for, if in a thick piece of stock the outside dries so quickly that the cells of surface begin to shrink before the free water has passed off from the centre of the piece, the result will be a case-hardened condition, which, if not properly noted, and taken care of by the operator, will result in such heavy stresses and strains taking place in the centre and on the surface of the piece that the fibres in the centre pull away from each other, giving the too well-known honey-combing or hollow-horned stock. Then again, if these conditions are not relieved in the drying before leaving the kiln they will be relieved in succeeding operations, with the result that the lumber will warp and twist out of shape, either spoiling the stock before it gets to the manufactured article, or else, if this takes place after the stock is in the finished article, it necessitates a new part or parts. This runs up the overhead and repair costs.

The installation of an efficient kiln, embodying the points outlined above (or the remodelling of an inefficient kiln) together with careful, intelligent operation, will eliminate much of the expense and worry common to the seasoning and manufacturing of wood.



An adaptation of the Spanish Renaissance style from the line of the Anthes-Baetz Furniture Co., Limited, Kitchener, Ont.

Malcolm & Hill on Quantity Production

Kitchener Plant Specializing in one Line—Canadian Birch Used Almost Exclusively—Advantages of Intensive Production Efforts—Lumber Yard Receiving Special Attention

IT has long been contended that the solution of the production problem in furniture factories lies to a certain extent, in greater concentration on a smaller number of lines—in a word, specialization. Focusing the productive efforts of any organization on a limited range of articles is bound to result in increased output, higher efficiency, lower manufacturing costs, together with a corresponding increase in profits. In the past furniture makers have been working on very diversified lines, and while an effort has been made during the last few years to concentrate on fewer lines there is plenty of scope for further improvement in this respect.

James Malcolm, Kincardine, Ont., Vice-President and Managing-Director, Malcolm & Hill, Limited, Kitchener, Ont.

One of the larger concerns who have organized for the quantity production of a small number of suites of medium-grade bedroom furniture is Malcolm & Hill, Limited, of Kitchener, Ont. This firm, as is well known, recently took over the furniture factory formerly operated by the D. Hibner Furniture Co., Limited. Since acquiring this property many notable changes have been made, the whole plant having been reorganized and improvements made wherever needed or wherever possible.

Design and Quality the Goal

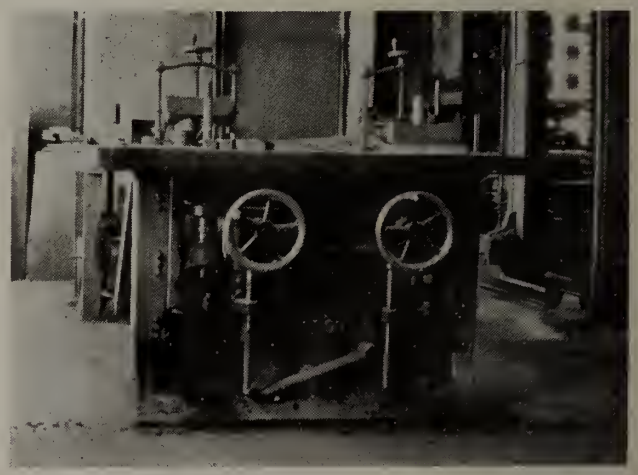
As fast as the orders, which had been accepted for the Hibner products were filled, these lines were dropped. To-day there is very little Hibner furniture going on the market. This switching of output paved the way for centralizing production on bedroom furniture. In addition to dropping the old lines, changes were made in the plant and layout that would facilitate the movement of work in the different departments and increase the efficiency of the whole organization, enabling them to turn out a quality line at a medium price.

For the present the output is confined to bedroom furniture, five suites being produced. The designing of these pieces was entrusted to Stanley H. Stirrup, formerly designer for such well-known firms as Berkey & Gay and The Luce Furniture Co. of Grand Rapids, Mich., now with the Andrew Malcolm Furniture Co., Kincardine. In the resultant product Mr. Stirrup has amply justified the confidence placed in his ability. The suites being produced are adaptations of some of the better-known English period styles, such as Queen Anne, Chippendale, Sheraton and Hepplewhite. The designs, themselves, however, show both originality and individuality. In beauty of form and line, proportion, dignity and general detail, they are a marked departure from the ordinary run of furniture having period motifs. The intention was to manufacture an exceptionally attractive line of medium-grade furniture, and while in this they have been successful the attractiveness of the designs and the quality of the workmanship and finish almost put their product in the same class as most of the high-grade furniture on the market.

Using Native Wood as Foundation

Believing that Canadian birch is the equal of any other wood for the manufacture of furniture, the Malcolm & Hill Co. have adopted birch as the foundation for their line. In this respect Malcolm-Hill furniture is, indeed, Canadian furniture by Canadian workmen from Canadian wood for Canadian homes. This fact is to be emphasized in their publicity work. Where walnut or mahogany veneer is used it is laid on a birch core. The posts, standards, frames and inside construction is all made of birch.

The suites are made in three finishes, viz., mahogany, birch and enamel. The enamel work is usually done on mahogany veneer. This is due to the fact that this furniture is a plywood product (better than solid wood). Most of the birch veneer on the market is rotary cut and is often ruptured and rough. It is, therefore, not suitable for face veneering, especially for a fine finish like enamel. Every attention is given



Preston ball bearing shaper in Malcolm & Hill plant.

to the finishing, both with regard to the shade and quality of finish. Fred. Hansen, who has charge of this department, is an expert finisher, having had many years of practical experience in different American factories where he gained an enviable reputation as an authority on color and finishing.

In reorganizing the plant special attention was given to the lighting problem. Walls and passage ways that tended to obstruct the light and darken the shop, were removed. Paint and whitewash were used liberally to brighten up, and where windows faced other outside walls, such walls were whitened to reflect as much light as possible into the plant. It is remarkable what a little white paint will do toward increasing the brightness of a plant. In this particular instance it seems to have about doubled the lighting efficiency of the factory.

Factory Made Bright and Cheerful

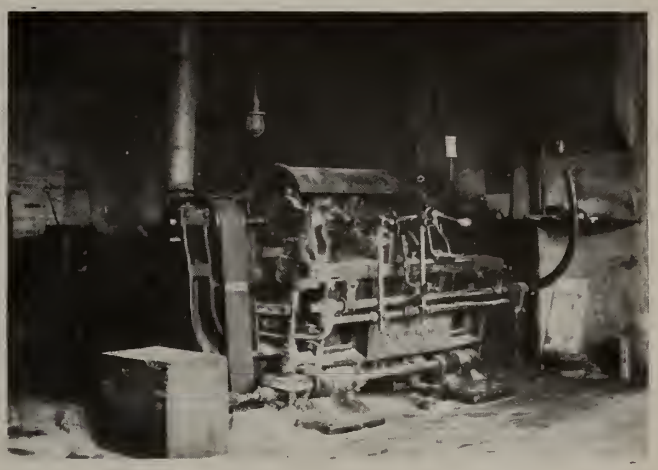
A visitor going through this plant could not help but notice the bright, cheerful aspect of every department. The windows are clean and free from obstructions, the walls white, the floors scrupulously clean and even the different lines of pipes have not been overlooked, red having been applied to the sprinkler system and the other lines painted another color. All this is not for appearance only as it has its effect on production. The workmen having a bright, cheerful place in which to work, are more contented, take a greater interest in their work and are, therefore, in a position to produce more.

The factory organization is under the guidance of S. H. Maxwell, late of Grand Rapids, Mich. Mr. Maxwell was with the Berkey & Gay Co. of Grand Rapids, for twelve years, and before that was with some of the well-known British furniture men. Thus he is admirably fitted for his present position. The practical knowledge gained in other centres should stand him good stead in maintaining his department at its highest point of efficiency.

At the present time the output is in the neighborhood of twenty complete bedroom suites per week. This will gradually be increased until a capacity pro-

Yates edging and jointing saw in Kitchener plant (one of two)

duction of fifty suites weekly is reached. At that time employment will be provided for about two hundred hands. These suites are put through in lots of twenty-five or fifty, and sometimes larger, thus taking advantage of the unit system of quantity production. Confining the output of a plant to a limited number of lines has the following advantages: Less time is lost in changing machines from one operation to another; few changes are necessary; not as many different parts to look after, the men become accustomed to and expert in, the different operations expected of them, and special opportunities are afforded for the use of time and labor-saving jigs and other special tools. Another feature is that advantage can be taken of straight line production in the arrangement of the equipment. This is a big thing in itself for it means



Mattison automatic turning lathe in Malcolm & Hill factory

that workmen are actually able to produce more with less effort and at less expense.

Special attention is being given at the present moment to the lumber yard. A series of tracks are being laid and when the installation is completed practically all the lumber in stock will be carried on kiln trucks. This effects a considerable saving in handling costs as well as reducing the loss from breakage. The lumber will be taken from the railway car into the yard, through the kiln and on into the breaking-out room without any re-handling.

The men behind this company are well-known in their respective fields. The president is Edwin A. Hill of the Toronto Plate Glass Co., Limited, of Toronto, while James Malcolm of the Andrew Malcolm Furniture Co., Limited, of Kincardine, Ont., is the managing-director. The secretary is J. H. Kennedy. The other directors are S. J. Sutherford and Bryce B. Hunter. The business-like way in which the above men have gone about the organization of this company and the reorganization of the plant, and the up-to-date methods being followed, auger well for the future success of this young industry.

Should Tenon be Sawed or Cut

We have always used saw-like score knives on tenoning machines to make the shoulder. In making tenons by hand we have nearly always used the saw on the shoulder, and of late years have resorted to the saw quite freely in cutting out the tenon body itself. Now there is offered a choice between the regulation cutterhead tenoner, and tenoning machines using saws both for the shoulder and for cutting the tenon itself.

When you stop to think of it, the saw seems the logical tool with which to cut the tenon. True, to get smooth work takes careful fitting of saws, and there is the question of adjusting the pair which make the tenon so as to get the exact thickness desired. This, however, should really be easy in comparison with the skill and patience required in grinding and fitting knives on the regulation cutterhead for tenoning.

What of the Hardwood Lumber Situation?

Is Last Summer's Market Likely to be Repeated—Delayed Buying Responsible Then, To-day Few Orders Being Placed—Stocks Below Normal with Low Production—Firmer Prices a Probability

IN the Annual Furniture Number of the "Canadian Woodworker," published in November, 1919, we gave a comprehensive outline of the hardwood lumber situation and suggested that our readers estimate their requirements for 1920 and buy sufficient lumber to cover. That advice was good, and those who acted on our suggestion saved money. Prices of the various hardwoods have apparently struck rock bottom, and the next movement will be upward. To those who find their stock running low or who have been waiting for rock bottom prices, we suggest that it would be good, sound business to purchase now. Conservatively estimate your requirements for the coming six months, or year, and enter the market before the demand picks up and prices stiffen.

Last year unfavorable weather conditions held up production so that stocks were well below normal. Buying was not general because lower prices were anticipated. When the demand did revive, there was not sufficient material to go around, with the result that buyers were bidding against each other and values were inflated out of all proportion. Delayed buying was one of the prime causes for the high values which prevailed in the lumber market.

Very Low Production

This fall all buying has stopped, the demand having fallen off to such an extent that many mills are closed down, while others are operating part time, and production is being curtailed right and left. On the other hand stocks in the different yards are not large. Some mills have large quantities on hand, while others are carrying only about 40 per cent. of normal. The lumber in the hands of the various mills in the Southern producing centres is estimated to be about 70 per cent. of normal, with production down to 30 per cent. of normal. Conditions in the Northern producing areas are very little better. Another bad feature is that logging operations are being curtailed so that when the demand revives as it is bound to do, there will not be a reserve supply of logs available from which to replenish the depleting stocks.

It is felt, by those who are in touch with the situation that prices have reached their lowest ebb. The average reduction from peak prices prevailing last spring, figure about 50 per cent. Many items are selling at and even below the cost of production. As the majority of the stocks are in strong hands, it is not thought that any further price concessions will be made. Again, it stands to reason that lumber manufacturers will not continue to cut lumber from which they cannot realize the cost of production.

Walnut is probably the strongest item on the list. This is due to the fact that walnut prices were not inflated to such an etxent as certain other woods and also because there is a fair demand for this lumber from the furniture industry, export buyers and manufacturers of interior finish. The walnut stocks in the different yards are large and well assorted. This is due to the lessened demand. However, the quantity on hand is not abnormally large and an increase in buying would tend to speedily deplete it. The supply of walnut logs is low, being about 20 per cent. of the quantity on hand this time yast year. Owing to the fact that the manufacturers have large stocks in their yards, the production of walnut logs has practically ceased.

Walnut to Hold Firm

The present market prices of this wood are likely to hold. Practically all walnut mills are in a position to carry the stocks they have and as the production of logs has stopped, there is not much likelihood of an over-supply. Thus it will be seen that walnut is in a fairly strong position.

Oak and Gum are not so favorably situated. The demand for these woods is at at very low ebb. Production is being curtailed in the wood as well as at the mills. With production about 25 to 30 per cent. of normal and a large proportion of the mills closed down indefinitely and an absence of buying, these woods are in a very weak position. Available stocks are well below normal, being about 65 or 70 per cent. of the quantities usually in the yards at this time of the year. With prices at or near the cost of production, and the majority of mills closed down, rather than operate at a loss, it would appear as if the lowest point in lumber prices had been reached. Prices may not revive immediately, as that depends on increased buying, but it is a foregone conclusion that higher values are bound to prevail.

Opinion of Wood User

That this opinion is held by some of the trade is illustrated by the following extracts from a letter sent in by a large furniture manufacturer.

"In our opinion, several of the hardwoods, such as Oak and Gum, are now lower than a normal figure and we anticipate an advance sometime next Spring, as we do not believe that these woods can be produced at the figures at which they are being sold at the present time. We do not look for any material drop in the price of native lumbers, such as elm, basswood, birch, maple, etc. With regard to walnut, which is what we use more than any other high class wood, this has not dropped any in price as yet and we do not look for any reduction."

In Canada the same condition holds true, though to a lesser degree; with regard to such local hardwoods as birch, beech, maple, basswood, elm, etc. The demand has eased and slight price reductions have been made, but on the whole the hardwood situation in Canada is much better than south of the line. At the present time prices are firm and are not likely to go any lower. Available stocks are below normal and owing to the uncertainty and the lower values, production for the coming winter is not expected to total as high as last year. Expenses in the woods this season are high, wages being above those paid last year. If this is any criterion, higher manufacturing costs will prevail.

It is in the best interests of all, both lumber manufacturer and consumer that the market be stabilized. This can be done by steady, careful buying. Delayed buying last fall and during the early months of 1920 was largely responsible for the inflated values which

prevailed during the spring and summer. Are we about to see a repetition of similar conditions, on perhaps a smaller scale?

If there is any truth in the saying that "When everybody is selling is a good time to buy and when everybody is buying is the best time to sell." Now is the opportune time to buy.

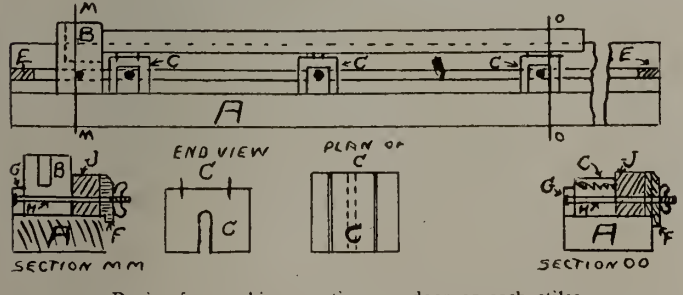
Handy Device for Marking Mortises

By Alf Paro.

The accompanying illustrations show a very handy device for laying off mortices in sash and door stiles and other similar pieces. It consists of primarily a bed piece A 1½ inch thick, 3½ inches wide and 8 feet long, on which is attached one or more adjustable stops B and a number of moveable blocks C, to which the markers are attached. The stop B has a large groove cut part-way through so as to accommodate any tenon, as thick as ½ inch, which might happen to be on the stiles or rails. This also makes provision for the marking of meeting rails and for tenoned pieces.

The marking blocks C are usually made from stock about 1⅛ x 1½ and cut to the required length. It is well to keep an extra length or two of this size stock on hand so that when an extra marker is needed it is only a matter of a few minutes to cut off a block and attach the pieces of old band saw blades which are used to mark the mortices. This is done by laying out the width of the mortice on the block, allowing 1 inch of solid wood on each side and sawing it with a ¼ inch hack saw. Care must be taken to make the cut square across the block. Next, take a short piece of band saw blade, say, 1 inch long and laying the block on a solid bench hammer this short length into the saw cut, teeth down. Be sure that both pieces are driven down level with each other. The next step is to take a flat file and bring them to a cutting edge.

A block of this kind will be required for every mortice to be made. By having sufficient bolts, the bed piece can be filled for the whole 8 feet. J is two strips ⅜ x ⅞, same length as the bed. The lower one is glued and nailed to the bed piece parallel with the back, keeping it in ¼ inch from the back edge. This is so that the shoulder on the wooden washer, F, will have a face to work against and thus be held in an upright position. Two small blocks E are nailed on top of the first strip and then the top piece is fastened in

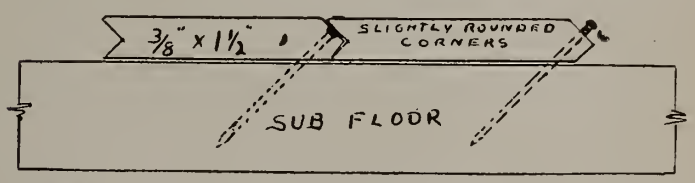


Device for marking mortices on door or sash stiles

place. Thus a groove is formed for the bolts to slide in. The washers F are made in strip length ¾ x 1½ rabbeted to provide a shoulder and cut into about 1½ inch lengths. It is probably better to bore the holes for the bolt before cutting into blocks. Washers, G, used on the front are made in the same way except that the rabbet is not required. Carriage bolts, say, 5/16 x 4½, with butterfly nuts, are used to hold the stop and marking blocks in place. The marking blocks are bored for the bolt and then cut through from the bottom. This aids in making changes as by simply loosening the nut, the block can be lifted off without removing the bolt. This will be found a very handy rig for sash and door factories.

Marketing Finished Oak Flooring

A new departure in the manufacture of hardwood flooring, one that embodies certain new and unusual features, is the finished oak flooring being placed on the market by the Crooks-Dettman Co., of Williamsport, Pa. This flooring is filled, finished and waxed before it leaves the factory, so that as soon as the laying is completed the floor is ready for use. Not only is the flooring finished, but it is, as far as possible, sealed against all moisture. To this end the edges, ends and back are given protective coats. Another feature of this flooring, which is made 36 in. thick and 1½ or 2in. face, is the joint used to replace the usual tongue and groove. The accompanying sketch gives an idea of the joint used. The holes for the nails are punched and where the nail is driven the head does not require to be "set" as the succeeding piece covers it. With this joint the strips do



Showing special design of joint with round corners for hardwood flooring

not have to be driven home to secure a tight joint, little or no pressure being required. The rounding of the face edges slightly, is a new departure in the manufacture of hardwood flooring. It is just possible that some would object to a joint of this kind. A flooring of this kind, which any practical man can lay in his home and which does not require to be finished, should find a ready market and result in an increased demand for flooring.

Slack Belts and Idlers

When walking through different plants one can hardly help noticing how tight many of the belts are being run and how often the "idler" is resorted to, in an effort to increase the tension. On a vertical drive this may be necessary, but there seems little or no excuse for tight belts and idlers on horizontal belts There are many objections to running tight belts among which might be mentioned excessive wear on bearings, excessive power consumption, short-lived belts and high up-keep costs. These may, in the majority of cases, be eliminated by treating the belt so that it will be soft and pliable and cling to the pulley. Then run the belt slack so as to increase the arc of contact. Of course the belt must be of sufficient width to transmit the load.

The idler is used to increase the arc of contact and also to increase the tension on the belt. While in some instances it will be found absolutely necessary, yet wherever possible it should be eliminated. If by treating the belt and running it slack the same amount of power can be transmitted, not only is the cost of the idler saved but the life of the belt and bearings is increased and a saving made in power consumed.

Don't blame others for dangerous conditions. Help to correct them.

Handling Reduced by Labor-Saving Installation

Box Factory Eliminates Factory Trucks—Conveyors and Gravity Carriers More Stock from Operation to Operation—Manufacturing Cost Reduced to Minimum

F. H. Strong

IN the manufacture of box shooks every mill faces serious competition, and in order to stay in the business and make profit the chief aim must be to combine large production with low cost of manufacture, and at the same time maintain a high standard of quality in the finished article. To this end many new machines, methods and ideas in regard to factory arrangement have been evolved. Some of the latest and most effective of these are incorporated in the new electrically-driven plant of the Cranston Box Mfg. Co., Spokane, Wash.

This modern specialized plant is so completely equipped with power conveyors that not a factory truck is used, and no man need take more than a step to transfer material at any point along the line of production. Mr. A. E. Cranston, who planned the factory, has taken advantage of every mechanical facility available to eliminate the necessity of trucking or carrying stock from one point to another. His plan of manufacture includes a straight line of production, the rough lumber entering at one end and the finished product, all bundled ready for shipment, leaving at the other end of the mill. This cuts out lost motion, lost time, extra labor and thereby turns a large per cent. of the usual box factory "non-productive" into efficient production. The plant is not a large one, but it represents what is conceded to be the latest thing in its line.

How Labor is Conserved.

The factory building is 60 x 100 ft. and is built right next to a railroad siding. Loads of lumber from the yard are tied in the middle, to form a compact "package," and rolled off special trucks onto an inclined roll-way leading into the mill. The part of this roll-way inside the factory is level, and packages of lumber are advanced forward to it by power drum and

Conveyor used to move stock. Note gravity carrier between resaws.

cable. The lumber is then untied and fed through a 6 x 15 inch American four-side planer, directly coupled to a 40 h.p. G. E. motor running 900 r.p.m. A self-feed rip saw is also located at this end of the factory, but it is seldom used except on special work. Lumber for the regular line—apple boxes—is both sized and surfaced on the planer. From here the stock shoots out onto a system of cross-conveyor chains and is carried to three cut-off sawyers, who work on an elevated platform as shown in the accompanying illustration.

As the boards pass along just below the cut-off saw tables the sawyers pick them up and cut them into box lengths. All cut stock and scrap falls into a conveyor trough and is sorted for size and grade. Practically everything that is good enough for box shooks is passed from the conveyor to the Yates No. 287 hopper-feed, horizontal band resaw. The 6/4 inch stock

Showing conveyor moving stock from planer to trim saws on raised platform.

intended for box ends is resawed once, and as it comes through the machine it is stacked on a conveyor belt which carries it to the end of the room where the machine binder is located.

Gravity Carrier Used.

Material for tops, bottoms and sides, after being resawed once on the horizontal band, is stacked on a gravity roller conveyor and sent to the vertical band resaw. This machine has 48-in. wheels, carries a 5-in. saw and is driven by a 30 h.p. G. E. motor running 680 r.p.m. Sawed material leaving the vertical resaw is piled onto the same belt conveyor that carries stock from the horizontal band to an automatic machine binder. At this writing a twin circular resaw is being installed to handle stock for tops and bottoms; the saw arbor will be directly connected to a 50 h.p. Fairbanks, Morse & Co. motor running 1800 r.p.m. A boxboard matcher is also being installed.

The tying or binding machine is an invention of Mr. Cranston and is known as the double-head Cranston automatic wire binder—called double-head because it will wire two different bundles, or both ends of one bundle, at the same time. Shooks are simply bunched and fed into the machine, which advances them forward, binds and ties them into a convenient bundle and discharges the bundles, by means of an extended conveyor attachment, into the shipping conveyor on the outside of the building. The last named conveyor carries the bundles directly to cars spotted along the railroad siding.

Material for cleats is sawed on a gang cleat saw

located near the wire binder. The cleats are tied with string into bundles of 100 each.

Getting Rid of Waste.

The conveyor serving the cut-off saws discharges its scrap into an elevating conveyor which deposits the wood in a large hopper partitioned off from the shavings bin. The shavings and wood bins, by the way, occupy only the upper half of the building in which the dust-collectors are mounted, The lower story of this building is completely fitted up as a filing, grinding and general repair room.

All matches in the plant are piped to a 60-in. exhaust fan which is belted to a 35 h.p. Fairbanks, Morse & Co. motor running 900 r.p.m. This refuse and the cuttings are sold locally for fuel. At present eight and nine carloads of apple box shooks are being shipped from the factory each week. The daily output with present equipment averages 35,000 to 40,000 ft. of box shooks.—"Woodworker," Indianapolis.

C.M.C. Appoint New Representative

W. J. Irving has been apointed manager in charge of the Toronto Office and warerooms of the Canada Machinery Corporation, Limited, Galt, Ont., succeeding David King, who is retiring. Mr. Irving has been in the employ of the C.M.C. since their organization, some ten years ago. Part of this time he carried Western Ontario and latterly in addition to his sales work he has had full charge of the C.M.C advertising. Mr.

W. J. Irving, Galt, Ont., in charge Toronto branch of C. M. C.

Irving is a practical man, was with the John Ballantyne Co. before joining the C.M.C. staff, and has been instrumental in designing and bringing out several new machines. One of these was the well-known C.M.C. No. 611 straight Edging and Jointing Saw. As intimated Mr. King, who is getting well up in years, is retiring from active work. He has been in charge of the Toronto office for the past 6 years. Previous to that he was with the McGregor, Gourlay Co. for 35 years.

Specializes in Woodworking Statistics

R. G. Lewis, Dominion Statistician of the Forestry Branch, Ottawa, occupies an important and yet somewhat unique position in connection with forest products tabulation in Canada. His duties as Forestry Statistician consist in co-operation with the Dominion Bureau of Statistics in the collection, compilation and publication of statistics relating to forest products. This work at present covers the production of lumber, lath, shingles, pulpwood, pulp and paper, planing mill products and some of the more important wood-using industries. The figures for these are collected annually and published in bulletin form.

Mr. Lewis is a graduate of the Faculty of Forestry of the Toronto University and for the past eight years

R. G. Lewis, Dominion Statistician, Ottawa, Ont.

has been acting as statistician for the Forestry Branch in Canada's capital city with the exception of two years, when he was on active service. Fifteen months of this time was spent in France as technical officer of the Canadian Forestry Corps.

Mr. Lewis states that, in connection with the wood-using industries, arrangements are now being completed for a renewal of the wood-using industries studies which were made by the Forestry Branch from 1911 to 1916. The work was interrupted by the war and it is gratifying to learn that it is likely to be resumed. During the five years that it was in progress, the Dominion was covered by a series of studies of the industries using wood as a raw material. It was intended to study each of the five regions—the Maritime provinces, the prairie provinces, Quebec, Ontario and British Columbia once every five years and to have each study explained by a published bulletin except in the case of British Columbia. It is understood that this investigation will be continued this year by a study of conditions in Ontario, undertaken in co-operation with the Bureau of Statistics.

Many men have lost their hands when they attempted to remove chips from moving machinery.

Box Men Hold Enthusiastic Gathering

Twenty-first Semi-Annual Meeting Successful Affair—Many Subjects of Interest Discussed—Advertising Campaign for Boxes Decided on—No Reason for Pessimism

THE twenty-first semi-annual meeting of the National Association of Box Manufacturers brought out a very enthusiastic gathering, comprising some seventy-five representative manufacturers. These gentlemen were unanimous in their opinion that, in spite of the present era of depression through which we are passing, the future would develop into a period of unprecedented prosperity.

The president, B. F. Masters, gave a very interesting and comprehensive review of the box industry, including its trials and tribulations. He counselled those assembled to give close attention to costs and market conditions and to avoid, if at all possible, attempting to increase sales by cutting prices. He also touched on the wage tendency and labor conditions in general and thought he could detect a new note in the attitude and sentiment of labor. The importance of production and accurate cost-finding were not overlooked. In discussing present trade conditions, he suggested that the manufacturers, in need of lumber, go into the market and buy. Stability of market conditions is a very desirable state of affairs, and a slight increase in the demand for lumber would have a tendency to stabilize the lumber industry. He also had a word to say with regard to competition. In his opinion the keenest kind of competition was to come from those in the box manufacturing industry rather than from manufacturers of substitute containers. He did not see any cause for pessimism, as all underlying business conditions are hopeful. The crop this year is a bumper one, and, with proper marketing conditions, the nation should experience a regeneration of business. In closing, he spoke appreciably of the secretary, W. D. Burr, and the able corps of assistants with which he has surrounded himself.

Mr. Masters' address was followed by the report of Secretary Burr. He gave an outline of the work of the Association for the preceding period and recorded the addition of twenty-seven new members to the roll. Mr. Burr touched on traffic matters, trade extension and the question of standardization. He is very enthusiastic regarding the work done by the Specification Committee, and the support and co-operation given by the Forest Products Laboratory at Madison, Wis. In speaking of the decreasing lumber production in the country, he said: "I am firmly convinced that we must develop the use of boxes which, without sacrificing security, may be made of less material. There are many reasons why this is true. The competition of other types of boxes, the higher freight rates, the increased cost of lumber and the decreased supply of raw material, but aside from these very good reasons, if you can produce a greater number of boxes from every one thousand feet of lumber, then you will enable your industry to hold its own and you will profit more as individuals." Mr. Burr's address was followed by reports from the assistant secretary of the different district associations.

A feature of the closing session was the presentation of the proposed Direct Advertising Campaign by Col. H. P. Howard. Mr. Howard discussed the various samples of direct advertising, which had been prepared for the use of the members. These include attractive mail stuffers, blotters, and various forms of circulars and booklets. The plan as outlined, is to confine the work largely to direct advertising, that is, making a direct appeal, by mail, to those who use, and are interested in, boxes. In detail he said: "We want to tell them that wood boxes are the strongest, most serviceable, the best-looking and most economical in the long run; that they will stand hard knocks; cannot be hurt by hooks; protect goods from rough handling by weather, heat and cold; that when reinforced by wire and steel, they will carry merchandise around the world and then be good for another trip. We want to tell the shipper that we will design and make for him a box for his special purpose, for his special product, and save him money in shipping losses and pilferage. We want to tell him that our boxes deliver the goods in good condition and please customers. There are many things we want to tell him and each one of these things is an idea."
was given the whole-hearted endorsation of

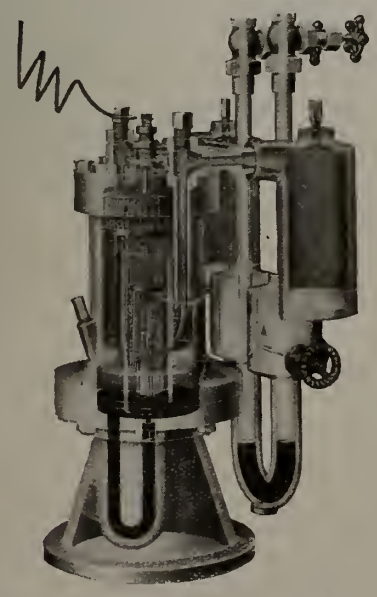
General publicity material, that is material which advertises the whole industry, will be distributed free by the association to its members. Circulars, blotters, booklets, etc., advertising a special plant will be supplied at the cost of the printing and paper. Thus the members are able to secure the necessary material through the publicity department of the association cheaper than if purchased individually from different printers. It is anticipated the information which may be presented in this way, will have a very beneficial effect on the demand for boxes.

The publicity scheme was well received and was given the whole-hearted endorsation of those in attendance; in fact, practically all present promised to make use of these advertising helps.

Machinery & Equipment

Meter for Checking Steam Consumption

The instrument shown in the accompanying illustration is what is known as the Republic Flow Meter and is used to determine the flow of steam and through the process of elimination, enabling the efficiency of the engine, pump, kiln, or any steam-using unit in any department to be accurately checked up. In actual practice it has been found that many units use considerable quantities of steam in excess of their rated requirements due perhaps, to worn parts, faulty installation or carelessness. By checkng up and rectifying such faults many pounds of steam are saved effecting economies that result in reduced operating costs and the saving of thousands annually. This measurement is accomplished by means of an electric current, which is regulated by the differential pressure of the flow. The current measured electrically represents directly the amount of fluid passing through the pipe to which the instrument is attached. Maximum accuracy is insured by the highly sensitive electrical instruments which are governed by the well-known relation between velocity of fluids and equivalent pressure. Bl employing electric current to transmit the action to the reading instruments, all uncertain mechanical appliances, such as floats, cams, levers, gears and stuffing boxes, are avoided. There are no moving parts in the meter body to interfere with the true level of the mercury column. Due to the electrical principle of operation, the instruments for indicating, integrating and recording the flow may be arranged to conform with every variation of plant conditions. They can either be separated, combined, or duplicated; and can be placed at any desired distance from the measured line and at any point however remote from the meter body. Full particulars may be secured from The Republic Flow Meter Co. of Canada, Limited, Toronto.



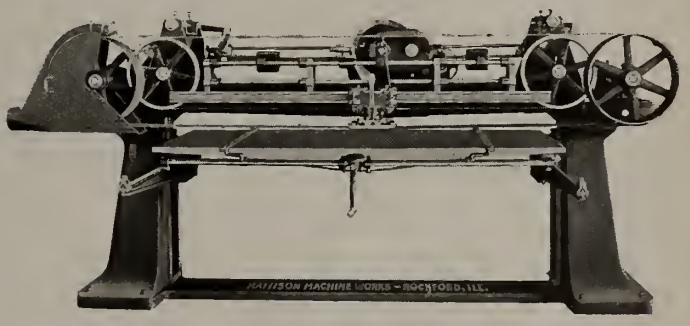
The Republic flow meter for checking steam consumption

New Automatic Power Stroke Belt Sander

The Belt Sander illustrated is a brand new power stroke belt sander, and is said to represent the first real advancement made in this type of machine during the past ten or fifteen years. It is the products of the Mattison Machine Works, Rockford, Illinois, U. S.A.

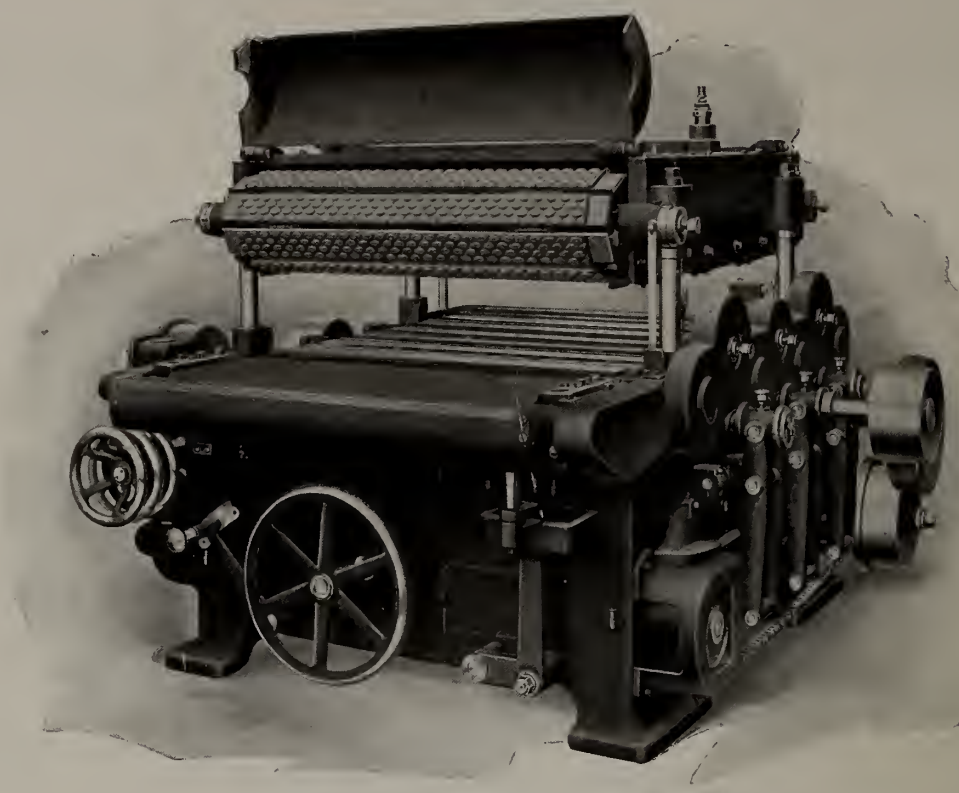
The power stroke can be instantly disengaged, leaving the sanding shoe free to be operated by hand for spot sanding. This feature is an important one, as it really combines two sanding machines in one.

Another important improvement is that the length of stroke and the number of strokes per minute can be instantly and simultaneously controlled by the operator without moving from his working position. He is thus enabled to adjust length and speed of the strokes to conform to the length or shape of work being sanded.



New Mattison belt sander with automatic power stroke

The reciprocating stroke mechanism is provided with double end drive and take-up. This does away with all lost motion. It also permits of a higher speed a much smoother reverse motion. It also permits of a higher speed, which is quite desirable. Among other mechanical refinements is the tempered steel band in place of the old-fashioned twisted wire cable. Chrome Nickel hardened steel gears, segments, etc., are used in the reciprocating mechanism. The sliding shoe is made practically frictionless by use of ball bearings. The track frame, which supports the sliding shoe, is also hinged on ball bearings. It is principally made of aluminum for lightness; and being accurately counterbalanced, gives an extremely sensitive pressure control, which is very essential for perfect sanding. The machine throughout is rigidly built to withstand the shock and strain peculiar to this type of machine. Further particulars on application to makers.



American combination roll feed and endless bed sander

Combination Endless Bed and Roll Feed Sander

As the name given to the machine implies it is a sander having the advantages of both the roll feed and endless bed types. The endless bed feed works are placed above and are adjusted up and down to accommodate stock of various thicknesses. This form of construction results in less wear on the metal slats to which the rubber pads are attached as well as on the pads themselves. This is due to the fact that the pressure of the slats against the guide is the pressure of the stock less the weight of the slats. Again placing the endless feed works above enables the bed to be made stationary and at a fixed height from the floor, permitting receiving and delivery tables to be employed. In addition to the regular feeding mechanism, this machine has an auxiliary infeed, rubber-faced endless bed which carries the work with the sander. The top frame is supported on four corner posts, and rises and falls on raising screws. All backlash has been avoided. The cylinders are three in number, each made in one piece, of semi-steel casting, turned, ground and balanced on especially constructed machines. They are provided with a patent automatic paper tightener, which takes up all slack in the paper while the machine is doing its work. The adjustment of the cylinders is regulated by hand wheels, placed together on the working side of the machine in convenient reach of the operator. The raising and lowering is accomplished by wedges. Three speeds for feed are provided, for different work.

Power hoist is provided for the top feed works, made in one width only 43 inches. Full particulars will gladly be furnished by the makers, the American Woodworking Machinery Co., Rochester, N. Y., or by their Canadian representatives, the Garlock-Walker Machinery Co., Limited, Toronto, Ont.

Simonds Establishes British Saw Company

The Simonds Canada Saw Company, Limited, "The Saw Makers" of Montreal, Quebec, have just secured a charter and established a new company in Great Britain, to be known as Simonds Saws, Limited. An office and shop has been opened at 53 Bayham, Camdentown, London, N. W., where a full line of Simonds Saw Steel Products as is demanded in Great Britain will be carried. The shop will provide for maintenance and repairs of saws, machine knives, and other edge tools produced by the Simonds Company.

Guy A. Eaves, formerly connected with the Fitchburg, Mass., plant of the company, has assumed the duties as office manager, and Leon E. Wilbur, a Simonds man, who has covered the Great Britain territory since his discharge from the army in France, will be associated with him.

The Simonds Manufacturing Company now maintains plants in Fitchburg, Mass., Chicago, Ill., Montreal, Canada, and a steel mill at Lockport, N.Y., where the steel is used in the manufacture of Simonds Saw Steel Products. In addition to the new British branch the company maintains twelve branch houses, located throughout the United States and Canada.

"The three great fundamental reasons for the safety movement in industrial plants are economic, humanitarian and efficiency," stated R. M. Little, director of the Safety Institute of New York city, in his address on "Industrial Safety" at the luncheon of a Canadian Manufacturers' Association recently.

Mr. Little pointed out how the American firms had been converted to the movement to such an extent that five thousand companies were now members of the National Safety Council. In Ontario five hundred companies are members of the Ontario Safety League.

Upholstering and Trimming

Uniform Cost in Upholstering

Tends for Greater Efficiency and Elimination of Unfair Competition—Variations in Costs Found

By W. E. Widdikim.

AN effort is being made both in Canada and United States to establish some uniform method of figuring labor costs in the different factories devoted to the manufacture of upholstered furniture. That the adoption of a uniform or basic method of figuring costs by the members of any industry is a desirable condition, almost anyone will admit and the investigations already made in the upholstering field have shown the absolute necessity of some such move being adopted by the upholstering fraternity.

In the United States the Industrial Relations Department of the National Association of Upholstered Furniture Manufacturers, which was established early in the year, have been making a series of time studies in upholstering plants, in relation to labor costs. In this connection they have recently issued a few suggestions to their members covering the cost figures on certain leading and practically staple lines. The ideas outlined were not intended to be rigidly followed by the members but were more along the line tentative suggestion of what might be considered ideal methods and along which it would be desirable to work in order to secure the greatest efficiency.

An attractive upholstered chair by Woeller, Bolduc Co., Ltd., Waterloo, Ontario.

Canadian Manufacturers Co-operating

The Canadian furniture men through the Furniture Manufacturers' Assocation are exchanging information with the American association with a view to bringing about more uniform costing methods in the upholstering branch of the Canadian furniture industry and, perhaps, the general adoption of some simple, basic cost finding method. With this in view the cost accounting section of the Furniture Manufacturers' Association is making a close analysis of the costs in the different upholstering plants. It is expected that much interesting and even startling information will be brought to light. In any event, it is absolutely necessary that correct costing methods should be established in all upholstering factories.

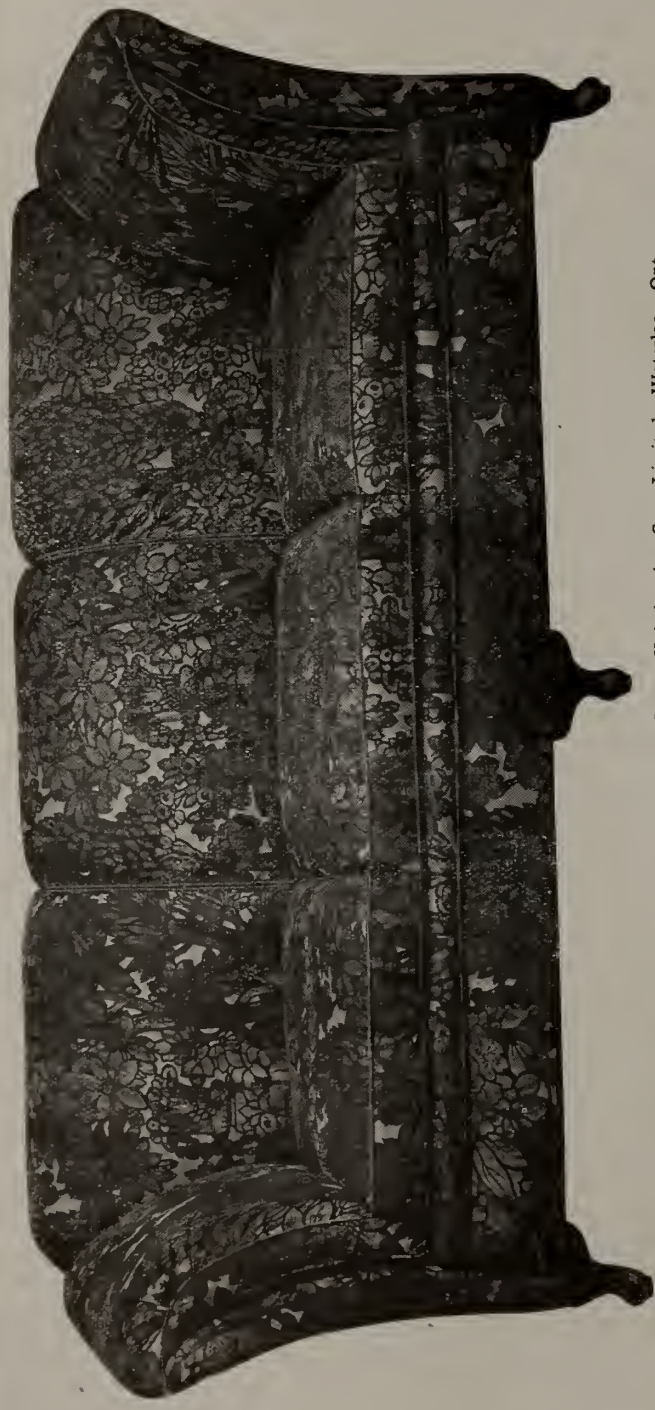
The analysis which is being conducted by our friends to the south has shown a great variation for the labor costs on practically the same articles in different factories. In many instances this discrepancy has been as high as one hundred per cent. and more than that figure in a few plants. Labor conditions, higher wages or different methods of working might account for this variation in certain instances but that would not hold true in every case. In many plants economies can and will be effected which would tend to equalize conditions. Owing to the diversity of the lines produced many articles could be compared; but if comparative figures were available no doubt the same discrepancies would be found to exist.

Form Basis of Comparison

One of the most beneficial results accruing to any industry through uniformity in costing methods, is, that such figures may be used as a unit or basis of comparison by which any manufacturer may compare the results he is securing in his plant with those of any other organization making a similar line. This would naturally tend for greater efficiency as one man would feel that he could manufacture as cheaply as his friendly competitor or would want to know the reason why. He would immediately begin to analyse his manufacturing methods so as to ascertan his weak places and see where economies may be gained and greater efficiency secured. This would be beneficial to any industry as well as to any individual organization.

As it is now if two men are making a similar article and one disposes of his product for considerably less than the other. The latter does not give his rival credit for being any smarter or for conducting his business any more efficiently, but takes it for granted that his own cost figures are correct and that his competitor does not figure correctly and is selling below the cost of production. On the other hand, he might feel that he can manufacture as cheaply as anybody and regardless of what his cost figures show, cut his prices to meet all competition. Such a course leads to mutual distrust and cut-throat competition.

In the cost analysis which is being made each minute operation is studied, timed and averaged. Thus in comparing the figure secured, a person is able to see where he is weak as well as where his methods are up to standard. As it is only natural for a manufacturer to strive to improve the weak places in his manufacturing methods the whole industry thus standardized is raised to new high levels of efficiency and everybody benefits.

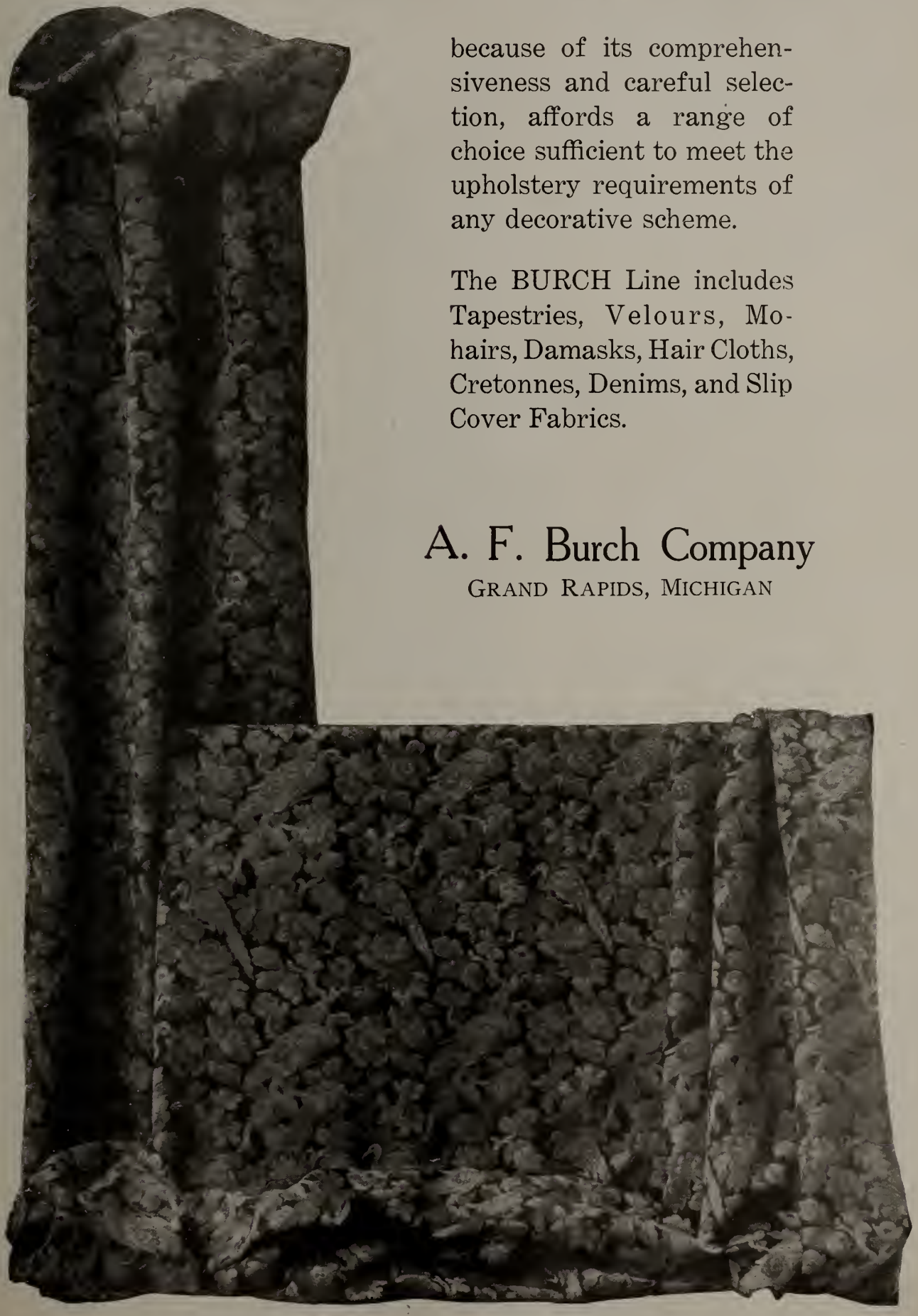


An attractive chesterfield by the Synder Bros. Upholstering Co., Limited, Waterloo, Ont.

One of the newer productions of the F. E. Coombe Furniture Co., Limited, Kincardine, Ont.

A cosy rocker from the Woeller, Bolduc line

THE BURCH LINE



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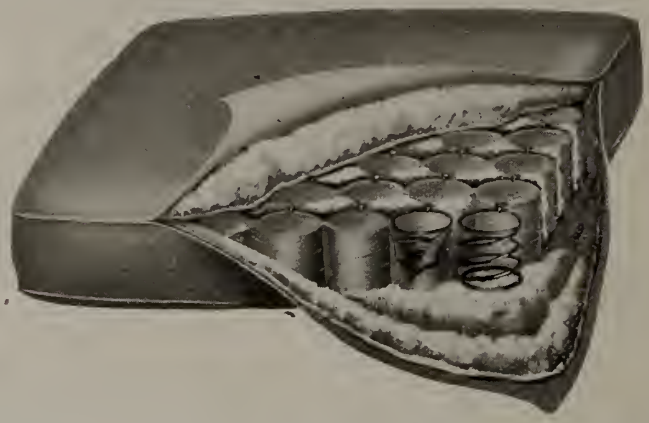

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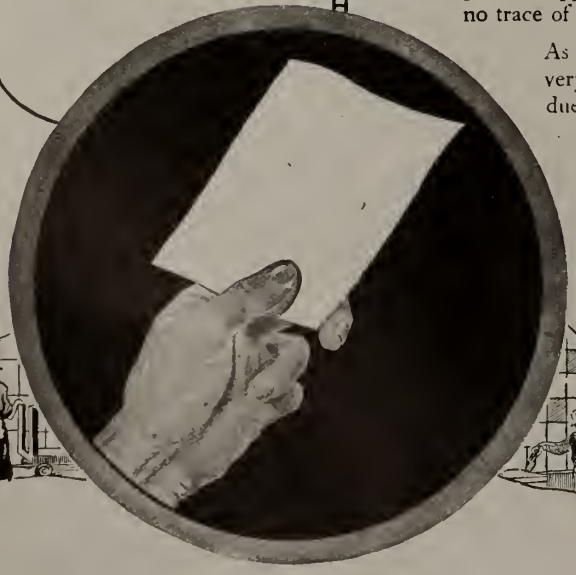
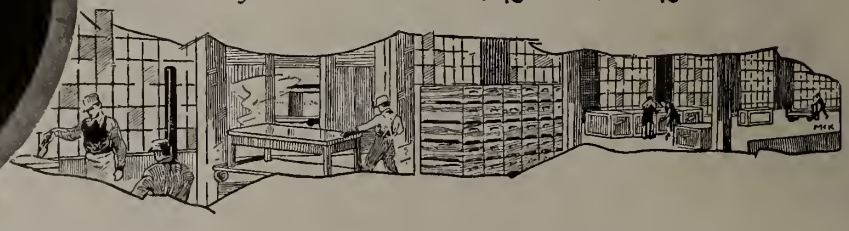
THIS is an easy, practical test of this new turpentine, made from Canadian Wood, by a patented process.

After dipping the paper to about one-half its length, place in a warm spot to dry. In a few minutes when the turpentine will have evaporated completely, compare the portion dipped with the remainder of the sheet. It will be clean and unstained, with no trace of grease of any kind.

As a thinner for wood fillers and enamels, and oil and japan colors, it is very satisfactory. It is also giving good results in some types of oil-stains, due to its smooth, even evaporation and great penetrating power.

And because it is an all-Canadian product, made from wood cut in the forests of Quebec, it naturally possesses a price advantage. May we tell you about it? Liberal samples are gladly sent upon request.





BROWN CORPORATION

Mills at La Tuque, Quebec

56 St. Peter Street, Quebec, P. Q.

How to Reduce Finishing Costs

Labor Saving Equipment Factor in Modern Finishing Room—Drying Varnish in Eight Hours—How One Firm Facilitated Handling

By A. M. Wark.

Were it possible for an old time finisher to visit a modern finishing room he would be astounded at the efficiency shown and the many changes that have taken place, even in the last few years. Not only are new methods and new equipment in vogue but new stains, varnishes and finishing materials are being employed, so that today the finishing department is on a production basis that enables it to keep up with the increased output of the plant. It is proposed , in this article to describe the labor-saving, production equipment as found in some of the more up-to-date factories.

One read in the "Canadian Woodworker" of January, 1920, of a furniture factory that turned out seventy-five completed bedrooms suites every eight working hours and who claimed that in twelve and one half days from the time the dry lumber entered the plant it was on the shipping platform finished, crated and awaiting shipment. This gives a slight indication of what modern production methods have done for furniture makng.

Higher Production Necessary

Picture the old-time finishing room if forced to keep up to a schedule like that; can you see the immense finishing department that would be required and the large staff of workmen necessary to handle such a large number of pieces. Even though the space required were available and the necessary finishers could be secured, it is doubtful if such a schedule could be maintained for under old conditions it required practically twelve days to finish an article with a three coat varnish finish, provided sufficient drying time were allowed for each application of varnish to harden thoroughly. Thus apart from the economies and savings that may be effected through the use of modern labor-saving, finishing-room equipment, such installations are demanded by latter-day efficiency methods and by the fact that through the use of new, high-production woodworking machines the output of the other departments have increased to such an extent that the finishing department was not able to cope with the work coming through.

This increased efficiency has been secured in three ways; first, by improving the method by which the materials were applied, second, by reducing the drying periods and third, but substituting automobile rubbing mechanics for the slower hand rubbing. The methods of application have been developed along two lines, namely, by spraying and by dipping. While the up-to-date finishing room is equipped with dipping tanks for applying certain stains and even varnishing certain articles the greatest advancement has been made in the development and installation of spray finishing equipment. With the spraying machine one man can put through as many articles as could be finished by from five to ten men brushing on the material. It will be seen from this that the introduction of spraying equipment has not only enabled the finishing room to keep abreast of the other departments but has resulted in reducing the cost of applying the different materials; for this equipment has been used successfully for applying not only varnish, but stain, shellac and filler.

Dipping Methods Improved

This method may be a little more wasteful of material, though this compensated for, to a certain extent, by the fact that a thinner, more even coat is applied and is more than offset by the saving in time which is effected. Even though spraying equipment did not result in reduced finishing costs installations would still be required to increase production in this department, and keep it on the same basis as the rest of the plant.

Certain improvements have been made in the dipping process, through the introduction of mechanical equipment which lowers large racks of articles into a tank of varnish and raises them out again very slowly, taking probably half an hour or longer to lift a piece clear of the varnish. I hope to be permitted to describe this equipment in another article in a later issue. The secret lies in the fact that raising the pieces so slowly enables the varnish to flow off slowly and evenly doing away with all runs and giving a fine smooth finish.

Varnish Drying Kilns

The reduction in the drying period is secured by automatic humidity controlled varnish drying kilns. These are found in the many more up-to-date plants though the practicability and advantage of drying a coat of varnish artificially in from eight to ten hours does not seem to be fully recognized. Such a method enables the work to be put through like clockwork resulting in an even steady production. It works out something like this: first, coat of varnish, then overnight in kiln, second coat and over night in kiln, third coat and into the kiln and then into the curing room for a few days and into the rubbing department. Each coat is dried evenly and thoroughly and from the bottom out. If the pieces were allowed to stay in the kilns for twenty-four or forty-eight hours the varnish would not be in any better condition.

This quick drying is secured through the application of warmth and humidity. Just putting the pieces in a room and raising the temperature would in all probability retard the drying rather than hurry it, due to the fact that warm dry air would cause a skin to form on the surface, sealing it and preventing the oxygen from reaching the body of the coat. Admitting a certain amount of moisture with the warm air tends to retard the surface drying and even assists in hardening

the varnish for it has been found that a limited amount of humidity in the air is very beneficial to the drying of varnish.

Three Essential Factors

The modern varnish drying kiln is one in which both the temperature and the humidity is controlled automatically so that constant drying conditions are maintained at all times, a very desirable thing in itself. In this connection an adequate ventilation must not be overlooked for if the air is not changed and renewed the supply of oxygen would become exhausted and the air would become saturated with the fumes of the drying. In this respect the process is similar to the successful drying of lumber for in both cases warmth, moisture and circulation are prime requisites.

Increased producton in the rubbing department has been secured through the adoption of rubbing machines either of the stroke, electric or pneumatic types. The stroke rubber is a large production machine particularly suitable for the rubbing of large surfaces. One phonograph factory in which the writer worked had one of the machines fitted up for rubbing the ends and back of the cabinets. They had attached two sets of felts to the moving mechanism and by placing two cabinets end to end were able to finish two at a time. The electric and pneumatic types are light portable machines and are very versatile having a wide variety of uses and being suitable for either large or small surfaces. With the aid of a good rubbing machine a man is enabled to do many times the quantity of work that he could turn out by hand and as the first cost is about the only cost the advantages of an automatic rubber and the savings that can be effected through its use are too apparent to require reiteration.

The accompanying illustration shows the method of handling, adopted by a large manufacturer of pianos in an effort to reduce handling costs and facilitate the movement of work through his finishing room.

There are many formulae for floor crack fillers, and also several different kinds of cracks that require the filler. Then select the filler best adapted to the crack. One master painter tells us that he takes some cheap varnish, or odds and ends, and gradually stirs it into plaster of paris to make a stiff putty. This is for large or wide cracks. For smaller ones the putty may be made thinner. Do not use japan or turpentine in this mixture.

How the Appollo Piano Co., DeKalb, Ill., facilitated the movement of stock through their finishing room and reduced handling costs by an efficient overhead installation

Overcoming Cold Weather Finishing Troubles

Problems Peculiar to Cold Season—How Low Temperatures Effect Different Materials—Some of These Permanently Injured—Suggestion For Eliminating Undesirable Features

By H. Sutton

NOW that the cold weather is imminent, it might be well to touch on a few of the troubles common to this season of the year. All finishing material is affected more or less, some of it permanently, by low temperatures, both when in storage and after being applied. This is particularly true of enamels and varnishes.

Cold will cause the oils in these two materials to congeal, thereby making the liquid sluggish and heavy to work. The "chilling," as it is called, is the cause of many bad after effects. If such material has been exposed to the cold, it will, when applied, show specky and lumpy. Again, cloudy effects will ofen be the result, especially with varnish. The specks are due to a physical change in the material caused by the cold, and while resembling undissolved particles, they are due entirely to the congealing of the oil content. This effect is not due to any inherent fault in the material itself or the ingredients used but is simply the result of exposure to low temperatures.

Permanent Changes Effected.

One should hesitate a long while before applying a varnish or enamel. When it is in this condition, should it become necessary to use it, it can readily be remedied by placing the material in some warm place such as near a steam pipe or stove. Care should be taken, however, to see that it is not exposed to an open flame. Placing the can containing such material in boiling water is, probably, the best method of warming it as there is no danger either from flame or from overheating. When once restored to its usual condition, it may be applied without any misgivings, for the results of being chilled are only temporary and not permanent.

When it comes to water stains greater care must be exercised, for when they freeze, unlike varnish and enamel, such stains cannot be restored to their former condition. This is due to the fact that freezing causes certain changes in the aniline dies from which the color is derived, which are permanent. The complex nature of some of these dies in solution breaks down entirely when subjected to cold, and the stains are permanently spoiled.

On the other hand, oil stains made upon a benzol base solvent will freeze at about the same temperature, as water stains are not permanently affected by such exposure. Warming such material will bring it back to its normal condition.

Drying Offers Peculiar Problems

So much for finishing material. The drying of these same items are affected by cold and changing conditions. The spring and fall are two seasons which apparently bring more than their share of troubles. This is due to the fact that finishing materials must have an even temperature during the time they are hardening and setting. As a rule the heat is not kept on continuously during the two seasons mentioned, with the result that freshly-applied finish is often chilled for it has had time to harden with disastrous effects. Open windows in the finishing room, especially on cool days, will cause similar troubles. In addition, draughts have a tendency to make the finish crawl and wrinkle if they strike directly on newly-finished surface. The drying is also retardeed by low temperature and draughts.

Sometimes circumstances will arise which make the use of cold or chilled material absolutely unavoidable, there being no means at hand for warming it up. When this holds true, extra care should be taken in rushing it out. The natural tendency lies in the opposite direction, for the average finisher will flow a thick, heavy, working varnish on heavily in an effort to avoid brush marks. The opposite holds true when applying on thin, warm material where the high viscosity is due to the fact that the material is warmer than the temperature of the room. Such a varnish or enamel should be flowed on freely for the lower temperature of the finishing room and the surface on which it is applied will cause it to body up. If this material had been worked out, the surface would, probably, show brush marks, crawling and pitting, because there would not be sufficient body to take care of the shrinkage.

The same thing often occurs when articles have been brought in from a cold storage room or other cool place. If such articles are varnished or enamelled before they have had an opportunity to warm up, the material will be chilled immediately upon application, retarding the drying and resulting in cracks at a later period. This is particularly true if it is the middle cost that is being applied.

All Departments Should Be Kept Warm.

Another suggestion is that during the cold weather the temperature of the storage and warerooms should be maintained at least 60 degrees. Failure to follow this suggestion often results in cracks, showing up on the finished surfaces. This will be particularly noticeable on polished articles, for as a rule the finish on such pieces is short in oils and therefore has not sufficient elasticity to expand in shrinkage.

From the foregoing it would be gathered that it is advisable to see that the finishing material is stored in warm quarters, that the finishing room is maintained at a fairly high and even temperature, that draughts must be scrupulously avoided, that the articles should be given sufficient time to warm up before being finished and that all finished articles should be stored in warm, dry storerooms.

Two New Fibre Products

Two new products of interest to furniture manufacturers and upholsterers have recently been placed on the market by The Fibro Manufacturing Co., Philadelphia, Pa., in the shape of woven material designed primarily to facilitate the manufacture of reed and wicker furniture. These are known as Fibro-Tex Wibbing and woven Hard Fibre and are put up in rolls, running from 36 inches to 100 inches in width. In addition to furniture these materials may be used for such work as chair and car seats, baby carriages, baskets and similar products.

Spray equipment cuts down painting costs.

Improved Method of Painting Factory Interiors

The Spraying System Has Modernized the Painting of the Interior and Exterior of Your Factory as Successfully as it Did the Finishing of Your Product

By W. H. Welman

WHERE is the manufacturer in the furniture industry who does not, deep down, realize the full importance of having his factory walls and ceilings properly painted? It is recognized that dark, dismal and cheerless factory surroundings are about as practical as blind workmen, and must tend to blind good workmen if they remain on the job. Removing the shadow zones from the factory interior and giving it a light, sanitary and cheery appearance results in many big and well known advantages both to the employer and to the employee.

The rub in many cases has been that the cost of painting was prohibitive, or that there would be too great an interruption of production, or that men to do the painting could not be had. In other cases, painting has been done but not at frequent enough intervals, and much of the effect is lost. All of these barriers to the proper painting of factory interiors have been removed through the introduction of the spray system of applying any kind of paint on all knds of structural surfaces.

Adapted to Interior or Exterior Work

This modern, improved and economical system of painting should require no elaborate introduction to those progressive men making up the furniture industry, as a large percentage of the furniture manufacturers of this country are today profiting through the use of the spray system in their finishing rooms. In the same degree that the highest quality of varnishing or enameling is being done there at a remarkable saving in time and labor, equally remarkable economies and advantages are now to be had in the spray-painting of their buildings.

Economical and Efficient

This equipment is known as the Aeron System portable painting equipment, and is manufactured by The DeVilbiss Mfg. Co., of Toledo, Ohio, U.S.A. It is a development making possible the more effective and efficient application of paints that would be expected naturally to follow the remarkable success of the spray system in all of its uses in the industrial finshing room. Oil paints, mill whites, flat wall paints and other like materials are sprayed to equal advantage. Moreover, this method of application greatly increases the covering, light-reflecting and wearing qualities of these materials, completely eliminating skimped places, laps and brush marks. There is no dripping or spattering of the paint when applied, which offers a saving of material and which further insures cleaner work and surroundings.

At least three to five times more surface can be spray-coated than can be hand-brushed in the same time. There is no loss of time in dipping into and refilling the pail, nor through the painting of out-of-way places which are easily reached with the spray. Less staging or scaffolding as a rule is required on the average class of work, which affords another saving

in time and which causes less interruption to factory work.

The principal items comprising this equipment are a portable compressing outfit consisting of air compressor either gas engine or electric motor driven, and air receiver with safety valve and pressure gauge; a portable paint tank in a 7 or 13 gallon capacity with complete regulating device; an Aeron of the standard separate container type, or a special extension Aeron, 3, 6, or 9 feet long, for coating ceilings and walls without the use of scaffolding; and air and fluid hose in sufficient lengths for all requirements.

Worked From Ordinary Air Supply

When an air supply of sufficient capacity can be had in all parts of the factory buildings, the portable compressing outfit is not necessary. However, where building exterior painting is to be done, or work in parts of the plant where air is not to be had, it is essential to have this outfit. It is compactly mounted on a truck that can be easily rolled from place to place in or out of the building.

It has been demonstrated on practically every class of inside or outside factory painting that the equipment is thoroughly dependable in operation, and calls for very little upkeep expense. It has been further demonstrated that the savings effected through the use of this equipment will entirely off-set its first cost within a short time. More about the improvement and economy in the painting of factory walls and ceilings can be learned from a careful study of the illustrative and descriptive material interestingly presented in a catalog recently issued by the DeVilbiss company.

Let Spray Equipment Solve Your Trouble

Solution of Labor Question in Many Finishing Departments—Destined to Become Universal Method—Has Helped Reduce Manufacturing Costs as Well as Increase Output

By Howard G. Bartling*

When manufacturers, commissioners or representatives of other countries visit factories on this continent, they invariably marvel at the labor saving machinery being utilized. There is such an extensive effort being made in our factories to produce articles in great quantities with the least possible loss of time. that visitors wonder at the evidences of ingenuity which they behold. Many of them attribute this remarkable condition to the fact that the people in America are "money mad" and that the tremendous productions are caused by a desire to attain great wealth. The real facts concerning the earnest desire of these factories to increase their production and decrease their costs is simply to meet an existing condition fostered upon them by an avaricious and grasping labor element.

The manufacturers of this Western hemisphere invariably find that an increased demand for a product brings a corresponding demand from certain labor interests for an increased wage. The peculiarity of this arrogant and dictorial attitude is the fact that it is assumed only when every bit of available human energy employed in those factories must be used for handling the increased business. To cope with this situation it has been found imperative for every available inventive genius, scientific mind, and efficiency expert to devise instruments and machinery which may be utilized in keeping down the costs and at the same time increasing the production.

Special Equipment the Solution

The greaest contributing factor to the success of the furniture and allied wood using industries has been the air brush method of applying finishes, and the automatic rubbing machines to prepare surfaces. These wonderful inventions, have on numerous occasions, become life savers to factories employing men.. This is true in Canada as well as in the United States for the Canadian industry is rapidly awakening to the fact that the air brush is a tremendous factor in the quality of work obtained through its use and in the intense production of the various factories employing it.

*Sales manager, Paasche Air Brush Co., Chicago., Ill.

Recently a prominent furniture manufacturer was asked if he believed the air brush would survive. He replied that not only would it survive, but it would eventually become the universal method used for the application of all liquid finishes. In the United States ninety per cent. of the piano production is finished by the air brush method. The same thing may also be said of our automobile production, and the general furniture industry also owes its success and growth to the great production made possible only through the medium of their brush and its accessories.

Not an Experiment

All industries who have been keenly alert for efficiency in their production departments, and wide-awake to the superior advantages of possessing any device or tool which would speed up their work. Long ago realized the superiority of the air brush method and were quick to adopt it. Pianos, phonograph cabinets, desks, chairs, dining, parlor and bedroom furniture, artificial flowers, mechanical instruments, machinery, steel furniture, art glass, chandeliers and lighting fixtures, paper novelties, lamps, toys, picture frames, mirrors, dolls, works of art, waterproof cloth, wall paper, bookbindings, automobile bodies and chasis, wagon and truck wheels, tubs, buckets, and thousand of other industrial products are being most successfully finished by the air brush method.

Within the next few years, history will show that the experiment of air brush users has been exactly the same as the users of all other labor saving devices. They have all succeeded. Not only have they been boons to the producer and the consumer, but their energy saving features and less laborous operations, are enjoyed by persons who use them. Therefore, the air brush will become more popular as its virtues become better known.

Make the Work Easier

One of the greatest objections against the air brush method which has been advanced by labor, is the fact that it will reduce man power. This is identically the same argument which was advanced against the introduction of the linotype machine in the newspaper offi-

ces some years back. The history of the air brush will be a repetition of the linotype machine's history. The hand painter who has been reluctant at first to recognize the faster and better method will gradually find he is chief beneficiary, under the air brush method, as it relieves him of that old back-breaking, muscle-aching work. It not only will relieve him of its drudgery, but will also bring him more work and greater remuneration for his services at less physical exertion.

The telephone, telegraph, automobile, electric light, steam engine, ocean liners, etc., are all labor saving devices so essential to our world of progress, yet none of them collectively nor individually has curtailed the use of labor. To the contrary, they have all been a direct cause of more men and women being employed in every way. The universal adoption of the air brush method simply means the overcoming of a hide-bound prejudice existing in the minds of practically all old school painters. The problem is an educational one and every air brush is sold is a form of sowing educational seed in the use of that device, because one sale invariably means another.

Obnoxious Fumes Eliminated

Fumes and odors which result from the atomization of liquids at high pressure are removed and entirely eliminated with the proper finishing cabinet, equipped with adequate and powerful exhaust system. This means greater comfort for the operator as well as reducing th fine risk.

When it is considered that the air brush can apply stains, fillers, shellacs, enamels, and varnishes of every description, more economically at less labor, and perform smooth and better work, it should be given careful consideration by every user of liquid finishing materials in Canada.

Now is Time to Paint Buildings

Suggestions for Mixing and Applying Paint for Outside Work—Shellac Knots and Sappy Spots

D. L. W.

The suggestions contained in this article are applicable not only to the factory and surrounding buildings but to the home, garage and other structures. Painting saves repair bills by reducing their size, besides adding to the appearance, and incidentally the value, of the property. This work should be carried out before the cold weather sets in, as painting should not be done when the temperature is below 50 deg. F.

The season when a temperature of above 50 deg. F. can be looked for at any time of day is drawing to a close, and there is a lot of work in the painting line yet to be done if buildings in many parts of the country are to receive adequate protection from the storms of the coming winter. For those who intend to save the cost of employing a qualified tradesman in applying paint to their buildings the following information will prove useful.

Value of Good Priming Coat.

Outside painting should be done in dry weather. Surfaces should not be painted while wet. Surfaces to be painted should be as smooth and clean as possible. They should be free from grease. In painting new wood, knots and sappy surfaces should be shellaced first. If painting over previously painted surfaces, all blisters and loose or peeled spots should be scraped or burned clean. A brushing with a stiff wire brush, followed by sandpaper, is good practice.

A priming coat usually pays for its cost. A firm base for the final coat is very essential to insure long service. The primer should be thin enough to penetrate the lumber; it should be well brushed in. Only pure linseed oil or pure turpentine should be used to thin paint.

Although frequently used, ochre is not a good primer. The primer should be of as good quality as the body costs, but reduced to the right consistency. Elbow grease is a very good thing to use on paint, especially the priming coat. If the paint is cracked in small hair lines which do not go through to the wood, reduce the first priming coat with equal parts of raw linseed oil and turpentine, in order to penetrate clear through to the wood. This only applies where the old paint is well bound to the surface.

If the old paint does not adhere well, scrape the surface with a stiff wire brush to remove all scale, then dust off with a stiff brush. Spots from which much of the old paint is scraped should be touched up with a thin coat of paint, reduced with turpentine. After this has dried, the surface is then ready for the first coat.

Peeling and Blistering.

Paint may peel from any one of several causes, but the most frequent cause is the improper application over a damp or frosty surface. Paint that is peeling rolls back from the surface in thin scales. A coat of paint put over a seemingly good surface will sometimes peel down to the bare wood or to the priming coat, showing that the old paint has lost its grip. Be on the lookout for this condition when repainting surfaces. The old paint surface should be well wire-brushed and dusted, after which the bare spots should be touched up with a thin coat of paint, reduced with pure turpentine. When these spots are dry, paint over with the first coat.

Blistering is easily recognized and is caused by moisture having come out of the surface under the paint or from priming to cheap ochre. When this condition exists, wire-brush and dust the surface, then wash with turpentine to cut any grease or excess oil which may be present. After this is dry, proceed as directed for first-coat work.

When the paint cracks into large blocks of every conceivable shape (becoming alligatoried, so-called), it is caused by the application of heavy non-drying undercoats, "fat" paint, the use of adulterated oils or from painting over cheap ochre priming. Boiled linseed oil in the undercoat will also produce this condition. The only treatment is to burn and scrape off the paint down to the bare wood.

Turpentine will readily penetrate through the staves of an ordinary wooden barrel. It is therefore necessary to coat the inner surface of the barrel with ordinary glue, which is insoluble in turpentine, but readily soluble in water, say naval stores experts of the Bureau of Chemistry, United States Department of Agriculture. Turpentine soon leaks out from a barrel that has been carelessly or improperly glued, as well as from one containing any water, regardless of how well the glue was prepared or applied. Consequently great care must be taken in preparing the glue and applying it to the barrel, and finally also in so filling the barrel with turpentine that no water gets into it. Detailed directions for glueing turpentine barrels were issued recently by the department.

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New Principle Non-Fading Stain

¶ Under ultra violet ray test it endured the equivalent of thirty days in bright sunshine without the slightest tendency to fade.

¶ It penetrates without raising the grain of the wood.

¶ It can be filled directly over like a spirit stain.

¶ Has the advantages of an oil, a spirit and a water stain with none of their disadvantages.

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IMAGINE sifting through delicate silk mesh anything with edges sharp as broken glass. Wonderful? Hard to believe? The crystals of Speed-grits when glued to paper or cloth will cut, grind or polish the hardest steel. Yet, so light are they, that they don't harm the tender elastic silk sieve of the Speed-grits grading machine.

The wizardry of it—

Up from the dust of the crushing room glide the bucket-elevators—each bucket heaped high with its load of crushed and sharp-splintered abrasives.

These tiny grits, so near alike that with the naked eye you can't tell one from the other, must not vary in size. One grit a trifle oversize on abrasive paper or cloth is enough to mar and scratch a fine polished surface. That's where the need of exact sorting comes in—and the grading machines are wizards at it.

Watch that machine as it starts work — watch its screens of fragile silk fibres as they begin vibrating gently—watch how the screens sort out just the grits they want from the stream of mixed sizes that flows over their silken surfaces. Results are nearly always 100%, but one oversize grit may have squeezed through.

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Before these grits finally take up their finishing role on the ready-for-use Speed-grits they must pass a final test before a board of "Detective" screens—exacting chaps that search carefully all over again for that one chance oversize grit, the grit that might do the damage on some delicate polishing job. And all this grading is just one of the Manning processes that put the "difference" into Speed-grits.

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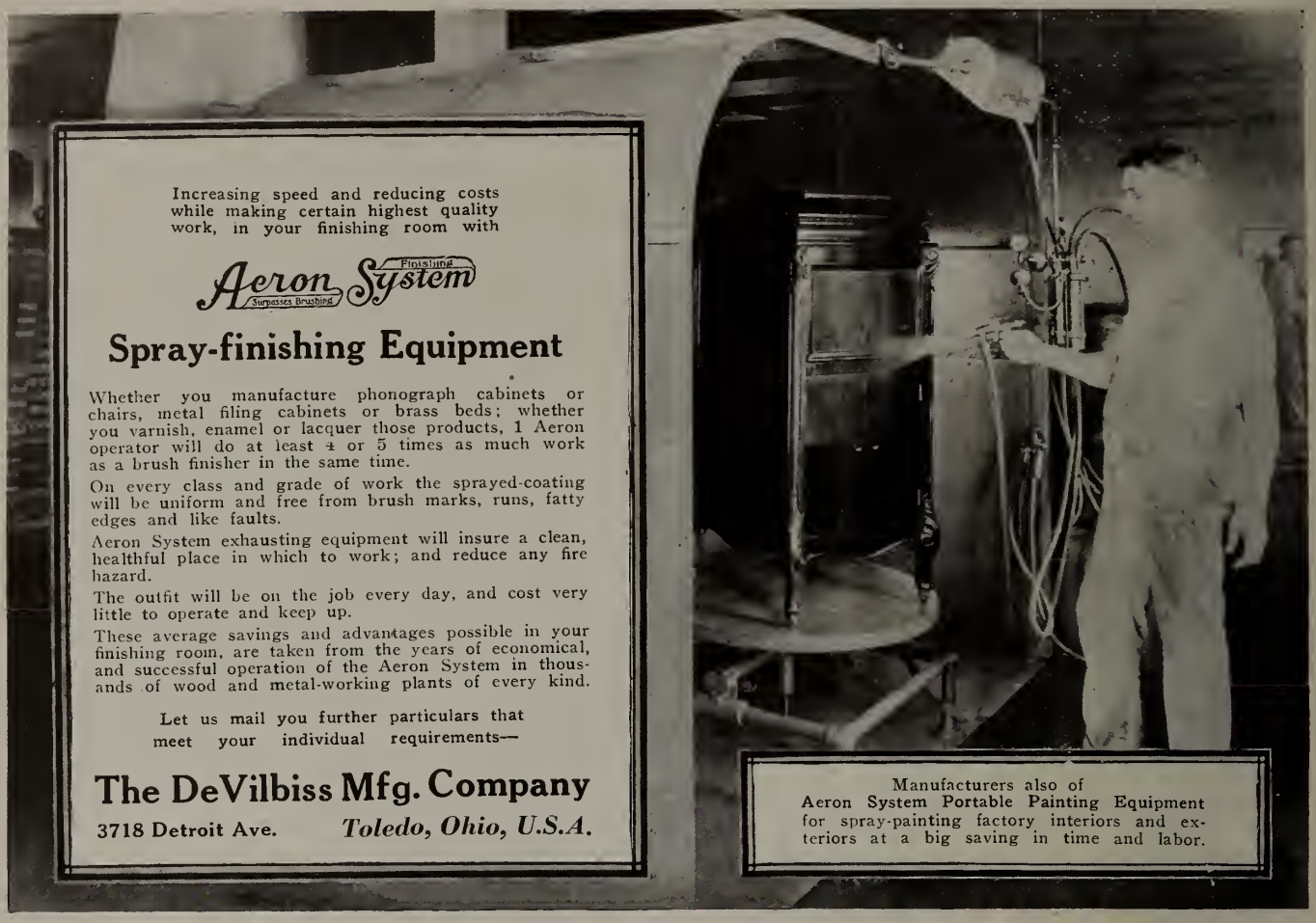

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Veneers and Panels

Decoration Applied to Veneering

The Inlaying or Planting-on of Fine Veners Adds to Beauty of Finished Article— How This Work is Carrried Out

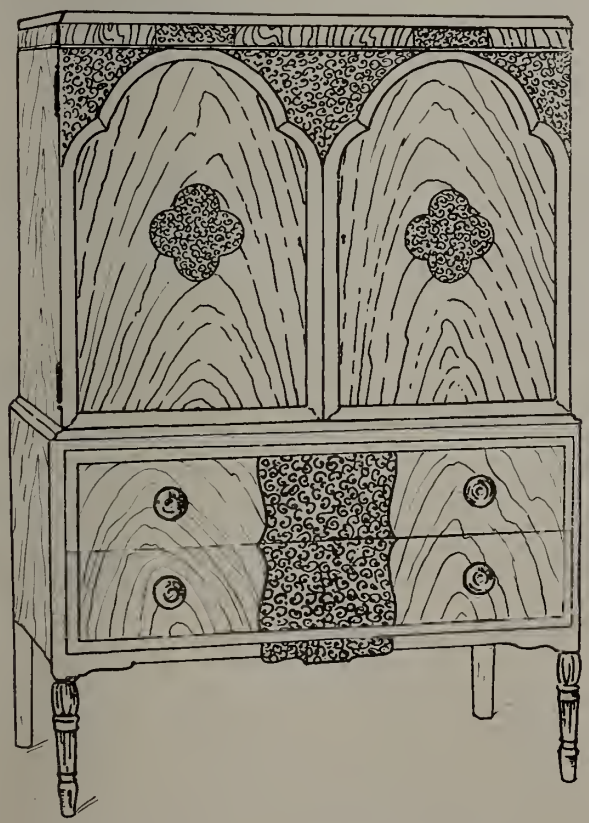
By John Welmers

There is an old saying,—"Fine feathers make fine birds," which might apply equally as well to furniture if changed to "Fine veneer makes fine furniture." For what is a mahogany, walnut or oak piece of furniture if it is not made with attractive veneers?

It is true that the styles are determined by the outline, the contour of the legs, the mouldings and various carvings, but if a person is buying a suite of furniture, does he only look at these things? Indeed not, unless he is contemplated buying an enamelled suite. Even then he is inclined to look at the finish and color of the ornamentation and antiquing, if there is any.

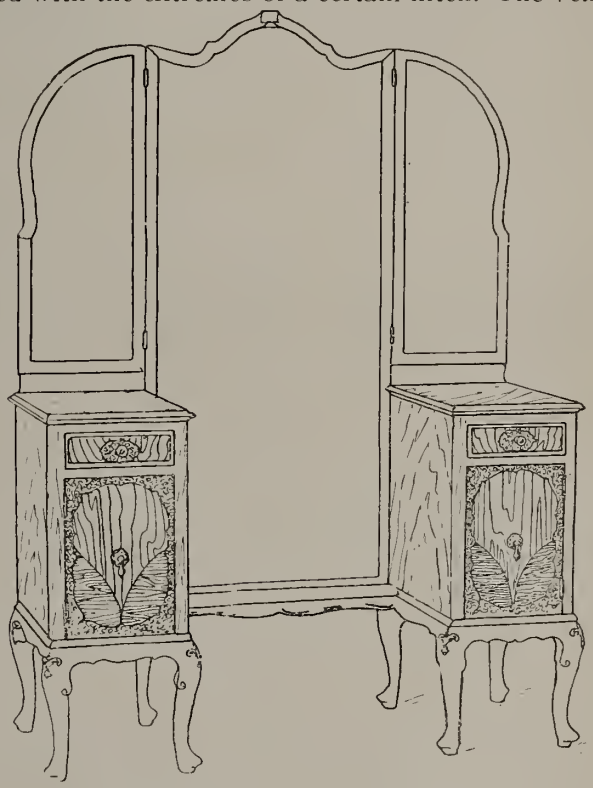
Variation in Veneer Figure

The quality of veneer is the one thing that most buyers are interested in, so why should not the veneer receive particular attention in view of harmonizing the grain with the design of the furniture? It is easy



An adaptation of Hepplewhite design showing inlaid veneers

to say that the veneer should harmonize with the design of the furniture, but due to the fact that veneer in the same log is not all alike, the task of sorting veneers from various logs is presented, and it is often difficult to get the veneers from two logs to match very closely. Veneers in the same flitch often differ to such an extent that some pieces would be hard to sell if the buyer had his choice between the cases veneered with the extremes of a certain flitch. The veneer



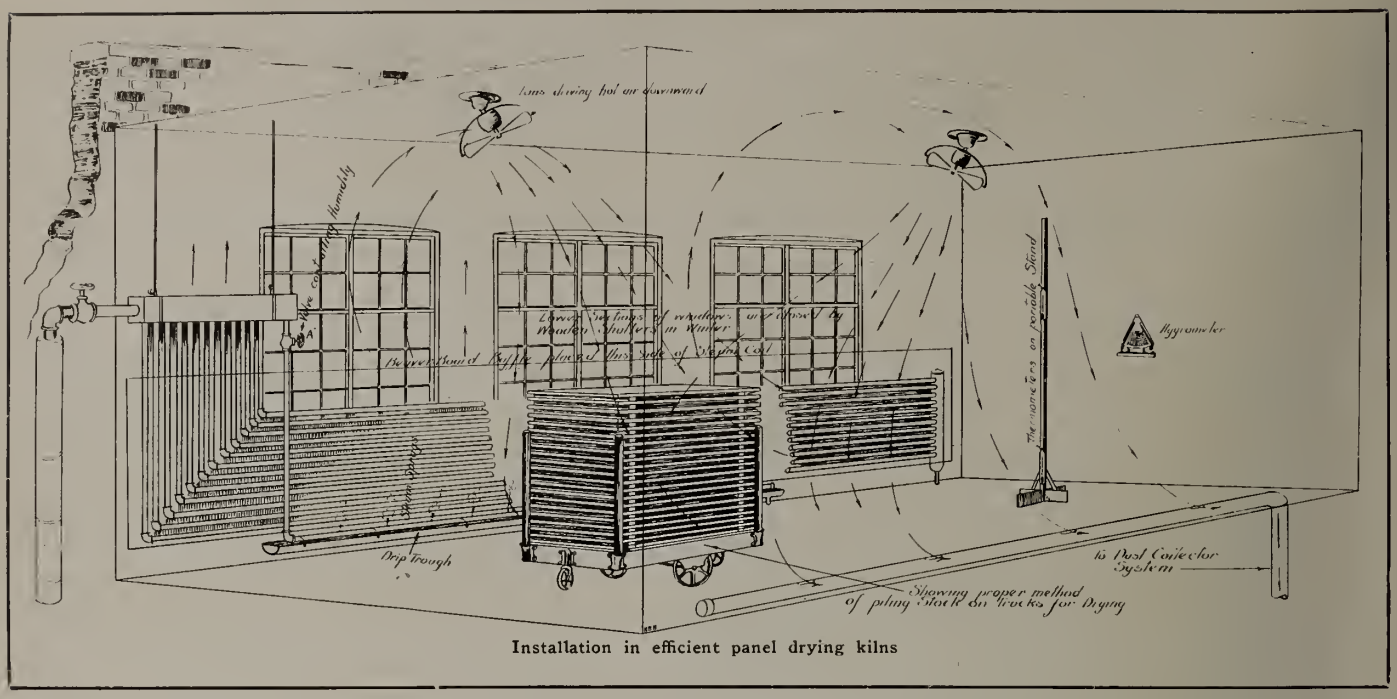
Dresser with Queen Anne motif showing fancy overlays

cut from the centre of a log is generally full of life and color while the one from the edge is often dull and lifeless.

There is one form of veneering which if properly termed, would be "decorative," for it really is used as such. It is composed of veneers of various woods and designs, which are either inlaid or merely planted on and form a very interesting phase of veneer work from both the practical and artistic standpoint. The two sketches shown herewith illustrate this phase of veneer work nicely, the chiffonier being a Hepplewhite reproduction with inlaid veneers, while the vanity dresser is ofthe Queen Anne period and shows the overlay work. In the chiffonier are burl walnut patches inlaid in a rich mahogany background, while on the vanity dresser are seen the small patches which form a setting for the pulls and also the band of veneer which forms a border for the doors and sets them out as no frame could.

The methods of preparing the patches and glueing them on may differ somewhat but the principles are practically the same. In the first place, the veneer, from which the patches are to be cut, has to be prepared

(Continued on page 188)



Installation in efficient panel drying kilns

How One Firm Overcame Veneer Checks

Strict Attention to Details of Every Operation, Together with Drying in Specially Constructed, Humidity Controlled Kiln, Solved Problem

By H. B. Beattie.

It has been said that much learning maketh the flesh weary and of the making of books there is no end. How about the making of built-up veneered stock, five-ply panels or tops, perfectly, the year round, even with the help of all the latest machinery? It not only maketh the flesh weary but it often causeth mutterings from out the mouths of operators and management alike.

Much has been done to fool Dame Nature in the preparation of wood to adorn the home of mankind, and much remains to be done, for some of us at any rate. Here we have a batch of beds, several have badly checked panels weeks after they are "in varnish." Several extension table tops gone in the same way even after the utmost care has been taken by all hands to insure a perfect job. These little occurrences cause you to sit up and take notice,—you slightly improve your system. A little more attention is paid to the core stock, and you perhaps delve into the secrets of your vegetable glue, yet you might spend a few minutes "looking wise" over your veneer department machinery, and put a dab of improvement here and there, and then sit back and await results.

And anon! Results, good, bad or indifferent. You might even get a severe jolt. I did—then tried this:

Strict Attention to Core

Going out to the dry kiln it was suggested that the 4/4 chestnut used for core stock was not steamed long enough to dissolve the minute particles of congealed sap in the pores of the wood, so that during subsequent drying this would not be all drawn off, and might prove a factor against good veneer work. say "might" for I am not just sure yet of the effect, if any, of the tanic acid in the sap on vegetable glue. However, we now steam our chestnut core stock the prescribed time. Following on into the breaking out department, we are careful not to plane our glued-up stock until the joints are thoroughly dry. I find that it takes as long as four days for animal glue joints, say in a top, 60 in. x 22 in. x ¾ in. to thoroughly dry out, that is in ordinary factory temperature. I have read of this and then proved it to my own satisfaction by weighing cuttings from the centre of test pieces.

The reason for not planing until the joints have dried out is that the swelling of the wood along these joints, caused by the moisture in the glue, forms a slight ridge hardly discernible. However planing too soon cuts away that ridge, then when the joint does dryout and the wood shrinks to normal there is a slight depression that often shows up on veneered work in varnish.

Even Glue Spread Important

In veneer department, before cross banding of birch or poplar is laid on, all worm holes or other depressions are filled with reliable crack filler. In running the core body through the glue-spreading machine, great care is taken to see that the spread is neither too heavy or too light, and that the surface is all uniformly covered. After cross-banded stock is removed from press or retaining clamps, it is piled upon trucks for several days between strips. Then as 1/24 poplar or 1/20 birch is often sliced roughly, the face side is put through the triple drum sander with just enough pressure on the feed rolls to move the stock along, otherwise the edges would be rounded over and the face veneer could not be squeezed down. While this makes extra handling it is a saver in the long run, as you are absolutely sure of a good foundation for the face veneer, whether it be crotch mahogany, butt walnut, or the common log-run variety.

All veneer joints are made on a Jenkins veneer jointer and then taped together on a Preston taping machine. After face veneers have been laid and pressure applied, stock is left in retaining clamps all night

and in the morning these are knocked off and stock is piled between stickers or strips on trucks. There it remains for a day to air dry, then trucks are shoved into a drying room, (see sketch), where temperature and relative humidity are controlled and registered by means of a "hygrometer." (This name is taken from a Greek compound meaning "moist measure").

Details of Veneer Kiln

Fans fastened to the ceiling and inclined downwards at an angle to force the rising hot air down onto the floor, and at the same time creating a circulation. The heavier moisture-charged air is drawn off at the floor level by a pipe connected to the dust collector system. Fresh air is drawn in through two opened windows (opened about 3 in.) During the winter months these openings will be covered with light factory cotton. The humidity is controlled by having a separate pipe connected to the steam heater. (see (a) on sketch), and run down to within 6 in. of the floor, then along horizontally for about 12 ft. At intervals of 15 in. there is a 3/16 in. hole drilled in the pipe, to allow escape of steam. A galvanized iron trough is placed underneath the entire length of the horizontal section of this pipe to catch the drip. This is emptied by a pipe leading away at the low end. For this and many other valuable suggestions I am indebted to Mr. E. U. Kettle of the Grand Rapids Veneer Works.

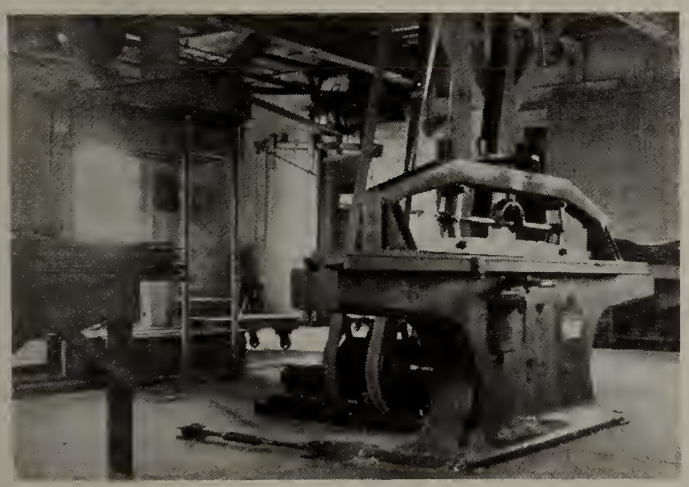
Two extra thermometers are hung upon a stand. One 6 ft. off the floor and the other 1 ft. off the floor to keep a check on uniform temperature. If the fans were turned off, for example, the temperature in the first 18 or 20 in. of space off the floor would be in the neighborhood of 90°, while the temperature above this level would vary according to height from 100° to 120°. This would mean that the stock piled near bottom of truck would be 10 to 150° cooler than stock piled on top, causing uneven drying. This noticeable difference in temperature is brought about by the ventilating pipe drawing the air off at the floor level, and the natural tendency of the hot air to rise. The proper condition for the drying room is 105° temperature, with 40 per cent. relative humidity, and stock will dry out to 6 per cent. or 7 per cent. in four or five days. This system is proving quite satisfactory.

A Better Way to Joint Your Veneers

Past and Present Methods Compared—Modern Veneer Jointing Equipment Increases Production—Accurate Work and Lower Costs

By W. Marsh

Years ago when the writer first made his acquaintance with the veneering industry, the almost universal method of jointing veneers was by hand. A "shooting board," a couple of handscrews or "go bars" and a jointing plane were the tools used. I think it is needless to describe at length what is meant by a "shooting board." This appliance is undoubtedly familiar to all cabinet workers. It is simply a piece of board with another piece several inches less in width secured to its surface. The veneers are laid flat on this top piece and allowed to project a quarter inch or so, depending on how straight or how crooked the edges are, so that the hand jointing plane may be pushed backwards and forwards on its side on the lower board.



Jenkins veneer jointer in St. Thomas Cabinets plant, St. Thomas, Ont.

This "shooting board" is, of course, placed on a bench when in use; a strip of wood is placed on top of the veneer and the whole thing held rigid on the bench with hand-screws or "go bars." The latter method is perhaps the best, as it is usually only possible to put a hand-screw at each end, whereas, the "go bars" can be placed on the ends and also on the centre. These "go bars" are simply strips of wood, usually elm, which reach from the bench to the ceiling, or an overhead platform. The pressure is obtained by bending them in the centre. This method of applying pressure is used extensively in glueing the ribs, or diagonal strips, on piano sounding boards.

Buzz Planer Used.

Jointing veneer by this method is very slow. About two dozen sheets are all that can be handled to advantage at one time. Frequent tests with a straight edge are necessary to show the workman when the joints are perfect. As is the case with many other hand methods, the results cannot be excelled, provided a mechanic does the work, but the output per man is so small, and therefore costly, that jointing veneer with a hand plane is out of the question in a plant where any amount of veneering is to be done.

A great many factories have used, and some are still using, a buzz planer for jointing their veneer. This method is faster than the hand plane, but is not to be compared with a regular veneer jointer, either in capacity or the quality of the joints. To joint veneer on a buzz planer it is necessary to grip the stock between boards and secure it with hand-screws. If the tables are properly adjusted and the knives are in perfect condition, a very good joint can be made on straight grained veneer. If the grain is not perfectly straight, it is almost impossible to avoid chipping and the smallest imperfection in the edges of the veneers makes an unsightly joint, when two pieces are taped together.

Special Machine the Solution.

Where a buzz planer is used by other workmen for jointing and facing off lumber, it is nearly impossible to keep it in fit condition for jointing veneers. It would

seem logical then to install a buzz planer for the sole use of the veneer room. But if this plan is adopted, why not go a little further and install a veneer jointer. It will cost more than a buzz planer, perhaps twice as much, but if output is a factor, it will save the difference in cost for the purchaser within a short period.

The writer is familiar with two types of veneer jointers. On one of these the veneer is placed flat on the bed of the machine and fed through by travelling chains. These chains are about three inches in width and have milled links. They are similar to the chains on the fast feed edging and jointing saws now in extensive use. The jointing is done with a saw and a cutter head. The saw takes off the rough edges and the cutter head makes the joint.

This is a good machine on flat veneer, but the

View of veneer jointer in plant of Midland Woodworkers, Limited, Midland, Ont.

writer's experience has been, that it "falls down" on veneer that is not perfectly straight. I believe this is due to the following reason: in carrying the veneer past the cutters, the top chain just exerts pressure on the edge with the result that if the stock is not perfectly flat, it twists around and does not pass through in a straight line. It has also been found that the chain feed is not suitable for veneers that are to be butt jointed and the writer is acquainted with a plant using this type of machine where they have to resort to the hand plane for jointing veneer that is in any way buckled and also veneers that are to be butt jointed.

Another Type of Jointer.

The other type of veneer jointer I am familiar with is made by the Jenkins Falls people. It operates on an entirely different principle. The veneer is clamped and held flat in a carriage which travels past the cutter. The cutter used is a special type of jointing saw. The edge of the table where the saw runs is bevelled and as the saw runs close up against this bevelled edge, with just the proper clearance, there is very little danger of chipping the veneer.

If a piece of waste veneer is placed on the outsides of the stock being jointed, perfect joints are obtained and the machine handles straight veneers, twisted veneer and butt joint stock with equal facility. The travelling carriage stops automatically according to the length of the stock being jointed. Then the operator throws in a clutch and the carriage returns to the loading point.

A veneer jointer is indispensable in any plant doing a quantity of veneering, although, too often, factory owners have been prone to give all their attention to machines that would increase the quality and capacity of their machine room work to the exclusion of the veneering department. If a properly balanced organization is the aim, it is obvious that the veneer room should be considered as part of the whole, rather than as a side issue.

Embarks on Aggressive Policy

Among the new advertisements appearing in this issue will be found that of the Williamson Veneer Co., Inc. of Baltimore, Md. This is one of the older and best known veneer companies in America, but heretofore they have been content to build conservatively, but well, doing business for the most part through jobbers. A change has been made in the methods of this company, with the result that an aggressive, direct-to-the-trade policy has been established

This firm was founded in Indianapolis more than half a century ago, as the Adams & Williamson Veneer Company, Marshall D. Williamson being the prime organizer. Mr. Williamson was an experienced veneer man and took an active interest in all departments of the business. Many improvements in methods and equipment are credited to his knowledge and practicability. He has since been succeeded by his son, Dwight W. Williamson, the present president, and his grandson, Roger W. Williamson, vice-president and sales manager.

In 1900 the plant was moved to Baltimore and in 1904 it was completely destroyed by fire. A new and larger plant was established, which consisted of six modern buildings; cutting mill, sawmill, dryhouse, warehouse, power house and office building. The installation consists of a seventeen-foot, two-inch slicer, three ten-foot rotary lathes and two sawmills, together with the other necessary equipment.

The Canadian business will be handled through the Jameston office, where Mr. Edward McGinley is in charge. R. J. Cavanagh will handle the sales in Chicago and vicinity. H. C. Livingston will be in charge of the New York office and C. J. Cummins will work out of High Point, N. C.

Vegetable Glue Patents Sustained

Last year the Perkins Glue Company brought suit against the West Michigan Furniture Company and Hood & Wright, in the U. S. District Court at Grand Rapids for infringement of the Perkins patents. The cases were tried in October, 1919, and the Court on September 10, 1920, handed down its decision upholding the patent and declaring both concerns to have infringed, and granting to the Perkins Company any injunction against further infringements and an accounting for profits and damages.

Talking Shop

"Life is a hard grind," said the emery wheel.

"It's a perfect bore," said the auger.

"It means nothing but hard knocks for me," sighed the nail.

"You haven't so much to go through as I have," put in the saw.

"I can barely scrape along," complained the plane.

"And I am constantly being sat upon," added the bench.

"Let's strike," said the hammer.

"Cut it out," said the chisel.

And all was silent.

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

THE OHIO VENEER COMPANY

Importers and Manufacturers

Foreign and Domestic Veneers and Hardwood Lumber

We always carry a large and assorted stock of Mahogany, Circassian Walnut, Sawed and Sliced Quartered Oak.

Send us your enquiries and orders. We guarantee good service.

2624 to 2644 Colerain Avenue, CINCINNATI, OHIO.

Mahogany Lumber
Mahogany & Walnut Veneers

Located close to the source of supply down in New Orleans, we have an up-to-date, well-equipped mill, exclu sioyedemplvely in cutting into Lumber and Veneers the fine Mahogany logs our ships bring in direct from the tropics.

The Freiberg Mahogany Co.

CINCINNATI, OHIO NEW ORLEANS, LA.

NATIONAL VENEER & LUMBER CO.

AMERICAN WALNUT VENEER

Long Wood and Butts

QUARTERED WHITE OAK VENEER

Sawed and Sliced

1635 West Michigan Street - INDIANAPOLIS, INDIANA

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

Litton Veneer Co.

Manufacturers

American Walnut, Figured Gum, Sliced Quartered Oak, and all Kinds of Figured Woods

Walnut and Quartered Oak Lumber

Office and Mill
ROCKFORD - ILLINOIS

Panels and Rotary Cut Veneers

Considering the present large demand for high-grade cabinets and the extreme scarcity of good panels, it may interest you to know, Mr. Manufacturer, that we now have in stock, and can make immediate shipment of, a very large quantity of both three and five-ply panels for talking machines in either

**Mahogany,
American Walnut,
Quarter Sawed Oak**

We also have for immediate disposal a large supply of birch and gum panels adaptable for shelving.
We are in position to take orders for future delivery. Order now for holiday trade.
We have just received a big shipment of single ply spruce for horn stock. Write us for prices on cross banding and core stock.

George G. Roberts
22 QUINCY STREET, CHICAGO, ILL.

"The Kiln Drying of Lumber"

A Practical and Theoretical Treatise

By HARRY DONALD TIEMANN, M.E., M.F.

In charge, Section of Timber Physics and Kiln Drying Experiments of the U. S. Forest Service. Special Lecturer in Wood Technology and Forestry, University of Wisconsin. Forest Products Laboratory, Madison, Wisconsin.

Second Edition 318 pages.

The value of a technical knowledge of *kiln drying* is self evident. This book, as does no other upon the market, gives the reader the most recent and most clearly expressed information. The text and illustrations guide the way to the most efficient methods of work.

Price $5.00

Woodworker Publishing Co., Limited

345 Adelaide Street West, Toronto

This Is Not A Truck Advertisement

HOLT TRACTOR No 1

HOLT TRACTOR No 2

A half century ago this company was founded on its present site. Today the popular idea is that Indiana and Ohio are devoid of timber. The extensive logging equipment here pictured is but the mechanical end of our logging department, all operating within a radius of 100 miles of our Indiana mills, and hauling northern grown Oak, Walnut, Ash, and other high-grade logs to the railroad. These machines with a full complement of trailers and animals will be so occupied for years.

Since its inception, the company has never been out of the family, and therein lies it strength. An intimate knowledge of all supplies of virgin growth northern timber makes possible an unceasing flow of as good logs as we cut fifty years ago.

Efficiency in manufacture has become traditional in our organization. The genuine and the perfect in northern grown hardwoods are our pride.

Reg. U.S. HB Pat. Off.

Est. 1867
Inc 1904

Hoffman Bros. Company
FT. WAYNE, INDIANA

PEERLESS
No 1

J-T TRACTOR
No 1

J-T TRACTOR No 2

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

VENEERS---*the better quality kind*

What are your requirements for—

ROTARY, VENEERS, POPLAR CROSSBANDING AND SHEET STOCK,
WALNUT BUTTS AND SAWED QUARTERED OAK

Your orders will be filled exactly as you specify and we can assure prompt shipment from our large reserve stock. Let us hear from you.

W. T. THOMPSON VENEER COMPANY

EDINBURGH, INDIANA - - U. S. A.

OUR reputation for Square Dealing, Fair Prices, Prompt Service, Courteous Treatment, Right Terms, is a Guarantee of Satisfaction on orders placed with us.

Best Assortment in Chicago of Rotary Cut Domestic Woods, Sliced and Sawn Figured Woods

VENEER MANUFACTURERS COMPANY

1036 W. 37th Street, Chicago

VENEERS: ***Not always the cheapest But always the best***

Western Office, 516 Lumber Exchange, MINNEAPOLIS, MINN. Mills at GLADSTONE, MICHIGAN

The Northwestern Cooperage & Lumber Co., Gladstone, Mich.

THE HOME OF "PEERLESS" STANDARD BRAND PRODUCTS

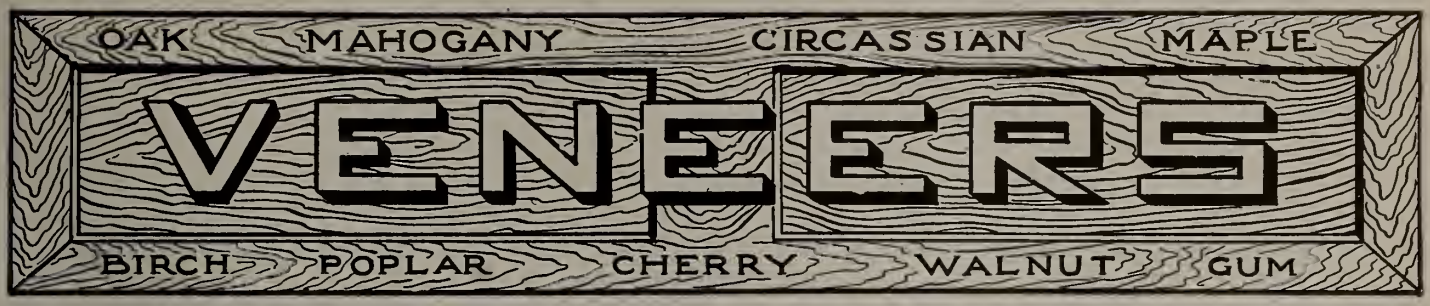
Manufacturers of

"PEERLESS" ROTARY CUT VENEERS

in Birch, Elm, Basswood, Maple, Ash and Beech for all purposes

Also hoops, liners and staves for manufacture of packages

Also "Peerless" Rock Maple, Beech and Birch flooring; Hemlock lumber; Lath, etc.
"Peerless" products are standard everywhere and you are always exercising Safety First in using them. Try us next time.
(When writing mention Canadian Woodworker)



Poplar and Walnut
Veneers

We specialize in large size poplar veneers as we have extra fine poplar logs. We can cut veneer up to 10 feet square.

Our walnut veneer cannot be beat, both in plain and figured wood.

Write us for prices.

Central Veneer Company
Winter Ave. and Belt R. R., INDIANAPOLIS, IND.

Sovemanco
Southern Veneer Manufacturing Co., Inc.
LOUISVILLE, KY.

Importers and Manufacturers of all kinds of Sawed, Sliced and Rotary-cut

VENEERS

CARRYING

a large stock of selected Mahogany, Figured and Plain Walnut, Walnut Butts, Sawed and Sliced Quartered Oak and Sycamore and all other native woods.

1,000,000 Feet
QUARTERED RED GUM
to select from

WE Respectfully solicit your inquiries

PANELS and VENEERS

Specialize in

Phonograph Cabinet Panels

For Service and Quality try

HENRY S. HOLDEN
1742 Monadnock Block, CHICAGO, Ill.

Wide Veneer

One carload of 1/20″
Quartered White Oak
Sawed Veneer
12″ and wider

Ready for Quick Shipment.

Memphis Veneer & Lumber Co.
MEMPHIS, TENN.

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

SAVE FREIGHT

Rotary Cut Birch and Gum

Why pay freight on gum veneers from southern points when our cutting mill is so near the border.

PANELS

We manufacture Tops, Fronts and Panels of all kinds

Ask for our "Ready to Ship" Stock List

MOHAWK VENEER CO., INC.

Warren. Pa.

Plywood Dept. Warren, Pa.

Cutting Mill Salisbury Center, N.Y.

K QUALITY

HONDURAS

MAHOGANY

K QUALITY

Lumber

Plain and Fancy

VENEERS

Mahogany, Walnut
Birch, Ash, Poplar

Rotary, Sliced or Sawed in all Thicknesses

Built up Stock in
Birch and Maple

Send for Samples

K QUALITY

George Kersley

Office: 511 St. Catherine Street West, Montreal.
Yard: 140 Chatham St, Montreal.

K QUALITY

QUALITY *SERVICE*

PICKREL VENEER COMPANY, Inc.

MANUFACTURERS OF

American Walnut

Exclusively

Woodruff and River *New Albany, Ind.*

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

Veneers and Panels

PANELS

Stock Sizes for Immediate Shipment. All Woods. All Thicknesses. 3 and 5 Ply or made to your specifications

We are Chicago agents for WOCO FIR PANELS, and carry a full and complete line in all stock sizes and all thicknesses at our Chicago warehouse for immediate shipment.

J. J. NARTZIK, Inc.

1966-76 Maud Ave., - - - CHICAGO, ILL.

Mills: Des Arc, Ark. and Grand Rapids, Minn.

WE HAVE A COMPLETE STOCK OF 3 and 5 PLY PANELS IN VARIOUS WOODS AND THICKNESSES FOR QUICK SHIPMENT

Also offer 3/8" 3 ply Fir s-2-s Panels for Drawer Bottoms and Backing.
1/8" Rotary Cut Northern Red Oak
1/8" Rotary Cut Northern White Oak.
1/8" Birch Veneer 6 to 36" wide 60 to 86" long.
Panels also made to your dimensions.

Write for Prices

GEO. L. WAETJEN & CO.

Milwaukee - Wisconsin

Immediate Delivery

FROM STOCK OR TO YOUR ORDER

Veneered Panels

Veneers—Wood Dowels

Adolph Sturm Company

ESTABLISHED 1869

542-544 West Washington Street,

Offices, Mills and Warehouses

CHICAGO, ILLINOIS, U.S.A.

C. E. CURTIS & BRO. CO.

2422 S. Western Ave.

CHICAGO, ILL.

SUPPLYING HIGH GRADE

Veneered Panels

IN ANY SIZE, THICKNESS OR KIND OF WOOD

Immediate Shipment on all Stock Sizes in Walnut, Plain Oak, Birch, Mahogany, Etc.

Buyers of Veneers and Panels

will find it to their advantage to purchase from the manufacturers and dealers whose advertisements appear in this publication. They are progressive firms—the leaders in the business, which is a guarantee of good service and prompt attention to orders.

Give your business to the man who will spend his time and money to get in touch with you. He deserves it—if his stock and prices are right.

THE WILLIAMSON

announces the opening of a

BRANCH OFFICE IN CHICAGO

FOR many years this Company has conducted its operations in Chicago and vicinity thru a firm of jobbers and has enjoyed a substantial business in that way. The Company now finds, however, that, by establishing a direct branch show room and sales office in Chicago, they can serve not only their old trade as well as or better than here-to-fore but many additional customers, giving to all the kind of service which - with the quality of its products - has built the reputation of this firm.

WE are carrying samples of a full line of our veneers at Jamestown and Chicago and extend a most cordial invitation to the trade to communicate with our representatives.

NEW CHICAGO OFFICE
In charge of Mr. R. J. Cavanaugh.
SUITE 713-719 28 E. JACKSON BLVD.

VENEER CO. INC.

MANUFACTURERS and MERCHANTS

MILLS

BALTIMORE. MD.

WALNUT BUTTS
MAHOGANY
OAK, POPLAR
LONG WALNUT
and other fancy wood veneers.

BRANCH OFFICES & SHOW-ROOMS

NEW YORK CITY
FORTY-FIRST ST. & SIXTH AVE

CHICAGO 28 E. JACKSON BLVD.

JAMESTOWN-N.Y. HIGHPOINT. N.C.

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

INVESTIGATE

P.-J. SERVICE

For high-grade rotary cut veneer, that is smooth and evenly cut and dried by mechanical means to any percentage of moisture desired.

We also operate large band mills where all kinds of southern hardwood lumber is cut from our own tract of timber in the very heart of the Saint Francis Basin District, Arkansas.

PENROD-JURDEN COMPANY

A Name that Should be on your Enquiry List for both Veneer and Lumber

Mills at Helena and Penjur, Ark. General Offices: Memphis, Tennessee.

Penrod Walnut and Veneer Co.

Kansas City, - Mo.

Exclusive Manufacturers American Walnut Lumber and Veneers

ON account of the freight congestion and the possibility of a very serious car shortage, we suggest you anticipate your Walnut requirements and get in your supply for the next few months as soon as possible.

Write us for prices on Lumber and Veneers.

"PENROD SERVICE" Satisfies.

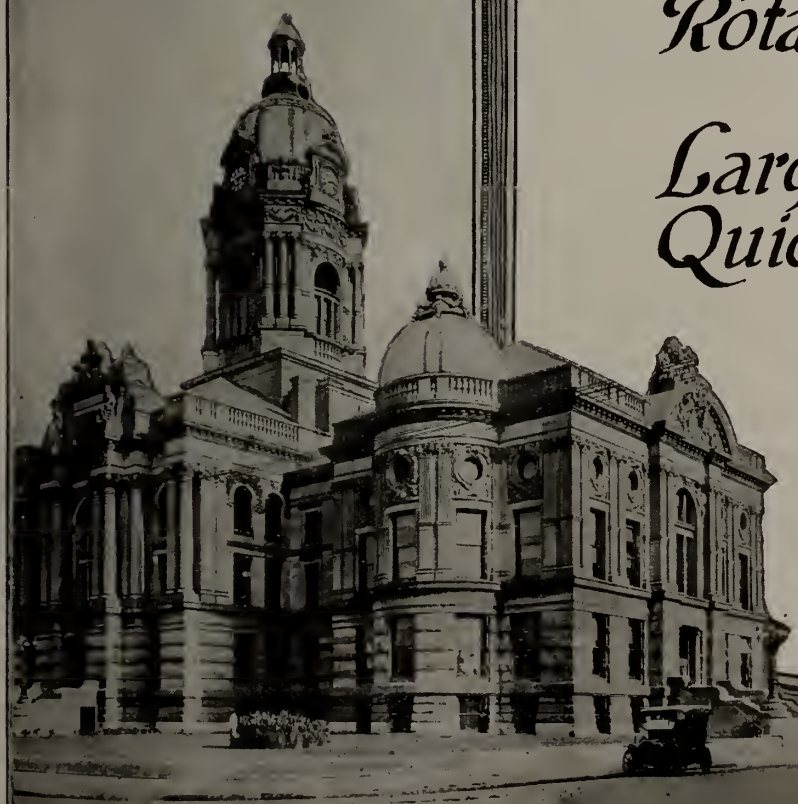
C. A. Rugg, 115 Foots Avenue, Jamestown, N. Y., Eastern Representative.

Geo. C. Hall, 610 South Michigan Street, Representative for Chicago and Michigan territory.

Ability,
Stability,
Dependability,
in
Price,
Quality,
Trade ethics.

Quartered Oak,
Sliced Walnut,
Figured Gum,
Rotary cut Gum.

Large Stocks,
Quick Delivery.



COURT HOUSE, *Evansville Indiana*

THE *Evansville Veneer Co.*

MANUFACTURERS OF

VENEERS.

EVANSVILLE, IND.

THERMOSTATICALLY CONTROLLED STEAMING VATS

THERMOSTATICALLY controlled steaming vats correctly prepare veneer logs and flitches for cutting. While not all important in themselves they reflect thorough care and knowledge throughout the manufacturing processes.

This one point is typical of every unit in our extensive hardwood lumbering and veneer operations. The entire equipment behind our band mills; the facilities accessory to our veneer operations are all carefully planned to attain the best results.

Our timber represents the critical selection of a trained timber department, including twenty experienced timber buyers. The lumber is cut in four modern mills equipped with five band saws. The veneer logs and flitches are converted at three plants operating an unusually large battery of saws, slicers and rotaries.

The product we offer consists of the best obtainable white oak, walnut, poplar, ash and other hardwood lumber, sawed quartered white oak veneers, sliced and rotary cut walnut veneers and rotary cut yellow poplar crossbanding.

Each product is made in an especially designed plant. The extent of our organization gives satisfactory guarantee of service to buyers.

WOOD-MOSAIC COMPANY

INCORPORATED

LOUISVILLE, KENTUCKY

Success in Business Depends on Service

PROBABLY at no other period in history, has service proven such a factor in promoting the success of any business, as is being constantly demonstrated to-day. We need only point to our own reputation in the woodworking industry, a standing that has been attained after years of co-operation with our customers, and the production of a veneer of merit—BeVeCo.

We have continued to advance, being in a better position now to serve our patrons, than before. Our stock is large and we can ship promptly any quantity of the following at reconstruction prices:

Bird's Eye Maple, Bird's Eye Maple Piano Lining. Plain Birch and Maple Veneers.

BeVeCo veneers are from selected veneer logs, and you are certain to get a product that gives absolute satisfaction.

BIRDS EYE VENEER COMPANY
ESCANABA MICHIGAN

BeVeCo VENEERS

Decoration Applied to Veneering

(Continued from page 171)

so as to be easily worked and handled, for it is usually of the brittle kind. The preparation consists of coating each side with glue size and then glueing a piece of gauze or cheesecloth on to them. This is done as follows. the first glue size is put on, then they are laid between basswood cauls and dried flat. They have to be changed and turned over frequently to prevent their sticking to the cauls. After the preliminary drying, warmed cauls may be used to speed up the drying, after which they are given a coat of glue on the back side and a piece of the gauge is spread on it and pressed down by means of wetted fingers. Then it goes through practically the same drying operation again to dry the glue. Now it is ready to be cut and made up into the various shapes.

In cutting out the various shapes it is necessary to put a number of the veneers together, as many as can be conveniently handled at one time. Then a 3-ply panel is placed on the top and bottom of the veneers for the purpose of binding them closely together. Needless to say the nails are driven in places that will be cut away. Then the pattern is marked on the top panel and the set is ready to be bandsawn.

Requires Sample Work

The nails and panels not only form a means of holding the veneers together but also keep the bottom edges smooth where they would otherwise present a jagged appearance. A smooth edge is very essential in both the inlay and overlay types for reasons which are very apparent. Now that we have the patchwork cut out, we will find that the methods of glueing them on are quite similar in some respects to the glueing on of mouldings.

The inlay work, however, usually requires the services of an expert, but where the designs are not too intricate, a careful band and jig-sawyer can accomplish a great deal. In the inlay work the face veneer is always prepared with the inlay before being glued to the crossbanding or core, the two being held together with stripes of gummed tape or paper, which should be placed on the face-side for they have to be taken off again after the panel has dried. With the overlay, however, the glueing takes place after the panel or piece to which they are to be glued, has been veneered, sanded and polished, for after they are once glued on, it is no easy matter to sand around them.

Small patches, such as are seen on the vanity dresser drawer front, can be glued on very easily, but where they are glued to surfaces, such as a bed-head or foot panel, a different problem is met with, for they are generally so large and unwieldy that clamps and handscrews are of little use. A small veneer press comes handy for such work. Another wrinkle that is used quite frequently where only a few pieces have to be laid, is to place the panel on a bench or a set of horses and glue the patch down by means of a stick which can be tightly wedged between the ceiling and the block covering the patch.

Joints Require Care

Borders, such as shown on the Queen Anne vanity dresser, are not always mitered as some readers might think. They are cut so as to allow the least waste. The joints are cut quite closely on the bandsaw and smoothed up on a shooting-board or a bench miter block. Sometimes they are cut to fit with a wide sharp chisel and a smooth cutting block. Then when all sides are fitted they are glued on and held in place temporarily with small veneer tacks, the heads of which are nipped off close to the veneer.

After both sides of the two doors are thus laid they are placed with their faces together, being separated by a sheet or two of paper to prevent them from sticking together and are then placed in a small press or squeezed with handscews. The nails are so small that they need to be taken out. Instead they are driven down into the panel with a small nail-set.

The faces of front post are often decorated by means of these patches, and if correctly designed, present a very attractive appearance. The methods for glueing these on, differ the same as all others and it can generally be left to the pressman's ingenuity to find the most efficient way of laying them.

Panel Plant at Southampton

One of the newer additions to the industries of Southampton, Ont., is the factory of Panels, Limited. As the name indicates the efforts of this firm are devoted to producing a line of panels and plywood in different woods and different thicknesses. About sixty hands are employed at present and the output runs about 5,000 feet of built-up stock each day. When running to full capacity this figure can be doubled. A very complete plant has been installed, including the latest in panel making equipment. In addition, certain woodworking machines were included to facilitate the manufacturer of cores.

The output includes built-up stock in all the figured and commoner woods. Many of the orders filled are for stock, sanded and sized, for such articles as phonographs, case-goods, doors, interior woodwork, in fact panels for all purposes, including the cheaper lines for case tracks, drawer bottoms and similar items.

Mr. J. H. Hande, manager of the Toronto Veneer Co., Limited, Toronto, Ont., is managing director of Panels, Limited. As a matter of fact the two companies are practically identical though incorporated and conducted as two distinct organizations. At the present moment Mr. Hande states that business is a trifle quiet, though he looks for an early resumption of buying.

Paper from Veneer Waste

In the wood waste from veneer factories the U. S. Forest Products Laboratory sees considerable raw material suitable for the manufacture of high grades of paper. The cores of many kinds of veneer logs, now used in a large part for fuel, would make excellent pulpwood. In addition, a large part of the clippings and small veneer waste, which amount to 1/5 of the total veneer cut, probably could be turned into pulp stock with profit.

Among the veneer woods whose waste has paper-making possibilities are red gum, yellow poplar, cottonwood, birch, tupelo, basswood, and beech. Many veneer factories cutting these species are already within shipping distance of pulp mills. In certain other cases, veneer factories are so grouped that they might furnish pulpwood enough to warrant the erection of a centrally-located mill. Other economic factors being favorable, such a mill could profitably operate on a daily supply of veneer waste equivalent to 50 cords of ordinary pulpwood. Of course, the construction of a mill should be undertaken only upon the advice of a competent mill engineer after a careful survey of local conditions.

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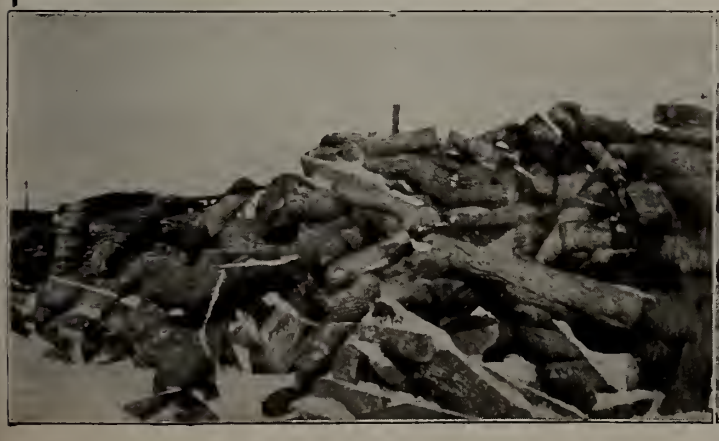

How St. Thomas Cabinets Make Panels

Up-to-Date Panel Making Equipment—Prefer Birch Crossbanding for Panels —Special Formula for Mixing Glue—Efficient Drying Room Constructed

By Jos. Bone.

When the St. Thomas Cabinets, Limited, St. Thomas, Ont., were purchasing machinery for their phonograph factory, they made a point of securing the very best equipment available, for a thoroughly up-to-date veneer department. Of this department much was expected. It was to be more than a mere auxiliary, but was to keep pace with the other departments, prepare panels for all the cabinets framed in the cabinet shop, and, in addition, to undertake the manufacture of panels for other firms who were not in a position to lay up plywood for themselves.

It made good, it kept pace and its output for the last eight months has been exceptionally large. Two carloads of veneers per month have been cut up and converted into panels in this busy department. Coincident with this large production, a certain amount of experimental work was undertaken, with the result that to-day the department boasts of being able to turn out panels as good as ony on the market, and as nearly perfect as the yet limited knowledge of the art of panel-making permits.

The ideal oak panel, according to the specifications of the St. Thomas Cabinets, if 3/8 thick and of 5-ply construction, is as follows:—3/16 in. poplar core, 1/20 in. oak face veneer, 1/20 in. birch,or maple back veneer, and 2, 1/20 in. birch cross-bands. If a walnut or mahogany panel is being made, gum veneer will be used on the back. For panels ½ in. thick or over, the St. Thomas people recommend that chestnut core with 1/20 in. birch cross-banding oak face and birch back, or walnut and mahogany face with gum back.

In making 5-ply panels the St. Thomas procedure is as follows:—A press truck is drawn immediately in front of the glue spreading machine and a press bottom, made of 3-ply 13/16 maple, placed upon it. The cross-band material and cauls are placed upon tables situated convenient to the men behind the spreader. The core stock is placed on another table behind the spreader. As the cores pass through the machine the 3-ply stock is built up on the truck with a 3-ply wood caul sandwiched between each layer. The load is topped with a 3-ply 13/16 maple press piece and run into the hydraulic press. This operation is performed with the utmost despatch.

Pressure 100 Lbs. per Square Inch

In the press the panels are subject to a pressure of 100 lbs. per square inch, if under ½ in. thick, and to 90 lbs. per square inch if over this thickness. After the panels are withdrawn from the press, they are allowed to stand for twelve hours in the retaining clamps. When released from these, the stock is passed through an endless bed sander, and smoothed to uniform thickness. The panels are then transferred to a specially-constructed drying room, stacked in piles with sticks between each layer and weighed down with heavy weights. This room is maintained at a temperature of 90 degrees and the stock is usually left in for a 36-hour period.

The drying-room is well ventilated and is provided with two fans. One of which the fresh air is from the outside, sending it through the heating coils, while the other is used to expel the moist air. From the drying room the panels are taken back to the veneer department where they are again passed through the spreader and the face and back veneers laid.

Worked Out Own Glue Formula.

The glue used is Perkins "183" vegetable glue. After much experimenting, the following formula has been found to give the most satisfactory results: Glue 120 lbs., water 202 lbs., solvent 4 lbs., water 14 lbs. The 14 lbs. of water for the solvent is first heated to a boiling point and the solvent added and stirred until dissolved. The 202 lbs. of water for the glue is poured into the cooker, the glue and solvent added and the mixture cooked under 180 lbs. pressure for about two hours or until such time as it has attained a light amber color. Cold water is then injected into the steam jacket and the mixture cooled off. The cooling usually requires half an hour. In mixing the glue, care must be taken to see that the water used is absolutely pure. Sometimes as an experiment this formula is varied, but invariably the results are not so satisfactory as when the glue used is mixed as above.

The St. Thomas people pin their faith on 3-ply, wooden cauls. These are coated with a solution of paraffine wax and light oil once a week and cleaned off every time they are used. They find that the best results are secured in a veneer department which has a wooden floor. On no account should a basement with cement floor be used, as a veneer room for a uniform temperature in this department is absolutely essential to good results.

Unique Veneered Effect

The term "oyster wood" is not applied to any particular variety of timber but to the method in which the wood is employed. Any firm wood showing stripe is suitable for conversion to what are termed oyster veneers.

The oyster veneers are usually from the boughs of walnut, or similar wood, five inches or six inches in diameter; the veneers are cut across the grain, showing the complete rings of the wood, and the angle at which they are cut is somewhat oblique, the resultant veneer being oval in shape.

The sapwood is left on the veneers, which are trimmed to fit into each other when applied to furniture, and are called oysters from their resemblance to the shape of oyster shells.

The oyster method of veneering is somewhat "freakish" and is not generally recommended, as the end grained wood is almost certain to split, and the appearance of furniture so treated is not always of the best after a time.

However, the oyster method of veneering was very popular during the Seventeenth Century and many pieces of furniture preserved from that period are ornamented in this way.

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Do Western Woods Make Good Cores?

Writer Does Not Agree with Coye in September Issue—Sitka Spruce Did Not Work Satisfactory—Investigate Thoroughly Before Adopting New Wood

By S. H. Johnstone.

Have you used or experimented with such woods as spruce, cedar, pine and California redwood for cores. If so, will you kindly send in outline of results secured, giving the advantages or disadvantages which you noticed.—The Editor.

In an article in the September "Canadian Woodworker" Philip Coye touches on the suitability of western woods for core stock. In his closing sentence he suggests that the eastern manufacturers do a little experimenting and satisfy themselves as to the behaviour of western woods when worked into panels. This is a very good suggestion—one that should be followed by anyone contemplating using three woods in ply work.

Some time ago the writer had an experience with sitka or aeroplane spruce as a core wood, and the results were not very satisfactory. This was in connection with the manufacture of phonograph cabinets. We had a quantity of this spruce on hand, and, acting against the advice of our veneer room foreman, decided to work some of it into cores for the cabinet doors. The lumber was nice and wide and gave an unusually high percentage of clear cuttings. Had it been suitable in other respects, it would have enabled us to reduce the cost of these cores. As intimated, the percentages of clear cuttings was high and owing to the width of the stock, we had less jointing to do, thus our cost of manufacture was lower. It certainly looked good and we had hopes of effecting a permanent reduction in our cost of production.

Panels Worked and Twisted.

All went well for a while. The spruce took the glue well and the veneers and cross-banding held tight. We piled the pieces away and left them to dry and equalize. These pieces were given identically the same treatment, which we gave to all our built-up stock. When the moisture was all eliminated, we dried them in a heated room, the stock was removed and started through the machine shop. Nothing out of the way was noticed until the pieces reached the assembly department. Here it was found that the majority of the doors were warped or twisted slightly. As this was largely an experimental lot, the warping was laid to the fact that the spruce might require longer to dry and thus was not in perfect condition when removed from the drying room.

Nothing daunted, a second lot was tried. This time particular attention was paid to the drying, the stock being left in until tests showed conclusively that the desired moisture content had been reached. These were then started through the shop with every confidence that the trouble had been overcome. Much to our chagrin when the assembly was reached, the same trouble was encountered. We tried several smaller lots with practically the same results, so gave it up.

The only explanation that we could give was that spruce was a "live wood," one that took up and gave off moisture freely, and owing to its life or liveliness, was hard to keep straight while taking on or giving off moisture. Chestnut is a comparatively dead wood and does not seem nearly as inclined to move and warp when subjected to atmospherical changes.

The table included in the article, to which reference is made, gave a percentage of shrinkage occurring in several woods while being dried from a green to oven-dry condition. Chestnut does not show the same amount of shrinkage as the majority of the other woods, but apart from that, the wood seems to lack life and thus is inclined to remain straight.

The explanation given may not be a scientific one, but as far as we were concerned, our conclusion worked out satisfactorily, for when we adopted chestnut as our core wood, the percentage of warped doors dropped to a negligible figure.

Might Prove Suitable.

There are two western woods, which might prove highly satisfactory for core work. They are both comparatively dead and not given to warping and twisting. These are Western red cedar and California redwood. Both are available in quantities, may be secured in good widths and in grades that will give a high percentage of clear cuttings. Before adopting either of these woods, some careful experimenting should be done, as suggested.

The core is the very foundation of the panel and deserves more consideration than it receives in most plants. Simply because it is covered and, therefore, invisible is no reason why any old grade and kind of wood may be used. The stock for the core should be chosen with as much care as the veneers for the office work. The lumber used should be dry, free from loose ends and wide cracks or checks. It should be of even texture and as far as possible of one kind of wood. One damp piece among the dry pieces will shrink as it dries out and cause a depression that will be visible on the finished surface. The same holds true if the core pieces are surfaced before the stock on both sides of the glued joints has dried out and equalized. The wood near the joints continues to give up its moisture and contracts in the process, leaving shallow depressions the full length of the joint. If not rectified by resurfacing the cores a second time, or if the veneer were applied immediately after the first surfacing, these depressions are likely to show when the panels are completed.

The point I want to make is this that while many different woods, including certain western species, may be entirely suitable for core work, it is not advisable for one to change from one wood to another on hearsay. It is certainly the part of wisdom to proceed carefully and do a little experimenting before making any radical changes. While different woods may give perfect results, yet each will, probably, require to be handled in a slightly different manner. Experimenting should show, if nothing else, the best way to work and handle each wood. It does not pay every time to make a change unless one is absolutely certain.

Walnut is steamed in these kilns to secure even color

How Walnut Lumber is Manufactured

Steamed to Secure Even Color—Labor-saving Equipment Employed—Stock Well Air Dried in Large Yard

THE equipment and methods used in the manufacture of walnut do not differ materially from those of any modern hardwood mill, but the Frank Purcell Walnut Lumber Co., Kansas City, Kansas, have worked out equipment and methods which they believe are not being used in any mill devoted exclusively to the conversion of walnut logs.

Due to the fact that walnut occurs at widely-scattered points and in small stands, their entire supply of logs comes in by rail. The unloading is effected by means of a huge derrick with a 70-foot boom. This permits of taking logs from the cars and placing them on the skids alongside the log tanks. The length of the boom gives sufficient range to properly sort and select the logs and gives a storage capacity of practically half a million feet of logs from the one derrick.

How Logs Are Handled.

As intimated, the logs are piled near the log tank. This is a huge concrete affair, filled with water. The logs are pulled through this before entering the mill, so that all grit and dirt may be removed from the bark.

A log haul-up of the chain type carries the logs from the tank to the log deck. Here a kicker is used to remove them from the log trough. The equipment in the mill proper consists of loader, steam nigger, 6-foot band mill, shot-gun feed, live roll system, a gang edger, an eight saw, 16-foot foot-controlled trimmer, slasher and a hog for reducing the slabwood and edging strips to chips for fuel. In addition to the band mill, a circular rig is operated to take care of the logs in which wire, nails, horseshoes and other hardware may be imbedded. The various steps and operations are arranged to permit of a continuous movement in one direction from the log haul-up to the placing of the lumber on kiln trucks.

Steamed For Even Color.

Owing to the fact that the logs are secured from widely-different localities, the color of the lumber is bound to vary. To secure a uniform color or shade in the finished product, a battery of twelve concrete kilns has been constructed in which to steam the lumber for various periods. This steaming period is varied according to the color and texture of the lumber going through, but usually takes about five days for a change of material.

After the lumber leaves the trimmed saws, it is inspected and stencilled and then conveyed by a sorter chain to the dry kiln trucks. These trucks carry about 7,500 feet of flat piled lumber and are pulled into and out of the kilns by a cable and block system, the power for which is supplied by the mainline shaft. After about five days in the steam, the lumber is conveyed to the piling yard by a transfer truck system. The alleys of the yard are raised from 2 feet to 4 feet above the ground. The individual foundations for the lumber piles are also raised from 1 foot to 1 foot 1 inch above the ground level. This arrangement permits of a free circulation of air through the piles and is conducive to quick drying. The lumber yard lay-out is large enough to accommodate a stock of two and a half million feet of lumber and is taxed to capacity at the present moment. A strong effort is made to carry a complete line of walnut in all grades and in all thicknesses from 3/8 inch to 4 inches.

The power plant consists of two 125 h.p. boilers, which supply steam for a 125 h.p. Corliss engine. The

Band mill in plant of Frank Purcell Walnut Lumber Co., Kansas City, Kansas

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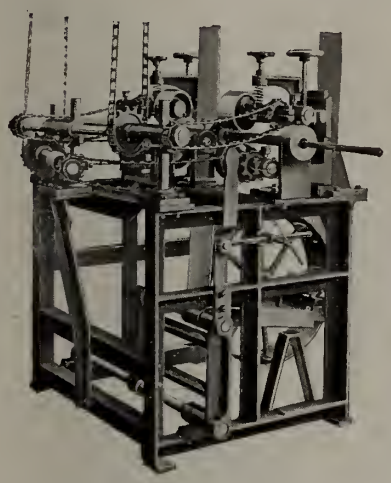

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Method: The operation is automatic throughout. Large flat feed rolls, 6-in. diam. by 3-in. face, revolve the stock with such great rapidity against a single belt of fine sand cloth that it is all done with astonishing swiftness.

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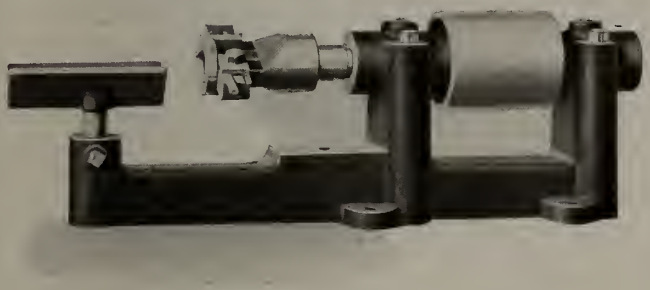

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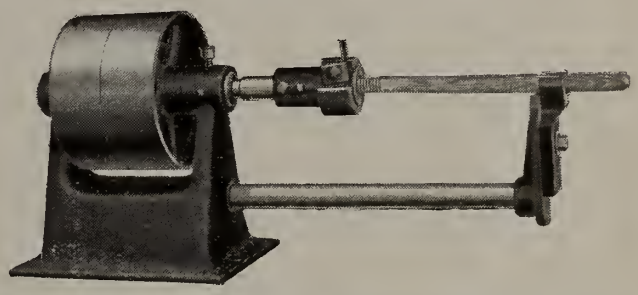

No. 20 Automatic Threading and Tapping Machine

It will tap and thread all kinds of Wood-work such as Brush Blocks, Mop Handles, Sweeper, Duster, and all similar Handles, at the rate of from 20 to 30 pieces per minute. This work is done on all kinds of wood and a clean, perfect thread is always guaranteed.

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TORONTO and MONTREAL, CANADA

boilers are fired by a Palmer forced-draught slack burner system, the fuel used being the chips secured by running the waste through the hog. The boiler-room itself is of hollow tile and is thus fireproof. The mill, engine-room and store-shed is of mill construction covered with corrugated iron.

This progressive company was organized in 1919 as The Frank Purcell Walnut Lumber Co. to take over the business conducted by Frank Purcell for a good many years. The officers and directors of the new organization were all connected with the old business and brought with them a knowledge of walnut and experience in its manufacture that enables them to give good service both in the selecting of the material and the quality of manufacture. The officers and directors consist of Frank Purcell, president; D. H. Shelby, vice-president; George S. Shanklin, vice-president and general manager; Wm. J. O'Connor, treasurer; Francis C. Downey, assistant treasurer, and Frank J. Purcell, secretary.

Walnut logs awaiting conversion into choice lumber.

Prices Show Very Slight Decrease

In view of all that has been said and written with regard to lower prices, the big declines that have taken place and those which are scheduled to occur in the immediate future, the figures just issued by the Cost of Living branch of the Labor Department, and published in the Labor Gazette for October, are worthy of consideration. The average weekly food budget in sixty cities in Canada, at the middle of October, was $15.83, as compared with $15.95 for September, a decrease of 12c a week for a family of five. Not very much. The budget for October, 1919, was $14.21 or $1.72 less than in October, 1920. Comparing 1920 with 1914 the difference is just $7.90 or 100 per cent. higher.

The same holds true with regard to the departmental index number as applied to wholesale prices. October, 1920, it was 317.6 as against 326.6 for September, 1920, a decline of 9 points or under 3 per cent. The figure for October, 1919, was 299.6 for the same period in 1914, 138.7.

It is well to bear in mind when reading articles and opinions on price levels, present values and future declines that while in Canada the term pre-war prices or pre-war values is applied to those which prevailed at or prior to 1914. The same does not hold true with regard to the American use of the term, for they did not enter the war until 1917. Thus in an article written in America or of American origin the term pre-war is applied to conditions as existed in 1917, or prior to the entrance of the United States into the European conflagration, a vastly different situation to that which existed in 1914.

Making Wood Buttons

The wooden button industry in the United States has received a decided impetus, as a result of the activities of the Government in the prosecution of the war, according to the United States Tariff Commission. The centre of this industry is in Providence, R.I., although some wooden buttons are being made in other Eew England cities.

Before the war the industry had an extensive foreign trade, exports going to England, Germany, France, Belgium, Austria and South America. England was perhaps the largest customer until shipments ceased, as a result of Great Britain placing an embargo on the enamelled wooden button.

White birch from the forests of New England provides the raw material for manufacturing these wooden buttons. The trees are cut in the winter, and the logs are sawn at the mills into squares 4 ft. long, each side measuring from ¼ in. to 4 in., the squares differing in size by 1/16 in. They are seasoned or cured for about six months so that the wood may be worked into all shapes. At the factories these squares are known a "spool stock."

Safety Work and Industry

Today, accident prevention is the one non-controversial subject in industry as both employer and employee are interested in preventing accidents. Compensation costs are a big item in modern industry and yet both employer and employee would be better off if there were no accidents. Compensation at its best can never replace a limb lost nor can it bring back a life lost in industry. Manufacturers in England and the United States have come to realize the importance of accident prevention and are getting very substantial results by placing this feature of their work on a strict economic basis.

Compensation is a substitute, accident prevention is the "real thing." As far back as the fifth century, compensation in money was paid for personal wrong. The freeman's life and the freeman's limb each had, under this system, its legal value. An eye for an eye, and a limb for a limb, or for each, fair damages. Accident prevention means whole bodies and lives saved.

Will Introduce Industrial Democracy

L. W. Sims, president of the T. S. Sims & Co., Limited, St. John, N.B., operators of one of the largest brush making plants in Canada, recently announced that they intend to introduce the principles of industrial democracy into their St. John plant. This company have made a careful study of the question of the relationship of employer and employee, and have worked out many ideas which have resulted in increased co-operation and an enlarged output. Some principles of the new relationship have already been put in force in the shape of a mutual benefit society. Further developments are to rest on the result of a study of industrial democracy, which is being made by Mr. Sims in several New England plants where this system is being worked out.

Hardwoods

Special Offers

Prices are now below the cost of production, and it is not likely that there will be further reductions of any consequence.

Undoubtedly "right now" is the time to place orders for next year's requirements. If you wait too long or until all buyers come into the market simultaneously, you will find prices advancing.

Our stock is thoroughly dry, perfectly manufactured, and would come to you properly graded.
Let us quote now for prompt shipment.

1 car 4/4 No. 1 Common Birch
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1 car 4/4 No. 1 C. & B. Sap Gum
1 car 6/4 Log Run Hard Maple
2 cars 8/4 Log Run Hard Maple
2 cars 10/4 Log Run Hard Maple
2 cars 12/4 Log Run Hard Maple
2 cars 1⅛" No 1. Common White Oak
1 car 5/4 No. 1 Common White Oak
2 cars 6/4 No. 1 Common White Oak
2 cars 5/4 Nos. 1 & 2 Red Oak
1 car 6/4 Nos. 1 & 2 Red Oak
2 cars 4/4 Sap and Select Poplar
4 cars 4/4 No. 1 Common Poplar
3 cars 5/4 No. 1 Common Poplar

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3 ply-¼ inch and 5 ply-⅜ inch thick

SIZES:

72 x 24—60 x 30—60 x 24—60 x 20—60 x 18
48 x 18—56 x 25

HAY & CO., Ltd., Woodstock, Ont.

Information and Inquiries

You are cordially invited to make use of this department

Varnish Drying Kiln

Montreal, P. Q., Oct. 24, 1920

Editor "Canadian Woodworker"

We plan on installing a varnish drying kiln in our piano factory and would be glad if you could put us in touch with a Canadian firm who specialize in this line. Thanking you in anticipation, we are

Yours truly,

The Pratte Piano Co., Ltd.

As far as we know there is not any concern in Canada specializing in varnish drying kilns. The A. S. Nichols Co., 33 W. 42nd St., New York make a very efficient type of varnish drying kiln. A description of a Nichols installation in the finishing room of the Heintzman Piano Co., Toronto was published on page 62 of the January, 1920, "Canadian Woodworker." Would suggest that you get in touch with the Nichols Co. We believe that several other American firms devote their attention to varnish drying equipment.

Period Table and Chair Legs Wanted

Grimsby, Ont., Oct. 15, 1920

Editor "Canadian Woodworker"

Will you kindly furnish me with the names of a few Canadian manufacturers who are making table and chair legs in the different period styles for the trade?

Yours truly,

G. Lander

We do not know of any Canadian firms who make these articles, other than for ther own use. The Jefferson Woodworking Co., of Louisville, Kentucky, specialize in this line and should be able to take care of your requirements. Their advertisement appears in this paper. There is a possibility that the Brantford Pattern Works, Brantford, Ont., is in a position to handle this work.

Wants Upholstering Springs

Chatham, Ont., Oct. 25, 1920

Editor, Canadian Woodworker:

I am in need of a quantity of upholstery springs, and was wondering if you could tell me where I could secure them.

Yours truly,

A. Dunn.

James Steel & Co., Guelph, Ont., the Waterloo Spring Co., Waterloo, Ont., and the Ideal Fence & Spring Co., Limited, Windsor, Ont., manufacture upholstering springs in different sizes and quantities.

Manufacturers of Bent Goods

Toronto, Nov. 8, 1920

Editor "Canadian Woodworker"

Will you kindly give us the names of some firms, in Canada, who manufacture bent goods?

Yours truly,

Kilgour Davenport Co., Ltd.

The following manufacturers make a line of bent goods: J. Finlay, Son & Co., Norwood, Ont.; Forest City Bent Goods Co., London, Ont.; Merritt & Co., Chatham, Ont.; and F. W. Hore & Son, Limited, Hamilton, Ont. You might also try the Brantford Pattern Works, Brantford, Ont., as they make a line of wood novelties and bent goods.

In Market for Table Slides

St. John, N. B., Oct. 15, 1920

Editor "Canadian Woodworker"

Will you kindly furnish us with the address of a few Canadian firms who are supplying table slides, for extension tables, to the trade.

Sincerely yours,

J. Fred Emery.

The Bruce Woodworkers, Limited, Chesley, Ont., are equipped to manufacture this line. Many furniture manufacturers have been securing their slides from the B. Walter & Co., Wabash, Indiana or the Jefferson Woodworking Co., Inc., Louisville, Ky.

Birch and Oak Panels

Regina, Sask., Oct. 22, 1920

Editor "Canadian Woodworker"

We would like to get in touch with a number of Canadian firms manufacturing panels in birch and oak. Perhaps you can help us. Any information furnished will be appreciated.

Yours truly,

Regina Sash & Door Co., Ltd.

For panels in oak and birch, would refer you to Hay & Co., Limited, Woodstock, Ont., Toronto Veneer Co., Limited, Toronto, The Waterville Veneer & Panel Co., Limited, Waterville,, P. Q., and the St. Thomas Cabinet, Limited, St. Thomas, Ont. The Birds Eye Veneer Co., Escanaba, Mich, specialize in the production of birch veneers and panels.

Equipment Wanted

Hamilton, Ont., Oct. 23, 1920

Editor "Canadian Woodworker"

Can you tell us where we can secure a second-hand 20 band saw, also a 4" x 7" or 4" x 8" wood trimmer. Thanking you for your kindness, I am,

Yours truly,

E. Wright

Practically all the machinery firms advertising in this paper handle band saws, many of them might have a second-hand one that would suit your requirements. Would also refer you to the lists published in the classified pages. The J. A. Fay & Egan Co., Cincinnati, Ohio, make a line of wood trimmers in different sizes. A description of their wood trimmers appeared on page 85 of the September issue.

Excelsior Wanted

A firm in London, Eng., wish to get in touch with Canadian manufacturers of Excelsior. For the name of this concern write the publishers of this paper. Inquiry No. 2237.

Desires to Represent Furniture Manufacturers

A firm of manufacturers, agents in Port of Spain, Trinidad are desirous of representing some Canadian Furniture manufacturers. If interested write the "Canadian Woodworker" for name. Inquiry 2235.

SPOT

SERVICE IS AN ASSET *To any* LUMBER BUYER

CONSISTENTLY good service has for many years been one of the assets of our organization. This service is neither a myth nor a boast, but is based on real facts. In the first place the geographical location of our operation and timber, and our relation to trunk line railroads gives us the advantage in securing cars under all conditions. This was clearly demonstrated in the car shortage of this year.

In the second place, as the above map indicates, the flow of our product from the sawmills to all consuming points is smooth and uninterrupted. This holds good for export as well as for domestic shipment, and is an easily provable statement.

The third reason is that our entire organization was built about the one thought of offering unusual and unique facilities. Our product is diversified, offering a selection of about all southern hardwood forest products the average consuming factory requires.

This service should be especially helpful to buyers requiring quick shipment under present conditions.

OUR FOUR MILLS PRODUCE 200,000 ft. DAILY

ANDERSON-TULLY COMPANY
Memphis, Tennessee.

ATCo MEMPHIS
SOUTHERN HARDWOOD LUMBER & VENEERS

Gummed Veneer Tapes

To the manufacturer of veneers as well as to the cabinet maker who makes any great use of them, gummed tape is one of the small but necessary adjuncts which often go far towards making or marring the craftsman's work in accordance with the reliance which can, or cannot, be placed upon them, says a writer in the "Cabinet Maker." Something of the care which must be exercised in the manufacture of gummed tape for use on veneers may be realized from the fact that the tape must in the first instance stick to the work "closer than a brother," and yet, when it is no longer required, peel off easily.

Before going further into the uses of veneer gummed tape, it may interest our readers to know something of the processes by which this article is made. The raw material is a stout brown paper, the term "tape" being applied to the finished product as well as to that in which cloth is the material used. The paper is bought in large rolls similar in size to those in which newsprint is delivered. The adhesive applied to the paper for veneer tape is glue, not gum, and experiments carried out over a long period have ensured that the glue used is mixed to exactly the right thickness in order to give the maximum amount of "stick."

The roll of paper to be gummed is taken from the storeroom and placed on the machine by which the adhesive is applied. The end of the paper is led between two rollers, one of rubber and one of steel, the former being always in contact with a bath of liquid glue. The machine is set in motion and the paper is drawn between the rollers, being coated evenly with the glue. From the machine the end of the paper is led straight into the drying-room, where it proceeds over a series of rollers, and finally emerges dry, and is rolled up again on another machine. Once the machine is started, the progress of the paper is continuous until the whole roll has been gummed, dried and wound up again on the second machine.

The gummed roll is next placed on another machine which unwinds the paper and passes it rapidly over a series of parallel knives, which cut it into strips, of the required width, the machine then rolling it up again. The roll of paper is now a series of coils placed one on top of the other. These are separated by hand, the ends are secured, a wooden peg is driven through the centre of each coil, and the gummed tape is ready for dispatch.

The idea of using gummed tape for joints is not only to hold them in position but also to render the joints airtight, in order to prevent shrinkage during the process of drying after the plys are glued and put together. After the boards are dry, and before the process of sanding or smoothing, the tape is taken off by wetting it. Consequently the paper used in the manufacture of veneer gummed tape must be very absorbent in order to allow its coming easily away from the wood, but at the same time strong enough to bear the strain of being pulled off in strips without breaking.

In the furniture factory where any quantity of veneered work is turned out gummed tape also plays an important part. When four separate pieces of veneer are to be used to make up a quartered panel, these are first matched up and may then be joined together by means of two pieces of gummed tape before being put into the veneer press. When the process of glueing is complete, the tape has to be removed, and it is essential that it should come away easily from the work when water is applied.

In addition to the plain paper tape, veneered tapes are made from cloth, also in perforated paper and cloth.

Demand for Standardized Millwork

The article and editoral in the September "Canadian Woodworkers" dealing with standardized millwork appears to have aroused considerable interest in this important question. One of the letters received, commenting on standardization of millwork, was from the Long-Bell Lumber Co., Kansas City, Mo., who says in part:

The bulk of mill work manufactured goes into the moderate priced home—the average home that is so much in demand now following the building shortage that came with the war.

The period just ahead will bring an enormous demand for these small houses, in fact, there are indications already in sections where house building is going on that the small home, carefully planned with considerable attention to economizing in space and cost wherever economy is possible, is becoming the popular type.

The orgy of extravagant buying seems to be about over, with every prospect that it will be naturally followed by a period of very careful buying. There is every indication that the demand for houses, which must come within a short time, will recognize this need for economy, without, however, sacrificing anything in the quality of building material used or in the "homey" touches that make a real home of a dwelling.

Already a distinct division between special millwork and standardized woodwork is being drawn. The builder of the moderate priced home is finding that standardized items may be had in many sizes and designs from stock, without the delays incident to having special designs milled. He is finding that it is more economical and more advantageous in many ways to plan in advance that openings and built-in-work space shall be of a size to fit standardized items, rather than to buy special work to fit the openings shown on a blue print. By purchasing standardized woodwork, he avoids delay and eliminates some of the cost necessary in having special sizes and designs made up. He obtains a reputable product from warehouse stock, and he does not sacrifice anything in the appearance of his home by taking advantage of this saving in time and money. The retail dealer, then, has these tremendous trade advantages in being able to offer standarized designs to his customers.

The Long-Bell Lumber Company has standardized all items of woodwork. As in all other Long-Bell products, this standardized woodwork is sold only through the dealer, who may select an entire bill of Long-Bell woodwork with the assurance to the customer that all items are carried in stock and may be shipped immediately.

Indications point to a sound popularity for standardized woodwork, a demand so far reaching that the average home builder will come to expect it from his dealer.

The kiln drying of lumber has been developed to a stage where green or partially seasoned stock may be dried at less cost and with a smaller percentage of loss than if the material were allowed to stand in the yards until thoroughly dry. That being the case, are you giving the drying end of the business the attention that it deserves?

One reason why our Gum is Straight and Flat

It *IS* Different

One of our customers to whom we recently made an initial shipment of our KRAETZER-CURED Sap Gum said to us:

"This is different from any Gum lumber I have ever seen."

Of course it is; that's exactly what we have been trying to make everybody understand. It's like another wood. **Better, vastly better.**

Most everybody thinks the Sap part of Gum must be black or discolored. **Let us show you differently.** Our Plain Sap and Quarter Sawn Unselected Gum is as **bright as a dollar,** with a slight pinkish cast, about the color of light cherry.

Of course, the inspection rules say "Stain is no defect," but **what do you say Mr. Manufacturer,** you who have to **cut up, work** and **finish** the lumber?

We do not see how the usual run of Sap Gum, discolored, black and lacking uniformity in color, can be used for the manufacture of furniture, trim, finish, etc. **It is NOT used by manufacturers acquainted with our kind.**

And warp—another unnecessary evil; the result of antiquated methods of production and handling. **Ours is straight and flat—EVERY BOARD OF IT.**

The initial cost is a little more, the final cost very much less and oh! the **satisfaction** resulting from **dependability** and **freedom** from **trouble** and **worry.**

Unscrupulous dealers misrepresent. Do not be deceived. **Insist on the genuine.** Every board bears our trade mark; it stands for the acme of quality and dependability in Hardwoods.

Our protection THE KRAETZER-CURED LUMBER CO. *Your guarantee*

The Kraetzer-Cured Lumber Co.

GENERAL OFFICE: GREENWOOD, MISS.

Band Mills: Greenwood, Miss., Moorhead, Miss.

Why our Gum does not stain

Our Quartered and Plain Red and White Oak, Ash, Hickory, Red Gum and Tupelo is as fine as the highest quality of virgin timbers and thorough knowledge of production can produce. THERE IS NONE BETTER.

Are You Thinking of Your Diminished Supply of

Hardwoods?

Just Read Over This List of Nice Dry Stock

100M′	4/4″	No. 3 Com. & Btr. Basswood
50M′	5/4″	No. 2 Com & Btr. Basswood
30M′	4/4″	No. 3 Com. & Btr. Birch
30M′	6/4″	No. 2 Com. & Btr. Birch
17M′	8/4″	No. 2 Com. & Btr. Birch
13M′	12/4″	No. 1 Com. & Btr. Birch
100M′	4/4″	No. 2 Com. & Btr. Hard Maple
50M′	8/4″	No. 2 Com. & Btr. Hard Maple
10M′	12/4″	No. 1 Com. & Btr. Hard Maple
25M′	4/4″	No. 3 Com. & Btr. Soft Elm
12M′	8/4″	No. 2 Com. & Btr. Soft Elm
20M′	12/4″	No. 1 Com. & Btr. Soft Elm
15M′	4/4″	No. 2 Com. & Btr. Black Ash
75M′	8/4″	Red & White Oak

Write for Quotations

Canadian General Lumber Company, Limited

712 Bank of Hamilton Building
TORONTO
MONTREAL OFFICE: 203 McGill Building

Selling

Graves, Bigwood & Co.'s

Lumber, Lath and Box Shooks

News of the Trade

The Dominion Furniture Co., Limited, Winnipeg, Manitoba, were recently incorporated.

The plant of the Canadian Reed & Rattan Co., Montreal, P.Q., has been destroyed by fire.

The Cedar Cove Sash & Door Co., Vancouver, B.C., are erecting a building to be used as a sash and door factory.

The partnership known as the Hamilton Furniture Repair Shop has been dissolved and the business will in future be conducted by L. B. Everitt.

The Fulton Motor Co., of Farmingdale, N.Y., who were negotiating for a plant and site at St. Catharines, Ont., have decided not to locate in that city.

The Progress Spring Bed Limited, Montreal, P.Q., are building an addition to their factory in the shape of a two-storey brick building 30 x 72, to cost $10,000.

Clarke Bros. Paper Mills, Limited, Glen Falls, N.B., have purchased what is known as the Ford factory, and intend converting it to the manufacture of boxes.

The Summerland Lumber Co. of Summerland, B.C., who now operate a mill and box factory at Mineola, B.C., contemplate installing a modern box factory at Summerland.

Cosmopolitan Gramaphone & Piano Co., Limited, Montreal, P.Q., have been authorized by supplementary letters patent to increase their capital from $10,000 to the sum of $100,000.

Maguire, Patterson & Palmer, Limited, Montreal, P.Q., are destroying a number of old buildings on a site at Pembroke, Ont., preparatory to the erection of a $5,000,000 match factory.

The name of Ditchburn Pleasure Boats, Limited, Port Carling, Ont., has been changed to Ditchburn Boats, Limited, and the capital stock of the company increased from $100,000 to $150,000.

J. I. Little, Fairbank, P. O., Ont., contemplates erecting a small chair factory on Dufferin St., Toronto. The building will be one-storey frame, 25 x 45, and is to cost in the neighborhood of $3,500.

The Woeller Boldue Co., Limited, Waterloo, Ont., manufacturers of upholstered furniture, are opening a warehouse in Vancouver, B.C. V. H. Wetmore will be in charge of the western business.

Plans have been drawn for an addition to the Hamilton Technical School. This new building will be used to house the auditorium, gymnasium, household science and woodworking department.

The factory of George White & Sons, London, Ont., has been acquired by the Stansell Motors, Limited. This will be used for temporary work until their new factory is completed next season.

The B. C. Spruce Mills, Wattsburg, B.C., who are constructing a large saw mill at that point, have commenced work on a planing mill. The equipment in this plant is to consist of five heavy machines.

The Stansel Motors, Limited, Amherstburg, Ont., have secured a site of 35 acres in London, Ont., and are planning to erect and equip a large automobile factory. It is not anticipated that work will be started before spring.

The Sterling Action & Piano Key Co., Toronto, acting for an English organization, have secured a factory site in New Toronto, 114 x 200 ft. It is anticipated that a factory will be erected to manufacture musical accessories.

Midland Woodworkers, Limited, of Midland, have opened an office at 129 Spadina Ave., Toronto, which is in charge of Frank A. Ransom, who will cover Toronto and Hamilton and the intervening towns in the interests of the firm.

Morency Freres, Limited, Montreal, P.Q., have been incorporated to manufacture furniture, cabinets and other wood products. Capital, $20,000. Two of the incorporators are L. A. Morency and A. Lacoste, both of Montreal.

The secretary of the Vancouver Board of Trade is in receipt of an inquiry for 500,000 boxes suitable for packing fruit. The inquiry states that the firms desiring these boxes are particularly anxious to place the business in Canada.

The North American Bent Chair Co., Limited, of Owen Sound, Ont., are bringing logs in, in large rafts known as "crib rafts." This is a very satisfactory way of handling logs, one that has not been in general use for many years.

Fairy Toys, Limited, Toronto, Ont., were recently incorporated to manufacture and deal in dolls and toys of every description Capital $40,000. B. Luxenburg and J. R. Huffman, barristers, both of Toronto, Ont., are two of the incorporators.

Work has been started on the new factory being erected at Cobourg, by the Rice Lake Canoe Co. of Gore's Landing. The building will be 160 x 52 ft. and will be rushed to completion so that manufacturing operations may be undertaken in the spring.

Macamic Nord, Limited, Macamic, Que., were recently incorporated to manufacture and deal in lumber, furniture, wooden vehicles and other wood products. Capital $20,000. O. Champagne and D. Duguay, both of Macamic, are two of the incorporators.

The Simonds Canada Saw Co., Limited, Montreal, P.Q., makers of saws, machine knives and files, are enlarging their plant by a one-storey addition, 175 x 70 ft. This will result in a material increase in output. The cost will be in the neighborhood of $50,000.

A. B. Beverley has purchased the three-storey factory situated at 485 King St. West, Toronto. Mr. Beverley has been manufacturing a line of phonographs in this building, and plans on making this the most up-to-date phonograph factory in the Dominion.

R. C. Patterson, Smithville, Ont., is in the market for a considerable quantity of woodworking machinery, including an 8-inch horizontal band resaw, 54-inch x 66-inch vertical band resaw, planers, edgers, 36-inch gang saw, steam engine, saw grinder and other machines.

The Woodworkers' Union of Owen Sound, Ont., held a very enjoyable At-Home recently in the C. O. F. Hall. The programme consisted of songs, instrumental numbers and sketches, and was followed by cards and dancing. W. Elliott was in charge of the gathering.

Ross and Millar, Limited, Hamilton, Ont., were recently granted a provincial charter of incorporation to manufacture and deal in boats, aeroplanes and other wooden vehicles. Capital $50,000. J. S. Ross and A. C. Millar, both of Hamilton, Ont., are two of the incorporators.

Dunwin Motors, Limited, Montreal, P.Q., have been granted a federal charter authorizing them to manufacture and deal in trucks, carriages and other wooden vehicles. Capital $100,000. A. G. Claxton and T. R. Ker, barristers, both of Montreal, are two of the incorporators.

See & Smith Motors, Limited, Toronto, Ont., have been incorporated to manufacture and deal in motor trucks, aeroplanes and other wooden conveyances. Capital $260,000. J. S. Beatty and J. R. Rumball, solicitors, both of Toronto, Ont., are two of the incorporators.

The Fowler's Limited, Cobourg, Ont., have completed their new furniture factory and are busily engaged installing the equipment and organizing the plant. Practically all the new machines in this new factory were secured from the Canada Machinery Corporation, of Galt, Ont.

Automotive Engineering Company, Limited, Montreal, P.Q., were recently incorporated to manufacture and deal in coaches, carriages, cabs and other wooden conveyances. Capital $500,000. Among the incorporators are L. P. Crepeau, K.C., and M. Dugas, advocate, both of Montreal.

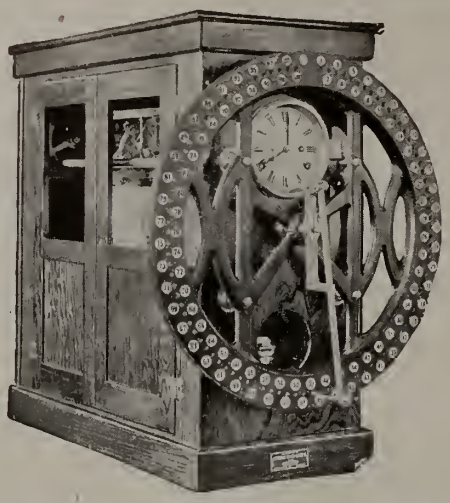
The Transportation & Shipping Co., Limited, of Sorel, P.Q., recently launched a large four-masted schooner. The new vessel, which is known as the "Marion L," is a large craft of 1,500 tons dead weight. This is only one of the many large boats which has been built bp this firm.

The new plant of the Milverton Furniture Co., Limited, Milverton, Ont., is rapidly nearing completion. A large part of the equipment has been secured from the Canada Machinery Corporation of Galt, Ont. It is anticipated that this factory will be in full operation by the first of the year.

The Elmira Furniture Co., Elmira, Ont., have closed down for a few days to make certain repairs to the boiler-room equipment. There has been a certain amount of delay in securing the necessary material, but as soon as the repairs are effected, the plant will be operated to full capacity.

New Era Piano Co., Limited, Montreal, P.Q., were recently granted a provincial charter to manufacture and deal in pianos, organs, gramaphones and other musical instruments. Capital $45,000. H. Keene, accountant, and G. M. Lewis, barrister, both of Montreal, are two of the incorporators.

A small blaze occurred in the dry kiln of the Preston Furniture Co., Preston, Ont. A hole was cut in the roof



International Dial Time Recorder

←Here are your purchased hours

The *Difference* costly over

Can you tell at a glance just what that **difference** is? There is a difference, of course, but how great is it? How are you going about it to find out? It represents one of the leaks in any business and nowadays it's up to every manufacturer to stop the leaks. You can find the leaks all right so why not do it?

Ask yourself the questions on the other page. Be fair with yourself—can you give a quick answer with your present method of running your business? If not, ask us to tell you where, and why our Time Recorders and Job Time Recording devices are a vital necessity in arriving at correct and indisputable answers to these questions.

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Head Office: 300-35

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St. John, N.B., 18 Germain St.
Quebec, Que., 506 Merger Bldg.

Montreal, Que, 1 & 3 Notre Dame St. W.
Ottawa, Ont., 190 Queen St.

Toronto, Ont., 409½ Yonge St.
Hamilton, Ont., 225 King St. E.
London, Ont., 489 Richmond St.

(Also Manufacturers of Dayton Scal

Ask Yourself These Questions

What are your total purchased hours for each department, for each month?

Did you get all the hours purchased?

What percentage of the purchased hours were **PRODUCTIVE HOURS** in each Department?

How does this fluctuate each month? How many non-productive workers do five of your productive workers have to carry, and why?

What percentage of your total factory organization, including the office, is an overhead load?

What percentage will your inventory of raw stock, finished stock and stock in process, be of your monthly shipments?

We have many other valuable questions you would like to answer.

represents a
head load

Here are your productive hours

From our experience with thousands of our customers, we positively know we can save you an awful lot of money and an awful lot of time in arriving at results that are vital to your business, and we certainly would relish interesting you and an opportunity to explain.

International
Job Time Recorder

Machines Company,

General Manager. **LIMITED**

ampbell Ave., Toronto

Walkerville, Ont., 44 Lincoln Rd
Winnipeg, Man., 227 McDermott Ave.
Saskatoon, Sask., 254 3rd Ave. S.
Edmonton, Alta., 10118 102nd Ave.
Calgary, Alta, 127-6th Ave.
Vancouver, B. C., 110 Water St.

Hollerith Electric Tabulators)

of the building and sufficient water poured in to extinguish the fire. Both the kiln and its contents were damaged, but as the blaze did not spread, the loss is a comparatively small one.

Best Boxes, Limited, Ottawa, Ont., were recently incorporated to acquire all interests of Boxes, Limited, Ottawa, Ont., and to manufacture and deal in all kinds of wood products. Capital $250,000. Two of the incorporators are J. P. Ebbs, barrister, and E. R. Jackson, accountant, both of Ottawa, Ont.

A by-law will shortly be submitted to the ratepayers of Listowel, Ont., with regard to the establishment of a plant for making steel, wire and wooden wheels for autos, trucks and bicycles. The name of the company has not been given out. B. L. Bamford of Listowel, is one of the interested parties.

Canada has lost the large order for 2,400 railway cars which the Belgian Government, through the Canadian Trade Commission, had been trying to place with Canadian manufacturers. The order has been given to German firms. Belgium will pay for these cars with the foodstuffs which hse will supply the Germans.

Canada Cabinette Heels, Limited, Montreal, Que., have been granted a provincial charter to take over the concern of Canada Cabinet Works, Limited, and to manufacture and deal in all kinds of wood products. Capital $250,000. Two of the incorporators are H. S. Ross, barrister, and H. M. Gardner, accountant, both of Westmount, P.Q.

Canadian Barrels & Kegs, Limited, Waterloo, Ont., have been incorporated to acquire the business of Charles Mueller Co., Limited, Waterloo, and to manufacture and deal in boxes, tubs, barrels and other wooden products. Capital $500,000. M. Aylesworth and H. J. Stewart, barristers, both of Toronto, are two of the incorporators.

A. Root, Greenbush, Ont., manufacturer of wooden measures and other wood products, is negotiating with a view to acquiring the sawmill in Smith's Falls, Ont., now operated by the United Farmers Co-operative Co. If Mr. Root succeeds in securing this plant, he will convert it to the manufacture of the same lines that he is producing at Greenbush.

Dominion Furniture Manufacturers, Limited, St. Therese, P.Q., were recently incorporated under federal charter as manufacturers and dealers of all kinds of wood products and to take over the business known as the Dominion Furniture Co. Capital $500,000. Two of the incorporators are L. McFarlane, K.C., and G. Barclay, both of Montreal, P.Q.

The McGill-Quinn Handcraft Products, Norwood, Ont., recently acquired a plant, and are manufacturing a line of woven fibre floor lamps. A complete line of woven fibre products is to be manufactured. The plant includes such machines as surfacer, bandsaw, mortiser, cut-off and ripsaw, etc. No further installations are contemplated at present.

The Westminster Furniture Manufacturing Co. of New Westminster, B.C., have commenced active operations and are producing a line of furniture made from B. C. hardwoods. The line manufactured is medium grade, being made chiefly of maple. The output at present is small, but additions and improvements are planned which will tend to enlarge this considerably.

The Canadian Edison Phonographs have been granted a provincial charter with headquarters in St. Thomas and a capital stock of $500,000, to manufacture, buy, sell and deal in phonographs and allied lines. Among the incorporators are Thomas Alva Edison, Chas. Edison, Stephen B. Mambert, Harry S. Miller and Wm. Maxwell, manufacturers, all of Orange, N.J.

A serious fire recently occurred in Arnprior when the plant and lumber sheds of the S. R. Rudd & Co. were destroyed. The stock in the sheds was being seasoned preparatory to being made into furniture, a line which the Rudd Co. intended taking up as soon as proper arrangements could be made. The loss, which is placed at $15,000, is partly covered by insurance.

At the annual meeting of Carriage Factories, Limited, Orillia, Ont., which was held in Toronto recently, it was intimated that the efforts of the company were being turned more and more to motor accessories, the plant at Orillia being devoted largely to the manufacture of automobile bodies. This leaves the Alexandria plant to take care of the carriage business.

Currie Manufacturing and Lumber Co., Brandon, Man., have been granted a provincial charter to take over the business formerly known as Currie Manufacturing Co. and to manufacture and deal in furniture, farm implements and other wood products. Capital $100,000. W. J. Currie and H. V. Currie, manufacturers, both of Brandon, Man., are among the incorporators.

At a recent meeting of the Clarkson Fruit Growers' Association a tender was received from a British Columbia firm, offering to deliver fruit baskets, boxes and crates at a price below the quotations asked by the Ontario manufacturers. The fruit growers of the Clarkson district will require 50,000 crates, 3,000,000 quart boxes, 175,000 11-quart baskets and 100,000 6-quart baskets to handle their 1921 crop.

N. O. Hipel, Preston, Ont., has commenced work on a two-storey factory building, which is to be fitted up with saw and planing mill equipment. The work on the building is proceeding nicely and it is expected that it will be finished in the near future. At present Mr. Hipel conducts a retail lumber yard, and when the new plant is complete he will be in a position to supply the trade with dressed lumber and finished building material of all kinds.

The Fisher Body Co. of Canada, are building a four-storey addition to their Walkerville plant. This will be completed about the first of the year. The new building is of heavy mill construction and will add about 75,000 square feet of floor space to their plant. It will be used for painting and trimming closed automobile bodies and will result in increasing the capacity of the closed body department about 80 per cent. The cost will be in the neighborhood of $275,000.

The fruit men in the different fruit-growing districts are alarmed over the quotation being made by the basket factories for baskets for next summer delivery. The prices quoted are from $130.00 to $140.00 per M for 11-quart baskets, as compared with from $85.00 to $94.00 for last year. The quotation on the 6-quart basket is $130.00 per M. The new prices mean that an 11-quart basket will cost 13c. or 14c. irrespective of its contents, which would have the effect of maintaining fruit and garden produce at its present levels.

The annual statement of Carriage Factories, Limited, Orillia, Ont., for the year ending July 31st, 1920, shows a deficit for the twelve months amounting to $36,845. Gross profits for the year were $302,635. Against this is charged administrative and selling expenses, $157,000; bond interest, $28,000; bank interest and charges, $51,000; bad debts reserved, $17,000, and reserved for inventory, $117,000, leaving a deficit as stated above. The total assets of the company are valued at $3,900,000.

National Steel Car Corporation, Hamilton, Ont., are operating to capacity and were recently forced to put on a night shift. The present output of the Hamilton plant is from 20 to 24 box cars per day. These are taken from the yard each day and hauled west to assist in moving the grain crop. This company has secured large orders from the Government Railway and also from the C. P. R. The Motor Car Department is very active and is turning out about three trucks per day.

An organization, name withheld, has been formed to manufacture automobiles and motor trucks in Winnipeg, Man. This car, which is to be known as the "Winnipeg," is expected to cost in the neighborhood of $1,800. The directorate of the company consists of F. A. Ogletree, president and manager; L. Arseneault, vice-president; D. E. Ogletree, secretary-treasurer; C. L. Law, superintendent, and W. H. McLean. A factory is to be established in Fort Rouge, Winnipeg. It is expected that this car will be placed on the market during 1921.

The W.F. Vilas Co., Limited, Cowansville, P.Q., manufacturers of furniture and school desks, are erecting a new addition to their plant. This new building, which will be of solid brick construction, will add about 10,000 square feet to the floor space. This addition will be used largely for the manufacture of high-class enamel ware, which will include enamel tops for kitchen cabinets and kitchen tables, and enamel stock for the manufacturers of refrigerators. It is expected that the new plant will be in full operation about the middle of April.

The Canadian automobile manufacturers met in Toronto recently and formed an association which is to be known as the "Automotive Industries of Canada." Mr. C. McLaughlin of Oshawa, president of the General Motors of Canada, Limited, was elected president of the new association, and W. T. Sampson, manager of the Gananoque Spring & Axle Co., vice-president. About fifty automotive companies have affiliated themselves with this association. Those present were optimistic, and, while admitting that sales had dropped, had every confidence in the future of the automobile industry. They declared that the outlook for 1921 was

IF IT IS

LUMBER

WE HAVE IT

½ Car 4/4 White Ash
1 Car 4/4 Black Ash
½ Car 8/4 Black Ash
½ Car 8/4 White Ash
Mixed Car 5/4, 6/4, 12/4 & 16/4 W. & B. Ash
1 Car 4/4 White Basswood
1 Car 5/4 Basswood
½ Car 12/4 Basswood
2 Cars 4/4 Soft Elm
2 Cars 8/4 Soft Elm
1 Car 12/4 Soft Elm

The above stock is in pile in our transit yard, Toronto, and is bone dry and well manufactured and can be shipped immediately

C. G. Anderson Lumber Co.

LIMITED

705 Excelsior Life Bldg. - Toronto

very bright, and owing to the fact that the export trade would absorb a large proportion of the output of the Canadian plants, the coming year might witness another shortage of cars.

The Redden Woodworking Co., of Kentville, N.S., who were incorporated early in the year with a capital stock of $120,000, have purchased the mill formerly owned by the Nova Scotia Carriage Co., Limited, Kentville, and are now manufacturing lumber, building material, furniture and cabinet work. The company's lumber mills are located at Forrest Home, N.S., and the office and factory on Cornwallis St., Kentville. The president and managing-director of the company is A. P. Redden, C. R. Redden is vice-president, and P. M. Caldwell, secretary-treasurer.

The planing mill and sash door factory of the Whitby Brick & Clay Products Co. was totally destroyed by fire recently. The loss amounts to upwards of $25,000. The management has intimated that the plant will be rebuilt, but it is not definitely decided whether construction operations will be undertaken right away or held in abeyance until spring. The new plant will be constructed of hollow tile made by the company itself. If suitable arrangements can be made with the G. T. R., an unused portion of the roundhouse will be equipped as a temporary factory.

According to information furnished it is understood that the Dominion Shipbuilding Company, Toronto, which has been idle for the past few months, will start up again at the end of November. When the shipyards closed down the company had in hand two unfinished Government boats. In order to complete these and finish the contract the Government has requested the Henry Hope Company of Peterboro, Ont., to complete them. This they have consented to do, and will probably commence work about the end of November. It is hoped that further orders may be forthcoming and the plant be kept running throughout the winter.

The Rubber-Set Co., Limited, Toronto, Ont., are about ready to open their new brush handle factory at Gravenhurst, Ont. This plant, which was formerly known as the Aeroplane plant, has been completely remodelled to suit the requirements of the new owners. The electric drive has been installed and a dry kiln constructed at a cost of $10,000. This factory will be used exclusively for the manufacture of wooden brush handles. An initial output of 15,000 handles per day, valued at between $600 and $700, is expected. The output will be used by the factory in Toronto and the parent organization in the States. Employment is to be given to from 30 to 50 hands. Local wood will be used.

Personals

H. H. Hastings has been engaged to assist John E. Banks of Toronto, National Hardwood Lumber inspector, in the Toronto district.

William Robertson, of Victoria, former acting Lumber Commissioner for the East, but now of the Forest Branch of the Department of B. C. Lands, is spending a short time in Toronto and other cities on a visit.

Loren L. Brown, of Toronto, B.C., Lumber Commissioner, has been visiting several towns and cities in Western Ontario. The Department of Lands has provided him with a handsome new motor car for making calls.

H. W. Petrie, head of the well-known machinery firm of H. W. Petrie, Limited, recently made a donation to the Brantford General Hospital in the shape of the interest for five years on $25,000 worth of Victory Bonds.

Frank Purcell of the Frank Purcell Walnut Lumber Co., Kansas City, Kansas, sailed recently on the Aquitania for a tour of the European markets in the interests of the Walnut Export Sales Company. Enquiries from overseas are coming in freely and it was these signs of an active market that prompted the trip.

W. F. Beck of the C. Beck Mfg. Co., Limited, Penitanguishene, Ont., manufacturers of boxes and woodenware of different kinds, was recently married in Newmarket, Ont., to Miss Bernice Cane, daughter of J. E. Cane of the Wm. Cane & Sons Co., Limited, of Newmarket. Mr. and Mrs. Beck left on a trip to California, and upon their return will take up their residence at Penitanguishene.

Thomas Bradshaw, formerly finance commissioner of Toronto, has been appointed general manager of the Massey-Harris Co., Limited, Toronto, Ont., manufacturers of agricultural machinery. Mr. Bradshaw succeeds Mr. Thomas Findley, who for some years has held the dual office of president and general manager, and who recently resigned the latter position. Mr. Findley will continue to act as the company's chief executive.

Mrs. H. B. Smith of Owen Sound, recently officiated at the christening of the "Canadian Rover," which was launched at the Collingwood yards. Following the launching Mr. H. B. Smith, who is president of the Collingwood Shipbuilding Co. and interested in several furniture factories in Owen Sound, gave a banquet to the business men of Collingwood. About fifty citizens were in attendance. Mr. Smith referred briefly to the problems which confront the shipbuilding industry in Canada, and spoke in an optimistic strain regarding the future of the industry.

Obituary

J. H. Quirt of Toronto, Ont., recently passed away at Los Angeles, Cal. Mr. Quirt was associated with the A. R. Williams Machinery Co., Limited, of Toronto, for many years.

Neil McKinnon recently passed away at Singhampton, Ont. Mr. McKinnon conducted a carriage factory in that town for many years.

G. M. Webster, president of Webster & Sons, Limited, Montreal, P.Q., manufacturers and dealers in building material, recently passed away in that city.

Joseph Myers, Toronto, Ont., recently passed away in that city at the age of 97 years. Mr. Myers was a cooper by trade and for 38 years conducted a cooperage shop in Toronto.

Thomas McCann, Whitby, Ont., recently passed away. Mr. McCann was in his 80th year and was one of the oldest business men in Whitby, where he conducted a carriage factory for many years.

J. D. Collie, superintendent of the Office Furniture & Supplies Co., Limited, Brockville, Ont., recently passed away. Mr. Collie was instrumental in organizing the present plant when the Office Furniture Co. decided to move from Ottawa to Brockville.

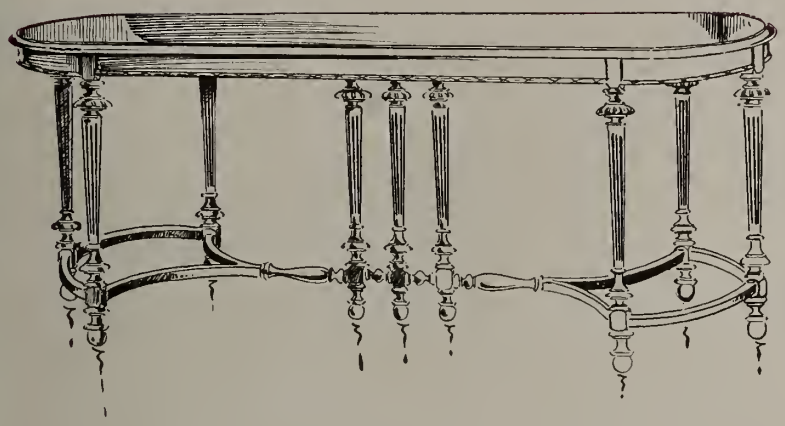
Thomas Long passed away recently in Toronto in his 85th year. He was a remarkable business man and identified with many interests. Mr. Long was one of the pioneers in opening up communication with Lake Superior ports and actively concerned in the development of inland navigation. He was the founder and president for a number of years of the Collingwood Shipbuilding Company, and was also identified with the lumbering interest a number of years ago.

Catalogues, Books, Etc.

An interesting illustrated booklet, entitled "Aluminium Applications," is being distributed by the British Aluminium Co., Limited, of London, England, through their Canadian branch at 265 Adelaide St. West, Toronto. It is surprising the number of industries which use aluminium in some form or other to advantage. Such a list will include the aircraft, automobile, furniture, woodworking, musical instrument, electrical, iron and rubber industries. In addition, there are a large number of general applications to which this valuable metal is peculiarly adapted. In the furniture industry it is used to a large extent for cauls in the veneer department and in sheet form for tops of tables, kitchen cabinets, etc. Copies of this interesting pamphlet may be secured on application.

The humidfying of woodworking plants or rather controlling and regulating of humidity in such factories is a subject that has received considerable attention of late years. It has been found that by drying the lumber to a certain percentage of moisture content and by controlling the humidity in the different departments through which the work passes, the product will come out with a certain definite percentage of moisture content, such as would make it most suitable for the climate of the country in which it is to be used. To those interested in this subject, catalogue No. 700 of the Buffalo Forge Co., Buffalo, N.Y., dealing with the fan system of heating, ventilating and humidifying, will be found to contain pertinent and valuable information. Copies may be had on application direct to the Buffalo Forge Co. or to the Canadian Blower & Forge Co. of Kitchener, Ont.

A new catalog has been received from the Paasche Air Brush Co., Chicago, Ill. This describes and illustrates the Paasche line of air spraying equipment and accessories. Air finishing is applicable to a wide range of work, including the finishing of furniture, pianos wicker furniture, auto bodies, mouldings, metal articles, in fact the application of this equipment seems to be practically unlimited. A copy of this new catalog, No. 13, will gladly be sent on request to the Paasche Air Brush Co.



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Memphis - Tennessee

SERVICE

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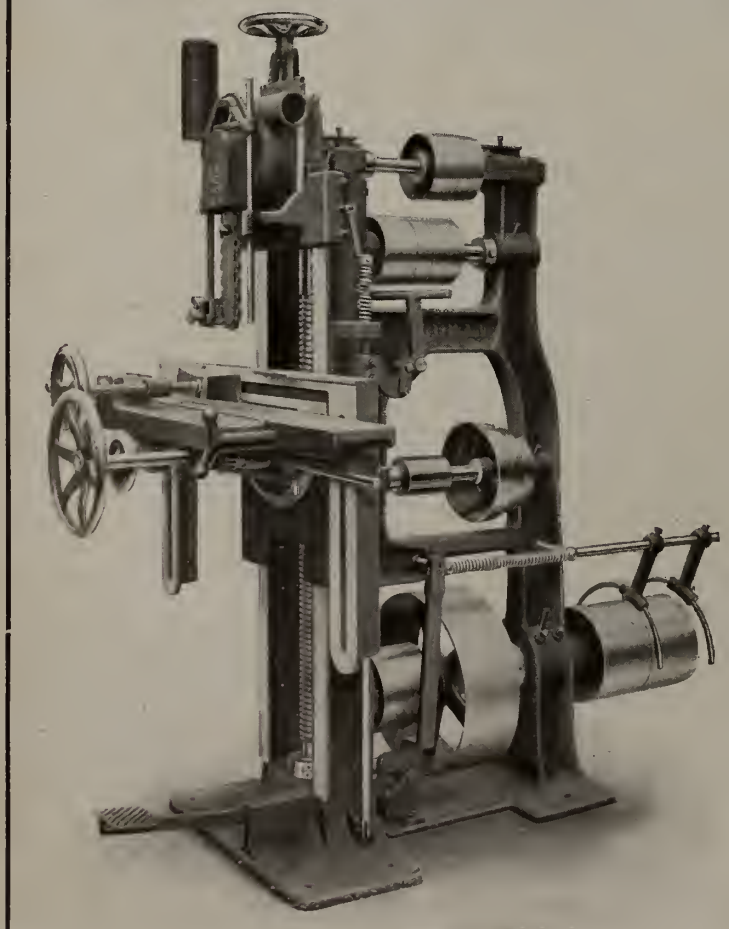

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Guaranteed Machines

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4 side 10" Sticker, Ballantyne make.
Double Spindle Shaper, Ballantyne make..
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Cut-off saw, tilting saw, sliding table.
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Post boring Machine.
12-20" Ball Bearing Bandsaws.
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36" Three drum Sander.
3 B. B. Trim Saws.
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Several factory trucks and exhaust fans.

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Warehouse 14 Darling Ave. 11

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1 Wood Turning Lathe 18", Cowan Co.
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Maple and Birch Squares for Turning

Handle & Dowel Stock, etc.

Furniture Dimension stock cut to order.

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6 ft. Linderman Glue Jointer, complete with countershaft, dovetailing heads and Linderman Rip Saw.

54" McDonaugh Band Resaw, fine, opens 20".

Double Surfacer.

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Sandpapering Machine, Berlin 48" 3 Drum.
Sandpapering Machine, Berlin 36" 3 Drum.
Sander, endless bed 48", H. B. Smith.
Belt Sander, Curtiss No. 20.
Sandpapering Machine, Moore Machine Co. Double Belt
Belt Sander, Wysong & Miles.
Belt Sander Shimmel Simplex.
Scraper, Baxter D. Whitney 42".
Rubbing Machine, Moore Machine Co. Standard.
Matcher, American No. 229 Fast Feed Hardwood Flooring.
Matcher, American No. 22 24" 4 Side.
Rip Saw, Greenlee Bros. Power Feed.
Band Resaw, Mershon, 44".
Band Resaw, Connell and Dengler, 60".
Band Rip Saw, American No. 1 Power Feed.
Jointer, Falls Machine Co. Undercut 24" Power Feed.
Buzz Planer 24" Buss Machine Works.
Buzz Planer, 12" Frank Machine Co.
Lathe, Back Knife Clement 36".
Lathe, No. 10 Ober Turning.
Planer, Buss Machine Works 30" Cabinet.
Dowel Rod Machine, E. B. Hayes
Dowel Gluer and Driver, E. B. Hayes.
Door Clamp, E. B. Hayes Standard Power.
Shaper and Dove Tailing Machine, Combination Single Spindle.
Carving Machines, Moore 4 Spindle.
Lock Corner Machine, Morgan Machine Company.
Drills, Tool Room Buffalo Forge Co.

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FOR SALE

Planer and matcher. One S. A. Woods No. 33 Planer and Matcher in very good order, $1200. Also one 4" Sticker, American Woodworking Machinery Co., new, $450.00. O. Chalifour, Inc., Quebec, P. Q.
8-11

FOR SALE

One Jackson-Cochrane 36" 3 Drum Roll Feed Sander rebuilt.
One Berlin No. 87-7 x 4 Hardwood Flooring Machine complete.
One Fay-Egan Band Rip Saw.

Apply P. B. Yates Machine Co., Limited, Hamilton, Ontario. 11

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The Imperial Trusts Company of Canada, and Elvira Green, Administrators of the Estate of Henry Green, and the said Imperial Trusts Company of Canada, Administrators of the Estate of Arnold Green, will receive until

Tuesday, the Thirtieth day of November, 1920

tenders for the purchase of Numbers 26 to 30 Britain Street, in the City of Toronto, having a frontage on Britain St. of approximately 36 ft. by a depth of 60 ft., with a parcel in the rear extending to Queen St., having a frontage of about 16 ft. by a depth of 78 ft., known as Number 201 Queen Street East, TOGETHER WITH the factories thereon: Number 1, 60' x 36' x 30'; Number 2, 15' 5" x 28' 6"; Number 3, 15' 5" x 50' x 45'.

Number 1 Factory is a two-storey brick, deck roof, exposed timber and walls, hot air heating, electric power, lavatory basins and office.

Number 2 Factory is a two-storey brick building, deck roof.

Number 3 Factory is a three-storey brick building, used as a storehouse, with a lavatory.

Together with all plant, machinery and stock-in-trade in said factories, consisting of:

1	Machinery and plant, as per inventory	$ 3,709.80
2	Lumber	4,002.31
3.	Lumber, partly machined	2,563.71
4.	Partly furnished stock set up	1,679.95
5.	Hardware	1,375.50
6.	Varnishes	130.00
7.	Office furniture and fixtures	379.00
8.	Coal in cellar	150.00
		$14,008.30

Details of the property inventoried as above can be had on application to the undersigned.

Tenders for the above property may be for parcels of the above property or en bloc.

All tenders must be accompanied by a marked cheque for ten per cent. of the amount of the tender.

The highest or any tender not necessarily accepted.

Further terms and conditions can be obtained from the undersigned.

DATED this 12th day of November, 1920.

Imperial Trusts Company of Canada

16 Richmond Street West, Toronto

Administrators of the property of Green Brothers, Deceased, or to

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BIGGS & BIGGS,
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Berlin Triple Drum Sander, 48".
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Berlin Triple Drum Sander, 43".
McDonough 54" Band Resaw, Vertieal
Diamond Horizontal Band Resaw.
American Timber Sizer.
70" Sheldon Fan.
400 H. P. Cross Compound Corliss.
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Lumber Firm Inaugurates Technical Service

A new departure in the lumber business—a departmcnt for furnishing technical service free of charge to users and manufacturers of all kinds of lumber and other wood products—has recently been inaugurated by the J. W. Darling Lumber Company of Cincinnati, manufacturers and distributors of cypress, southern hardwoods, yellow pine and West Coast woods. The broad field in which this company operates places it in a position to furnish straight technical facts in its service work, unbiased by a desire to promote the use of any particular speeies or grade of lumber.

This service department will be called "Darling Technical Service." The work will be organized and handled by three wood speeialists of several years' experienee on the teehnical staff of the United States Forest Products Labatory at Madison, Wisconsin,—J. R. Watkins, Engineer in Forest Products, D. R. Brewster, Forester and Wood Teehnologist and A. C. Knauss, Engineer in Forest Products. Mr. Watkins has specialized on boxing and crating problems and the suitability of various woods for different purposes; Mr. Brewster is a speeialist in seasoning and kiln drying work, as well as in lumbering and lumber distribution; while Mr. Knauss has been engaged particularly on problems connected with atmospheric eonditioning, built up eonstruction and glues. Additional men of special training in the uses of wood will be added to the organization as the expansion of the work may require.

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More or Less

A little more deed and a little less creed;
A little more giving and a little less greed;
A little more bearing other people's load;
A little more God-speed on the dusty road;
A little more roses and a little less thorns,
A sweeter air for the sick and forlorned;
A little more song and a little less glum;
A little gold for the uplift of the slum;
A little less kicks for the man that is down,
A little more smiles and a little less frown;
A little more love for the man in our trade,
A little more sunshine and a little less shade;
A little more done for father and mother,
A good word, a strong arm for a U.C.T. brother;
A little less knocking and a little more cheer,
A good word for the hero that's left in the rear;
A little more love and a little less hate,
A little more kindness at your brother's gate;
A little more helping by you and me,
A little less frowning where all can see;
A little more flowers in the pathway of life,
A little less sadness at the end of the strife.

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Used Woodworking Machinery

We warrant every machine in the following list to be in good working condition, some have been re-built and tested, others, operating recently satisfactorily in mills of our best customers.

SUBJECT TO PRIOR SALE

WRITE IMMEDIATELY FOR PRICE AND PARTICULARS.

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1 Woods 24 x 6 Planer & Matcher.

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1 Cowan Band Resaw with 42" wheels, 4" blade.

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1 Bolton Saw Swage.
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1 Ballantyne Self Feed Rip Saw.
1 Jackson-Cochrane 12 spindle Dovetailer.

DOUBLE SURFACERS.
1 Berlin 30 x 6 Double Surfacer.
1 Whitney 26 x 8 Double Surfacer.
1 Yates No. 160 Double Surfacer, 30 x 6.
1 MacGregor 26 x 8 Double Surfaeer.

SANDERS.
1 Jackson-Cochrane 36" Three Drum Sander.
1 Jackson-Cochrane 48" Three Drum Sander.

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1 Rogers Saw Sharpener, 2 x 8" saws (new).
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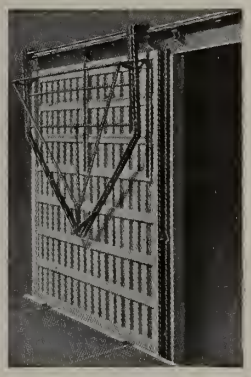

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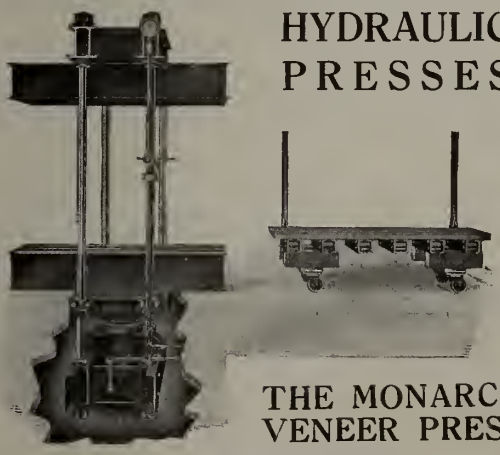

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Pedwell Hardwood Lumber Co., Toronto, Ont.
Perkins Bros., Kelso, Ark.
Pickrel Walnut Co., St. Louis, Mo.
Powe Lumber Co., Thos. E., St. Louis, Mo
Probst Lumber Co., Cincinnati, Ohio.
Reese Sheriff Lumber Co., Williamsport, Pa.
Ritter Lumber Co., W. M., Columbus, Ohio
Rush Lumber Co., Memphis, Tenn.
Sondheimer Co., E., Memphis, Tenn.
Spencer, C. A., Montreal, Que.
Spotswood & Son, E. R., Lexington, Ky.
Stark & Co., Jas. E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Sterrett, Will S., Cincinnati
Stinson Hardwood Co., J. V., Memphis, Tenn.
Sullivan, Frank T., Buffalo, N. Y.
Tallahatchie Lumber Co., Memphis, Tenn.
Thompson, Katz Lumber Co., Memphis, Tenn.
Thompson & Co., Philadelphia, Pa.
Tustin Hardwood Lumber Co., Memphis, Tenn.
Upham & Walsh, Chicago, Ill.
Utley-Holloway Co., Chicago, Ill.
Warren-Ross Lumber Co., Jamestown, N.Y.
Wheeler-Timlin Lumber Co., Wausau, Wis.
Whiting Co., Wm. S., Johnson City, Tenn.
Woodruff Powell Lumber Co., South Bend, Ind.
Wayne Lumber Co., New York
Wood Mosaic Co., Louisville, Ky.
Yellow Poplar Lumber Co., Coal Grove, Ohio.

HYDRAULIC VENEER PRESSES
Perrin & Company, Wm. R., Toronto, Ont.

KNOBS
Waddell Mfg. Co., Grand Rapids, Mich.

JOINTERS
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Onio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochane & Company. Kitchener. Ont.
Mattison Machine Works, Rockford, Ill.
Petrie. H. W., Toronto, Ont.
Preston Woodworking Machinery Company. Preston, Ont.
Smith, C. W., Grand Rapids, Mich.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

LEATHER (Artificial)
Burch Co., A. F., Grand Rapids, Mich.
Fibro Mfg. Company, Beverly, N. J.

LUMBER MEASURER
Durant Mfg. Co. Milwaukee, Wis.

MACHINE KNIVES
Canada Machinery Corporation, Galt, Ont.
Casey Co., M. E., Montreal, Que.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

METERS
Republic Flow Meters Co. of Canada, Toronto.

MIRRORS
Hart Mirror Plate Co., Grand Rapids, Mich.
Pilkington Bros., St. Catharines, Ont.

MITRE SAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

MOTOR TRUCK EXTENSIONS
Swedish Crucible Steel Co., Windsor, Ont.

MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.

MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

NAILS
Laidlaw Bale-Tie Co., Hamilton, Ont.

NAILING MACHINES
Morgan Machine Co., Rochester, N.Y.

OIL
Zero Oil Co., Parkersburg, Pa.

OIL STONE GRINDERS
Mummert-Dixon Co., Hanover, Pa.

PANELS
Gorham Bros., Mount Pleasant, Mich.
Hay & Co., Woodstock, Ont.
Holden Company, Henry S., Chicago, Ill.
Roberts, Geo. G., Chicago, Ill.
Rutherford & Sons, Wm., Montreal, Que.
Waetjin & Co., L., Milwaukee, Wis.

PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago. Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PERIOD MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.

PERIOD TURNINGS
Decorators Supply Co, Chicago, Ill.
Walter & Sons, J., Kitchener, Ont.

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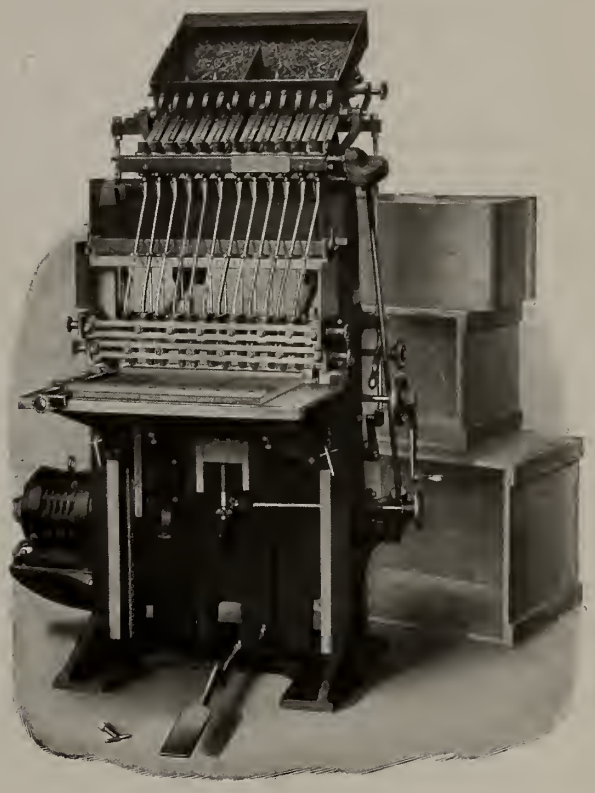

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Batts, Limited, Toronto, Ontario.

Swedish Crucible Steel Co. of Canada, Limited, Windsor, Ont.

Branches: 901 Royal Bank Bldg., TORONTO 285 Beaver Hall Hill, MONTREAL.

"Canadian Woodworker" Buyers' Directory—Continued

PLANERS
Canada Machinery Corporation, Galt, Ont.
Casey Co., M. E., Montreal, Que.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY
Canada Machinery Corporation, Galt, Ont.
Casey Co., M. E., Montreal, Que.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PORTABLE DRILLS
Wisconsin Electric Co., Wisconsin, U.S.A.

PRESSES (Veneer)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

PROVISIONS
Signode Systems, Inc.

REED
Overseas Reed and Cane Co., Ionia, Mich.

RESAWS
Canada Machinery Corporation, Galt, Ont.
Casey Co., M. E., Montreal, Que.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY
Defiance Machine Works; Defiance, Ohio.
Fay & Egan Co., J. A. Cincinnati, Ohio.

RIP SAWING MACHINES
Canada Machinery Corporation, Galt, Ont.
Casey Co., M. E., Montreal, Que.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Waddell Mfg. Co., Grand Rapids, Mich.

RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill

SAFETY DEVICES
Cowan & Company, Galt, Ont.

SANDERS
Canada Machinery Corporation, Galt, Ont.
Casey Co., M. E., Montreal, Que.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Loeffler Machine Co., Wm. Sheboygan, Wis.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAND PAPER
Manning Abrasive Company

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Casey Co., M. E., Montreal, Que.
Cowan & Company, Galt, Ont.
Elliot Machinery Co., Belleville, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R,, Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS
Atkins & Co., E. C., Indianapolis, Ind.
Disston & Sons, Henry, Toronto, Ont.
Elliot Machinery Co., Belleville, Ont.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Silver Mfg. Company, Salem, Ohio.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.

SAW BENCH
Wallace & Co., J. D., Chicago, Ill.

SAW SWAGES
Cowan & Company, Galt, Ont.
Crowel, D. J., Buffalo, N. Y.
Disston & Sons, Henry, Toronto, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Company, Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY
Reynolds Machine Co., Massillon Ohio.

SCROLL SAWS
Canada Machinery Corporation, Galt, Ont.
Casey Co., M. E., Montreal, Que.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane, & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamiltonfi Ont.

SECOND-HAND MACHINERY
Casey, M. E., Montreal, Que.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Osborne Sexton Machinery Co., Columbus, O.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAPER COLLARS
Woodworkers Tool Works Chicago, Ill.

SHAVING COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.

STAINS
Ault & Wiborg, Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ohio.
Shannon Co., Ed. J., Cincinnati, Ohio.
Standard Paint & Varnish Co., Windsor, Ont.
Williams Bros. & Co., Hounslow, Eng.

SINGLE SPINDLE BOXING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE
Whitney & Son, Baxter D., Winchendon, Mass

STEEL DOOR MATS
Cary Mfg. Company, Brooklyn, N.Y.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Casey Co., M. E., Montreal, Que.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Canada Machinery Corporation, Galt, Ont.
Casey Co., M. E., Montreal, Que.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Eaglesfield, R. D., Indianapolis, Ind.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohoa.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES
Jefferson Woodworking Co., Louisville, Ky.
Walter & Company, B., Wabash, Ind.

TEMPERATURE REGULATORS
Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Compan, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS
International Business Machines Co., Toronto, Ont.

TOPS
Gorham Bros., Mount Pleasant, Mich.

TOYS
Clarke Bros., Bear River, N. S.

TRIMMERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Preston Woodworking Machinery Company, Pretson, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS
Cowan Truck Company, Toronto, Ont.
National Dry Kiln Co., Indianapolis, Ind.

TURNED WOOD GOODS
Algoma Wood Products Co., Algoma, Wis.

TWINES & WEBBING
Doon Twines, Ltd., Kitchener, Ont.

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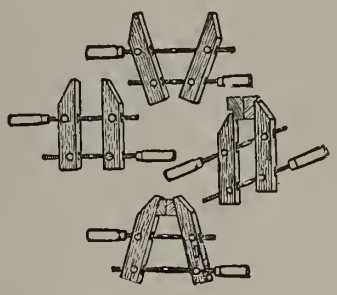

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Sankey & Manson, 839 Beatty Street, Vancouver, B.C.

"Canadian Woodworker" Buyers' Directory—Continued

UPHOLSTERY FABRICS
Burch Co., A. F., Grand Rapids, Mich.

UPHOLSTERY SUPPLIES
Burch Co., A. F., Grand Rapids, Mich.

VARNISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto Ont.
Flint Varnish & Color Co., Montreal, Que.
Penfound Varnish Co., Toronto, Ont.

VARNISH DRYERS
Nicholls Co.. A. S., New York, N.Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS
Astoria Mahogany Co., New York, N.Y.
Batesville Lumber & Veneer Co., Lawrenceburg, Ind.
Birds Eye Veneer Co., Escanaba, Mich.
Bury & Compny, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christmann Veneer & Lumber Co., St. Louis, Mo.
Curtis Co., C. E., Chicago
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Evansville Veneer Co., Evansville, Ind.
Freiberg Lumber Co., Cincinnati, Ohio
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Holden, Henry S., Chicago, Ill.
Geo. Kersley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Litton Veneer Co., Rockford, Ill.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Mowhawk Veneer Co., Warren, Pa.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Veneer Co., New Albany, Ind.
Roberts, Geo. G., Chicago, Ill.
Southern Veneer Mfg. Co., Louisville, Ky.
Stimson Veneer & Lumber Co., Memphis, Tenn.
Sturm Co., Adolph, Chicago, Ill.
Talge Mahogany Co., Indianapolis, Ind.
Thompson & Co., Lewis, Philadelphia, Pa.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Underwood Veneer Co., Wausau, Wis.
Veneer Manufacturers Co., Chicago, Ill.
Waetjen & Co., George L., Milwaukee, Wis.
Williamson Son Veneer Co., William, Chicago, Ill.
Wood Mosaic Co., Louisville, Ky.

VENEER TAPE
Canadian Nashua Paper Co., Peterboro, Ont.
Gummed Products Co., Troy, Ohio.
Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.

VENEER JOINTERS
Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY
Garlock-Walker Machinery Co., Toronto, Ont.

VENEER PRESSES (Hand and Power)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont
Perrin & Company, Wm. R., Toronto, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Johnson Co., O. E., Chicago, Ill.

WALNUT LUMBER
American Walnut Mfrs. Assn., Chicago.
Des Moines Saw Mill Co., Des Moines, Iowa.
Pickrel Walnut Company, St. Louis.
Purcell Walnut Lumber Co., Frank, Kansas City.

WIRE
Laidlaw Bale-Tie Co., Hamilton, Ont.
Pakanship Company, Brooklyn, N.Y.

WIRE BOX STRAPPING
Cary Mfg. Company, Brooklyn, N.Y.

WOOD FINISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Penfound Varnish Co., Toronto, Ont.

WOODWORKING MACHINERY
General Machinery Co., Toronto, Ont.
Hollis Wood Trimmer Co., Birmingham, Eng.

WOOD SCREWS
Robertson Mfg. Co., P. L., Milton, Ont.

WOOD TURPENTINE
Brown Corporation, Quebec, Que.

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WOOD LATHES
Colladay Machine Works, Indianapolis, Ind.

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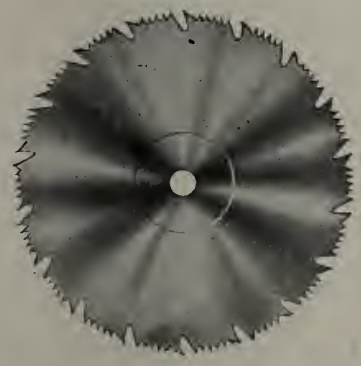
8 New Andrew Multiple Vertical Borers, 20, 30, 42 and 60-in., any number of heads.

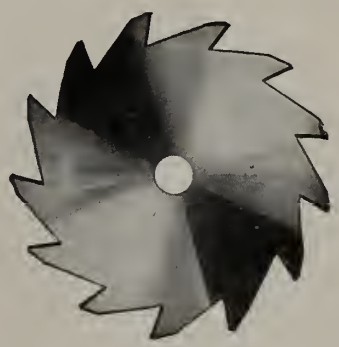
Band saws, 32, 36 and 38-in.
Borer, Andrew, 10-ft., 13-spindle, power table.
Borers, Andrew mult. vert., 20, 42 and 60-in., new.
Door clamp, Fay-Egan, heavy.
Door clamp, Jenkins-Hayes power-feed.
Edgers, two, three and four saws.
Glue cookers and retainers.
Jointers, 8, 12, 16, 20, 24 and 30-in.
Lathes, speed, eight, mounted on iron bed.
Lathes, turning automatic, Mattison No. 8 Yates No. 72, practically new.
Matcher, American Northwest, 24x8-in., 3 sides.
Matcher, 24x6-in., 3 and 4 sides.
Molders, 4-side, 9, 10 and 12-in. American.
Molder, Fay & Egan, 12-in. outside, heavy.
Mortiser, chain saw, New Britain No. 7, new.
Mortisers, F. & E. vertical, hollow-chisel; also plunger type; Greenlee vertical, double hollow-chisel.
Nailers, two, Hayes, 8-track, 8d, closed back.
Nailing machines, 2 closed back, 4-track, 4d, 15-in. spread, Hayes' make.
Pony planers, 16, 20 and 24-in.
Rip saws, self-feed, Hoosier, F. & E. Greenlee.
Rip saw, gang, Luther, for box work.
Router for stair stringers.
Sand belt, closet seat and similar work.
Sander, H. B. Smith, spindle and disc, practically new.
Sanders, 30- 42 and 54-in. Columbia; 30, 42 and 48-in. Invincible; 30 and 36-in. F. & E. double.
Saw, 8-ft. double cut-off, roller table.
Saws, combination and variety, single and double arbor, also tilting arbor, stationary and tilting table, 24 and 30-in. circular resaw.
Saw, circular re-slab, 40-in. blade, power feed rolls.
Shapers, Fay single-spindle reversible, also Shimer single with overhead routing attachment.
Shaper, Whitney No. 7 and 8 double-spindle, practically new.
Surfacer, 30-in. double, cabinet, B. & M., practically new.
Surfacer, Whitney 30-in. double, sectional roll and sectional chipbreaker; American No. 4½, 36-in. sectional and solid; Fay & Egan No. 140, 27 and 30-in. double divided rolls; also 18, 20, 24 and 30-in. single cylinder panel planers.
Tenoners, Fay & Egan double-end, also single-end.
Window frame machine for production work, new.
Window frame machines, Smith & Phillips combination.
Wood-worker, universal, Fay & Egan and Bentel & Margedant. One lot of glue room machinery.

We have just received two carloads of Band Saws and Jointers—all new—which are ready for immediate delivery.
Band Saws, 20, 26, 32, 36 and 38-in. Jointers, 8, 12, 16 and 24-in.

The Osborne & Sexton Machinery Co.
Re-manufacturers **COLUMBUS OHIO**



ATKINS
STERLING QUALITY
SAWS and KNIVES



The best steel—the most careful and accurate workmanship—the equipment that will eventually save you money.

Atkins Sterling Quality Saws and Knives are proving their superiority by competitive tests in the largest plants of the country. We welcome your most careful investigation, as we know the satisfaction that will result.

Write to-day for our Knife Booklet "C W" and Pattern Template Paper.

E. C. ATKINS & CO.
Makers of Sterling Saws

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

Rub Your Varnish Electrically

with a

MATTISON ELECTRIC Rubbing Machine

—operates direct from a lamp socket

By doing the work of two hand rubbers, the Mattison Electric cuts wages 50%, thus paying for itself many times over every year. It is a power unit complete in itself, consumes very little current, and requires no special hose or piping.

Any flat varnished surface, larger than the machine itself can be rubbed to better advantage with this portable electric rubber than by any other method.

The machine is very easy to handle, and relieves the operator of all the hard labor of hand rubbing. His attention is concentrated on his work; and with the machine he produces a finish much more uniform than is possible by hand.

Ask for bulletin "165" and get detailed information

MATTISON MACHINE WORKS

Main Office and Works - ROCKFORD, ILLINOIS, U. S. A.

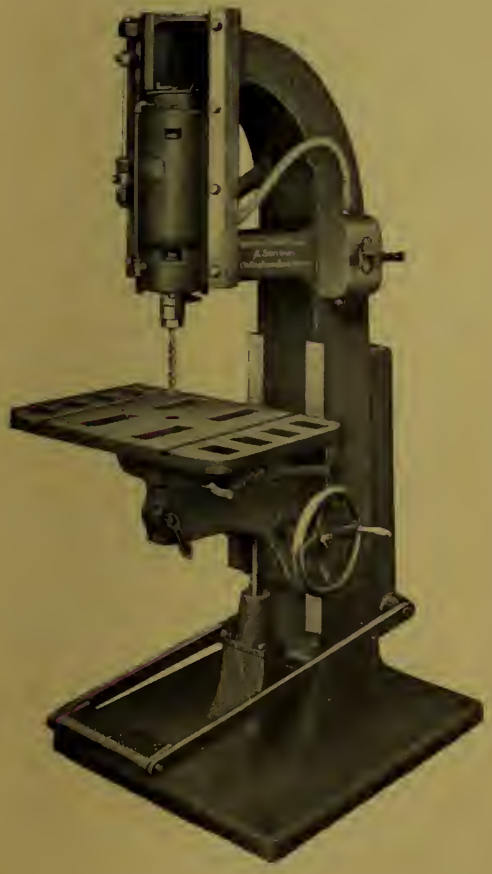
Branch Sales Offices:—1735 Republic Bldg., Chicago. Greensboro, N. Car. 703 World's Tower Bldg., New York City

Volume Twenty TORONTO, DECEMBER, 1920 Number Twelve

CANADIAN
WOODWORKER
and
Furniture Manufacturer

ANOTHER NEW ONE
A WHITNEY

Direct Motor Driven Boring Machine



Motor Mounted on Spindle

No Counter Required.
No Belts to Buy.
No Pulleys or Belts to Care for.
No Belts to Slip.
No Slowing Down of Bit.
Bores Holes from ¼" to 1½" diam. and 9" deep.

Write for Booklet

Baxter D. Whitney & Son, Inc.

Winchendon, Mass.

Canadian Agents—H. W. Petrie, Ltd., Toronto, Montreal

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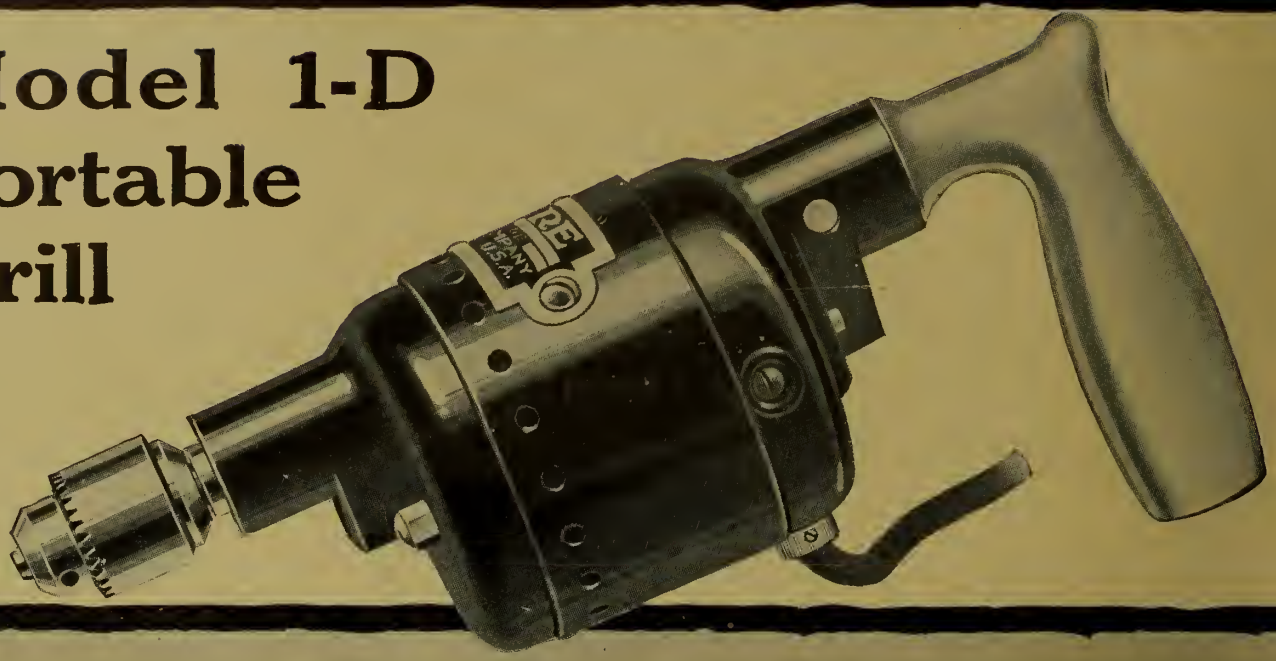
Model 1-D Portable Drill



HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—4¾ pounds.

Capacity—Steel, 0 to 3/16". Wood and alloys, 0 to ½".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3⅜ inches.

Spindle—Offset from center ⅜".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

Jacob's Chucks used as a regular equipment.

FOR speed in drilling and countersinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

Wisconsin Electric Company
7130 Sixteenth Street, Racine, Wisconsin, U. S. A.

DUMORE GEARED ELECTRIC DRILLS

No. 30 American Universal Saw Table

Woodworking Machinery

New——————Used

American No. 200 Automatic Self-Feed Knife Grinder

All these machines are guaranteed in A-1 condition and can be seen in our warehouse at 163 Dufferin St., Toronto.

BAND SAWS
1—36″ Jackson Cochrane.
1—36″ Preston No. 132.

BUZZ PLANERS & JOINTERS
1—24″ American, (Fig. 824) with power feed.
1—No. 199 CMC, 16″ jointer.
1—24″ Preston round head jointer.

SAW TABLES
1—No. 30 American Universal saw bench.
1—No. 7½ American combination saw bench.
1—No. 127 Preston variety saw table.

EDGING SAWS
1—No. 25 American edging and ripping saw.

BORING MACHINES
1—CMC 2 spindle horizontal.
1—Andrews 18 spindle.

SAWS—RIP, CUT-OFF, MITRE, ETC.
1—No. 3 American double cut-off with power feed attachment.
1—No. 2 American iron frame rip saw, Fig. 575.
1—Jackson Cochrane self feed rip saw.
1—Double end mitre machine, CMC.
2—Yates No. 257 self feed rip saws

LATHES
1—CMC wood turning.
1—54″ heavy type back knife gauge.
1—36″ heavy type back knife gauge.
1—Wood lathe, c/s and equipment.

MOULDERS
1—Cowan 10″ four sided outside.
1—American No. 26, 10″ four sided outside.
1—American No. 22, 10″ four sided outside.
1—Hermance 8″ four sided outside.
1—Hespeler 10″ four sided outside.
1—American Houston 8″ four sided with 6″ heads.

SHAPERS
1—Ballantyne 2 spindle.
1—Preston 2 spindle.
1—American No. 1 single spindle.

SCREW DRIVERS
2—Reynolds No. 2, one equipped with boring attachment.
1—No. 4 Reynolds, with magazine for No. 10, 11 and 12 screws.

TENONERS
1—American No. 2½, (Fig. 9431).
1—Ballantyne single end.
1—Cowan single end.

MORTISERS
1—CMC, No. 507 with boring attachment.
1—Wysong & Miles hollow chisel.

PLANERS
1—Preston No. 121, 24″ pony planer.
1—American No. 4½, 36″ single surfacer.
1—MacGregor-Gourlay 24″, single surfacer with sectional rolls and chipbreaker.

ROD & DOWEL MACHINES
1—Jackson-Cochrane with Hawker head, capacity ¼ to 2″.

SANDERS
1—American No. 2 disc & spindle, with iron table.
1—American No. 5, 36″ double disc.
1—CMC No. 548 arm.
2—Canadian Sander Co. disc, motor driven.

FILING ROOM EQUIPMENT
3—Covel No. 40 automatic circular saw sharpeners.
1—No. 2, B.T. & B. band saw sharpener.
1—American No. 9, 37″ automatic knife grinder.
1—American No. 9, 31″ automatic knife grinder.

MISCELLANEOUS
2—Porter spindle carvers.
1—Valley City rounder, 2 spindle.
3—Linderman dovetail glue jointers.
1—Francis double roll 24″ glue spreader for animal glue.
1—45″ Sturtevant, double exhaust fan.
1—60″ Sturtevant single exhaust fan.
1—48 ″ Sturtevant single exhaust fan.
1—36″ Sturtevant, single exhaust fan.
1—No. 16 Detroit Blower Co. exhaust fan.
1—Oliver trimmer, pedestal type.

Pulleys—Wood split, solid iron and pressed steel.
Belting—All sizes, leather, single & double.
Shafting—Various sizes and lengths.

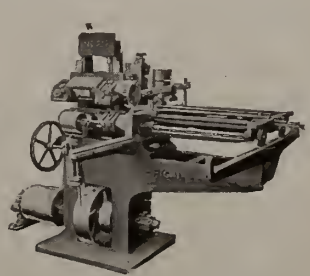
American No. 25 Power Feed Edging and Ripping Saw

Garlock-Walker Machinery Co., Limited

32 Front Street West

WINNIPEG TORONTO MONTREAL

Everything in Woodworking and Metal Working Machinery



American No. 2½ Single End Tenoning Machine

THE "SIG'NODE SYSTEM" IS A PROCESS OF APPLYING METAL STRAPPING TO WOODEN BOXES! BALES, FIBRE CARTONS AND MANY OTHER TYPES OF CONTAINERS WITHOUT USING NAILS, RIVETS OR BUCKLES. ITS EFFICIENCY AND ECONOMY COMMEND IT TO ALL UP-TO-DATE SHIPPERS. "SIG'NODE SYSTEM" SIG'NODES, JOINTS, BINDERS, AND PROCESSES ARE FULLY PROTECTED BY PATENTS AND TRADE-MARKS IN THE UNITED STATES AND FOREIGN COUNTRIES.

TRADE MARK REG. U. S. PAT. OFF. SIGNODE SYSTEM COPYRIGHT 1917 SIGNODE SYSTEM INC.

CABLE ADDRESS
"SIG'NODE CHICAGO"
ALL CODES

SIG'NODE SYSTEM INC.

Manufacturers

S64 WEST ADAMS STREET
TELEPHONE FRANKLIN 2734-35-36

Chicago

OFFICES
TORONTO
MONTREAL
NEW YORK
PHILADELPHIA
BOSTON
ATLANTA
SAN FRANCISCO

Mr. Box Manufacturer,
Everywhere,
Canada.

November, 1920

Subject: Nailless Strapping

Dear Sir:—

To show how to get the business you would otherwise lose is the object of this **open letter.**

Shippers everywhere are seeking a satisfactory means of reducing the cost of their shipping containers. The meeting of this demand requires serious consideration and intelligent foresight on the part of box manufacturers.

The solution lies in advocating the use of lighter shooks in connection with nailless strapping, which scientific tests have shown results in a stronger, lighter and cheaper box and one that is sealed against pilferage.

Rather than have your prospective customers substitute some other type of container for wooden boxes, your good judgment will suggest that you test our claim that the Sig'node System is the answer to the problem. Elsewhere in this issue of The Canadian Woodworker interesting comparative tests are shown which bear out our contention.

Representatives at Toronto and Montreal will gladly demonstrate the method of operation of our system and advise as to size and cost of strapping best adapted for use on various boxes.

Strapping your shooks and veneers The Sig'node Way solves another shipping problem.

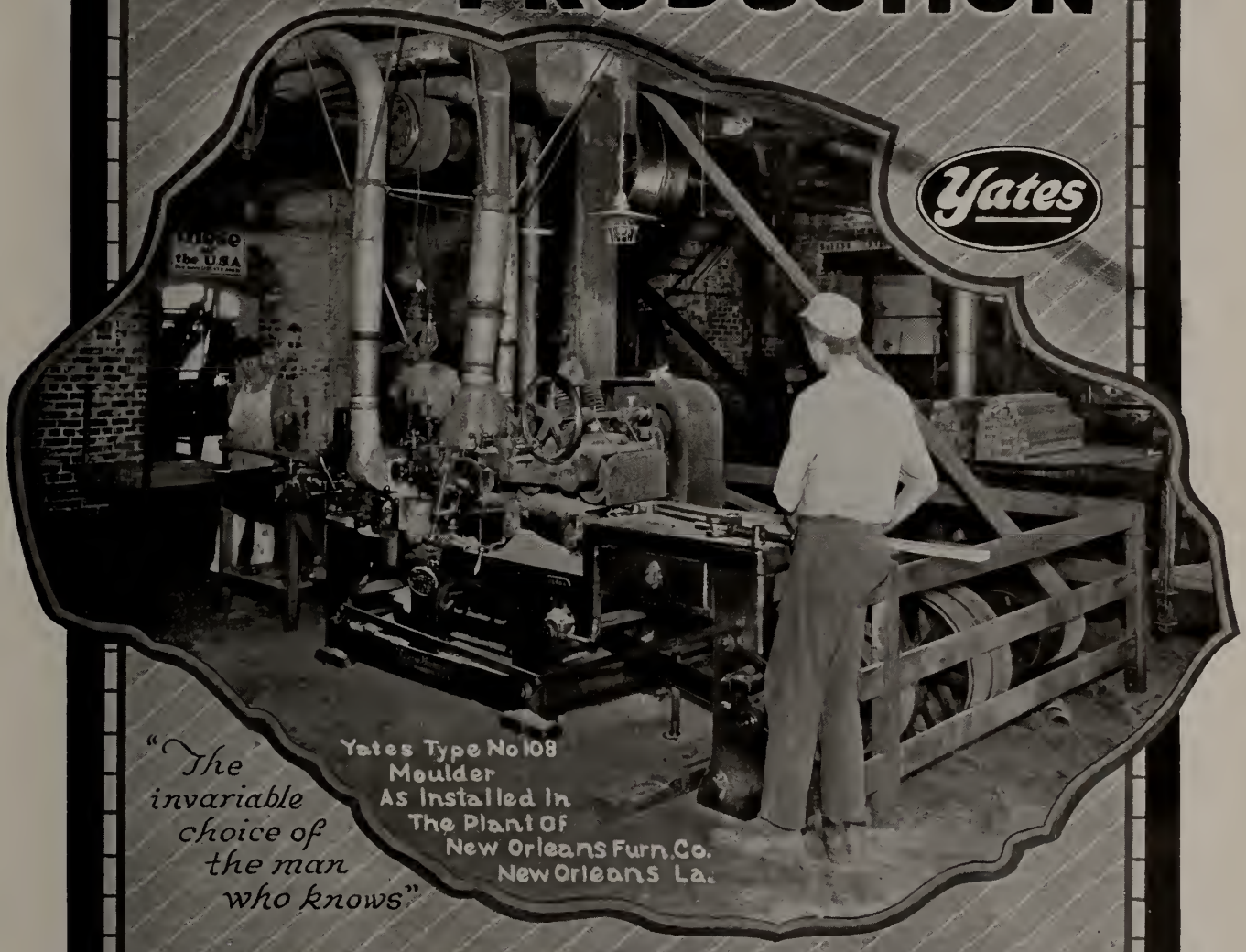
Get in touch with our Canadian representatives. It will pay you to do so.

Faithfully yours,

SIG'NODE SYSTEM, INC.,

Toronto, 46 Colborne St. Montreal, 20 St. Nicholas St.

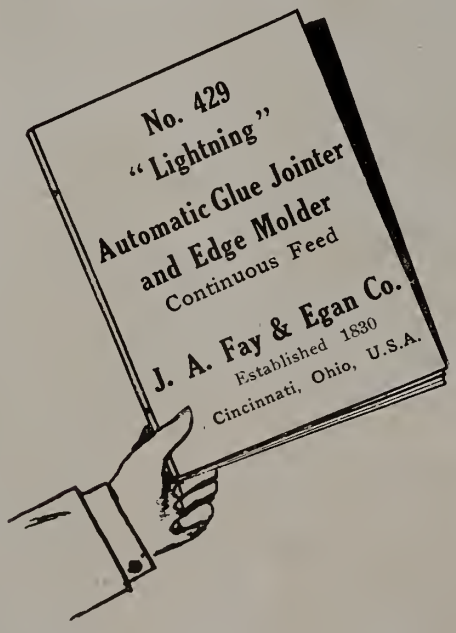
LESS MEN, MORE PRODUCTION


Yates
"The invariable choice of the man who knows"
Yates Type No 108 Moulder As Installed In The Plant Of New Orleans Furn. Co. New Orleans La.

The Yates No. 108 Moulder

is built for strength and speed and it sure does get the work out. Is just the machine progressive mill men are looking for. They cannot afford to be without a No. 108. This is the big reason. By actual tests, in many mills, under all conditions, the Yates No. 108 got out more mouldings and better mouldings with less men. Write a letter for detailed information and circulars.

P. B. Yates Machine Co. Ltd.,
HAMILTON, ONT. CANADA.
U. S. Plant – Beloit, Wis.



Write today for pamphlet giving full information about this wonderful tool

Convert a Loss Into Profit

Save 40 to 60 per cent. on Production Costs by using a

No. 429 "Lightning" Glue Jointer and Edge Molder

Your narrow stuff now going to waste in your mill or factory can be jointed at a low cost—is really stronger than solid pieces—and you convert a loss into a handsome profit.

This machine is the greatest time and lumber saver presented to the woodworking industry in years

J. A. Fay & Egan Co.

Established 1830

World's Oldest and Largest Manufacturers of Woodworking Machinery

W. Front St. - Cincinnati, Ohio

The "Shimer Limited" Expansion Head

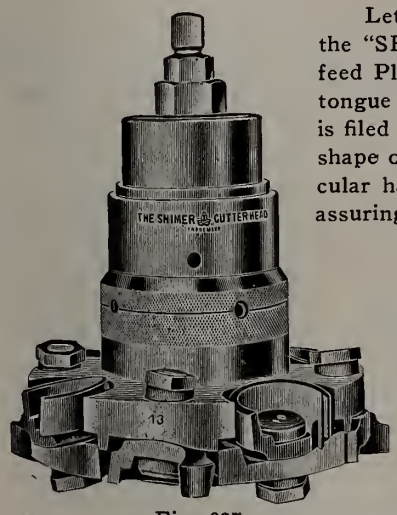


Fig. 627

Let us draw your attention to the advantages of using the "SHIMER CUTTER HEAD" for general Mill and fast feed Planer work. The Cutter is turned to cut the shape of tongue and groove desired, so that to sharpen the cutter it is filed or ground on its face, guaranteeing the user the same shape of cut during the life of the cutter. The bit being circular has from 3½ in. to 5 in. cutting length to the cutter, assuring long wearing life to the cutters

Note that the cutter, being fastened to a concave seat on a compound angle, assures the user of the proper clearance of cutters, consequently they never burn.

These heads are fitted with or without the Self-Centering Sleeve, and made Expansion or Solid, to suit the customer's wishes.

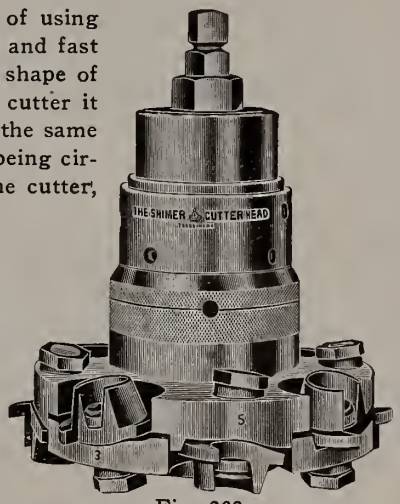


Fig. 268

Shimer Heads have been in use for sixty years, and their reliability and reputation have spoken for them in the past. Let us know your wants and we will guarantee their reliability at the present.

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

Manufacturers of Cutter Heads, Safety Cylinders and Grinders

GALT, ONTARIO

Subscribers' Information Form

Many letters reach us from subscribers enquiring where certain goods can be obtained. We can usually supply the information. We want to be of service to our subscribers in this way, and we desire to encourage requests for such information. Make use of this form for the purpose.

Date.....19

"CANADIAN WOODWORKER"
345 Adelaide St., West, Toronto

Please tell us where we can secure (give description as fully as possible) .....

.....

.....

.....

Name .....

Address .....

A Merry Christmas

and

A Happy New Year

Start Your New Year Right, by Having

PROGRESSIVE MACHINERY

WEST SIDE IRON WORKS

Manufacturers of

Motor Driven and Ball Bearing

STEEL WHEELS AND BAND SAWS

36″ Band Saws 42″ Band Saws 14″ Bench Band Saws

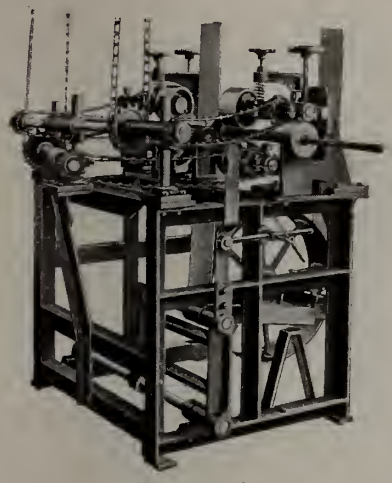
Office:
1227 Washington Blvd.
Chicago, Illinois

THE VERY BEST

Factory:
327 Front Avenue
Grand Rapids, Mich.

BEATS THEM ALL!

An Automatic Machine for Sanding Handles Smooth as Glass
in the Twinkling of an Eye



No. 75 Rapid Sander

The Rapid Automatic
Sanding and Buffing Machine

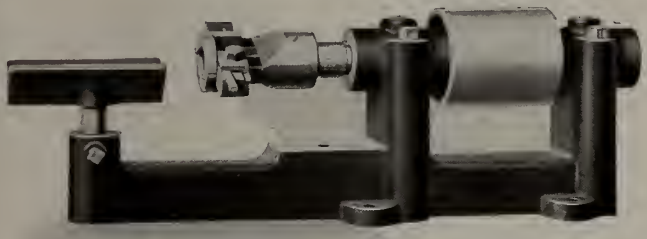
Quality: It will make your handles as smooth as the highest grade furniture, their beautiful finish aiding greatly in their ready sale at top-notch prices.

Speed: It sands turned stock at the rate of 70 lineal feet a minute, which lowers the cost per handle to next to nothing.

Method: The operation is automatic throughout. Large flat feed rolls, 6-in. diam. by 3-in. face, revolve the stock with such great rapidity against a single belt of fine sand cloth that it is all done with astonishing swiftness.

Capacity: Takes stock from 20 inches up to any length and ¼-in. to 1¾-in. diameter.

A machine to make your handle business pay
Will you not write for complete information?

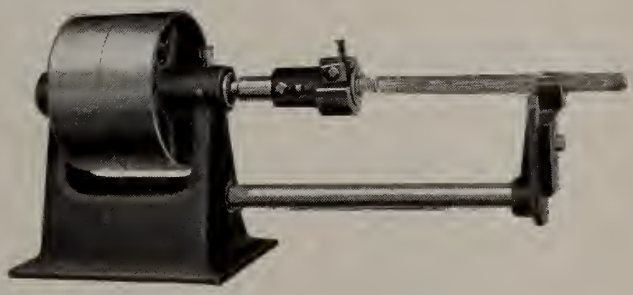


No. 31 Topping and Sizing Machine

For Topping all kinds of Handles & Chair Stock.

Will cut Tenons Straight or Tapering for all purposes.

Ask for full information.



No. 20 Automatic Threading and Tapping Machine

It will tap and thread all kinds of Wood-work such as Brush Blocks, Mop Handles, Sweeper, Duster, and all similar Handles, at the rate of from 20 to 30 pieces per minute. This work is done on all kinds of wood and a clean, perfect thread is always guaranteed.

Chucks and Taps made to order for any and all kinds of threads, from ¼-in. to 2-in. diameter, and any number of threads to the inch.

This machine is in use all over the world, giving perfect satisfaction in each and every instance.

Free samples of work and full information upon request. Write today.

C. W. SMITH, *Manufacturer*

503 Grandville Ave. - - Grand Rapids, Mich., U. S. A.

OLIVER MACHINERY CO.
MANCHESTER, ENGLAND

A. R. WILLIAMS MACHINERY CO.
TORONTO and MONTREAL, CANADA

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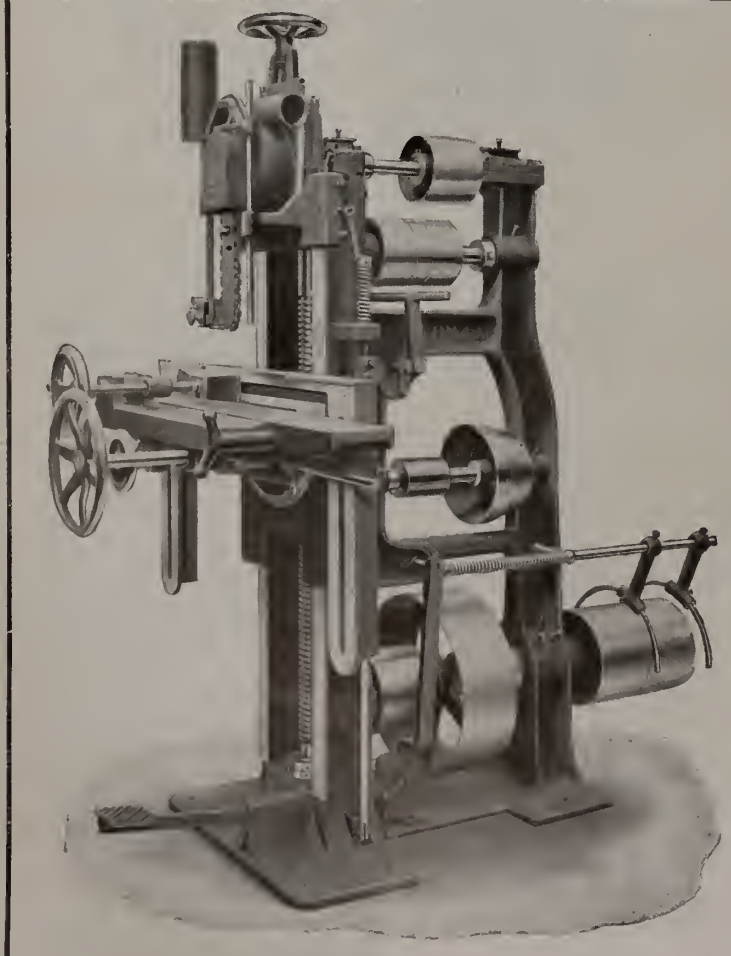


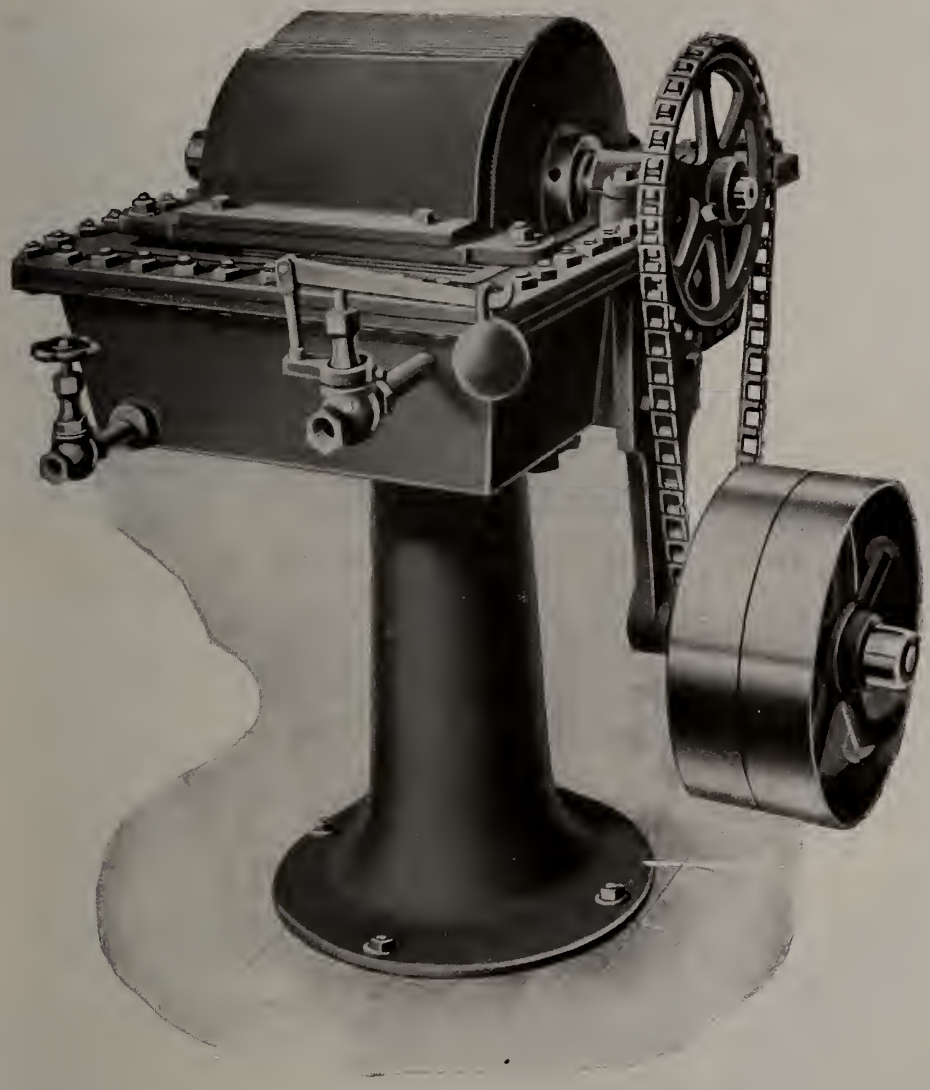
COWAN
236
Chain Saw Mortiser

The best on the market today. Rapid, free from noise and vibration.

Hans Renold (English) Make Chains, Bars and Sprockets in stock.

Cowan & Company
of Galt, Limited
GALT - CANADA

No. 192 Roll Glue Spreader



Designed for Glueing Edge Stock and Narrow Widths

The frame is a large pedestal casting with cored centre. The glue pot in which the drum is suspended, is a heavy cast iron pot, lined with sheet copper. It is tightly fitted and covers the steam or hot water retort, which is that part of the frame shown above the column. The steam or hot water retort is fitted with proper steam connections, and both the glue pot and retort are fitted with practical drain cocks. The space between these two receptacles is large enough to allow sufficient circulation of steam or hot water around the sides and bottom of the pot.

The drum or glue roll is of cast iron, with small corrugations for holding the glue.

Weight, 500 lbs.; size of glue roll—length, 12", width, 10"; fitted with tight and loose pulleys.

Write for full particulars aud prices

Jackson, Cochrane & Company

Kitchener, - Ontario

Prompt Deliveries NOW

Those new boilers you need—Why not order them now?

Ordering from us means that you get prompt deliveries of boilers that you as well as we will always be proud of from the standpoints of workmanship and service.

Subject to prior sale we have materials here, ready, for Boiler sizes 77" x 14', 66" x 16', 72" x 16' and 72" x 18'. Inquiries promptly answered.

A Section of Our Boiler Department.

Engineering and Machine Works of Canada, Limited

St. Catharines, Ont.

Eastern Sales Offices:
Hall Machinery Co., Sherbrooke Que., and Birk's Bldg., Montreal.

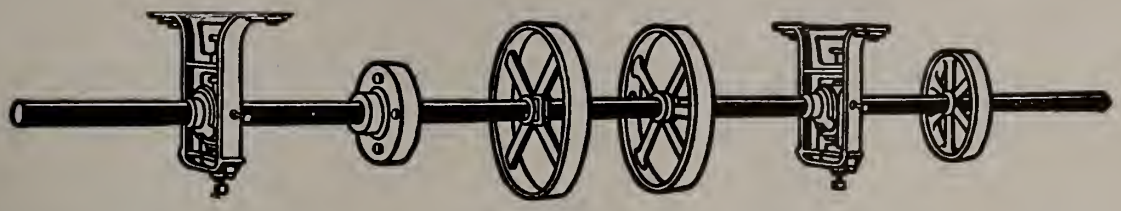
RADCLIFF Saws have enjoyed another year of gratifying success—and it is but natural that we should thank those in the trade responsible for it. During 1921 we shall spare no effort in making Radcliffe Saws worthy of the confidence you have placed in them.

We wish you one and all the Compliments of the Season and all good wishes for the New Year.

Radcliff Saw Manufacturing Company, Limited

1550 Dundas Street West TORONTO, ONT.

AGENTS FOR L. & I. J. WHITE CO., MACHINE KNIVES



If Shafting Always Remained in Perfect Alignment!

—then hangers equipped with ordinary non-adjustable bearings would come much nearer fulfilling the purpose for which they were designed.

But the facts are that practically all line shafting runs very badly out of alignment and causes non-adjustable bearings to bind the shaft. The result is excessive friction that cuts down production, wastes fuel and eats into your dividends.

But this large loss—amounting in many cases to 25 per cent. of all the power produced or bought—can be largely eliminated by the installation of S K F BALL BEARING HANGERS.

For with S K F Ball Bearing Hangers the shaft rides almost frictionless, not only when well aligned but also under extreme conditions of misalignment. The inner race tilts with the shaft—the bearing can never bind.

Other most important features of the S K F Hangers are **longer life, lower maintenance cost,** and a material saving in lubrication.

Canadian S K F Company Limited

Montreal Toronto

SKF INDUSTRIES

Hess-Bright Ball Bearings
S K F Ball Bearings
Atlas Steel Balls
Gronkvist Chucks
Transmission Hangers

A Service that contemplates more than the sale of a bearing

Every S K F Industries Service-salesman is a plant engineer equipped to consult on your power transmission problems. S K F Service made available through these men is built on a laboratory-backed ideal that seeks to increase Canadian output by lifting the friction load from industrial machinery.

Manufacturers are invited to avail themselves of this freely offered co-operation.

The S K F Research Laboratories where friction problems are solved

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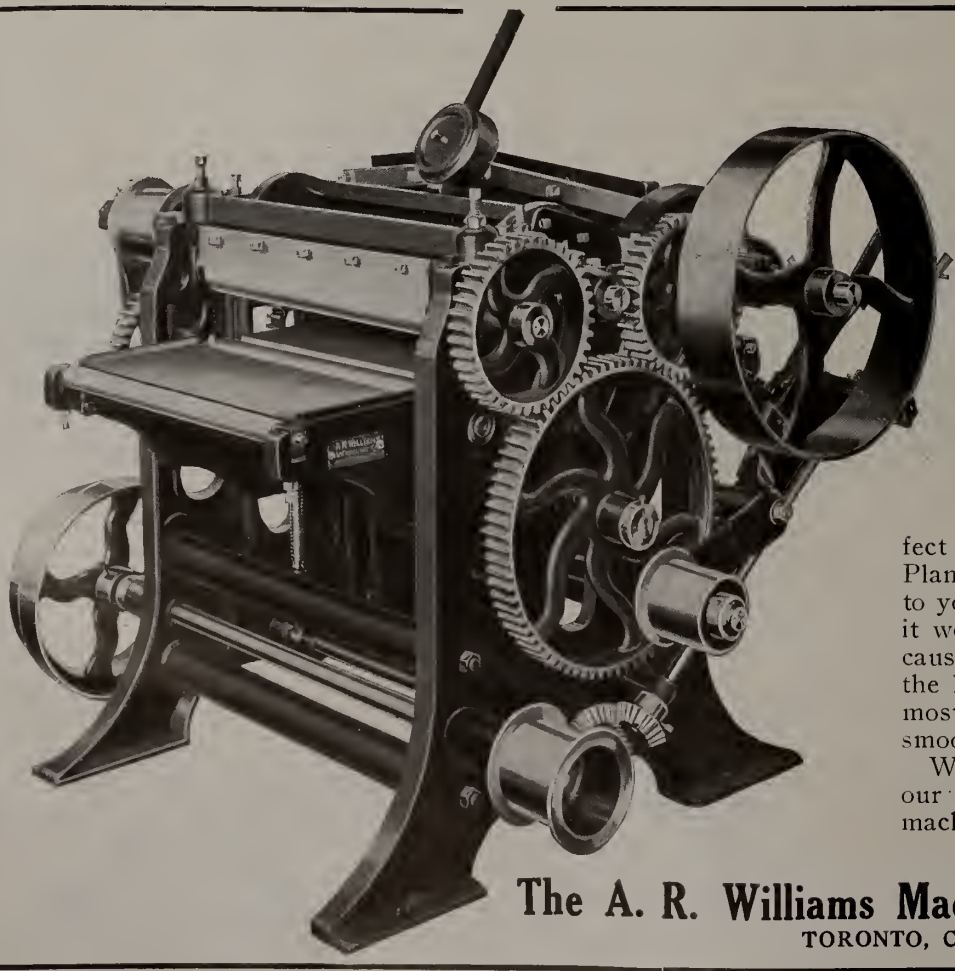


A Record Service by

The "Eclipse"

SURFACE PLANER

With a record of over 2,000 in actual use and giving full satisfaction and perfect results the "Eclipse" Surface Planer is bound to be of interest to you. For the furniture factory it would be an ideal machine because of its ability to produce the highest grade of planing and most suitable where very thin, smooth work is required.

Write us for full particulars on our entire line of woodworking machinery of all descriptions.

The A. R. Williams Machinery Co., Limited

TORONTO, CANADA

A Better Band Saw and The Reasons Why

The illustration shows the Oliver No. 16 Band Saw—with Safety Guard.

One of the principal functions of the Oliver is to save lumber.

It also saves time—and labor.

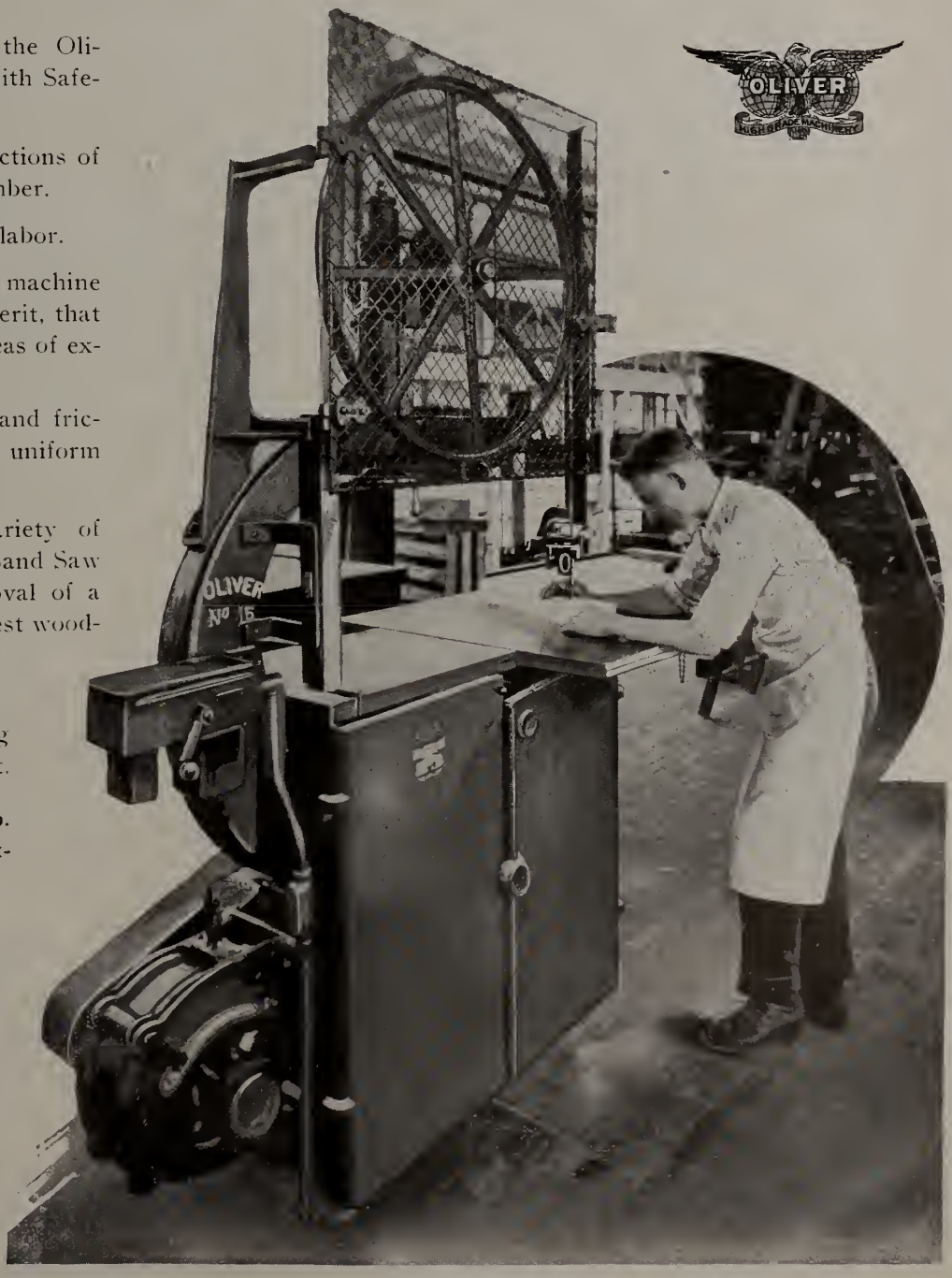
This is a general utility machine of more than ordinary merit, that embodies all the good ideas of expert designers.

The bearings are large and frictionless, insuring steady, uniform sawing.

Adapted to a wide variety of work the Oliver No. 16 Band Saw has met with the approval of a great number of the largest woodworking concerns in the country.

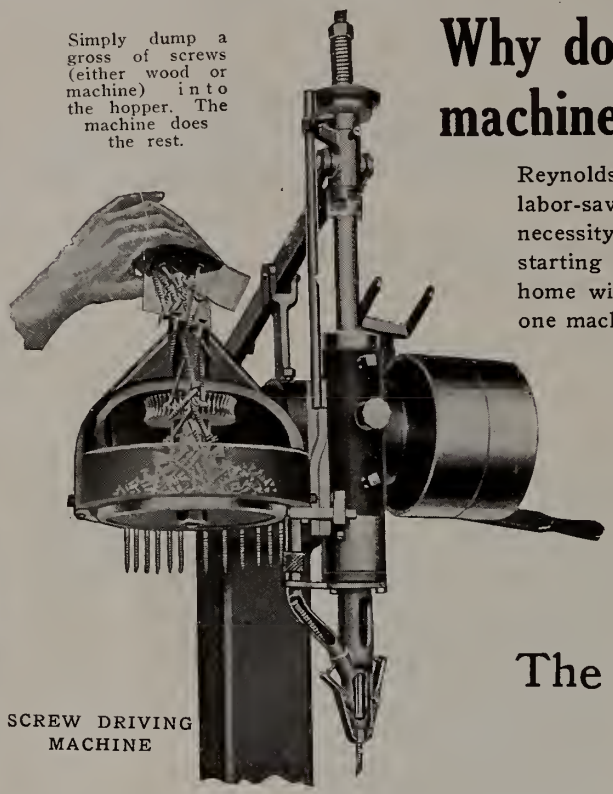
Let it show it's working qualities in **Your** plant.

Send for Catalogue No. 16 on Oliver Woodworking Machinery.



Oliver
MACHINERY COMPANY
GRAND RAPIDS,
MICHIGAN - U.S A,

Simply dump a gross of screws (either wood or machine) into the hopper. The machine does the rest.



SCREW DRIVING MACHINE

Why do by hand, what a machine does better and quicker?

Reynolds Screw Driving Machines are inexpensive, labor-saving, money-making devices, which eliminate the necessity of handling each screw separately, many times starting them with a hammer before they can be driven home with a Screw Driver. One ordinary operator with one machine will frequently do as much work in the same length of time as five or six men with other methods. Ordinarily a boy or girl operator can set from 800 to 1200 screws per hour. On some classes of work with an expert operator, a record of 2000 screws per hour has been made.

Send us dimensions over all of your work and gauge length of screws used and we will send you complete description of the machine to meet your requirements.

The Reynolds Machine Co.

Department C

Massillon, Ohio, U. S. A.

MOULDINGS We are making more Period Mouldings than ever before. Orders should be placed early to assure your supply when needed.

KNOBS The Period Knobs we placed on the market a few months ago are proving very popular. If you have not received samples ask for them now.

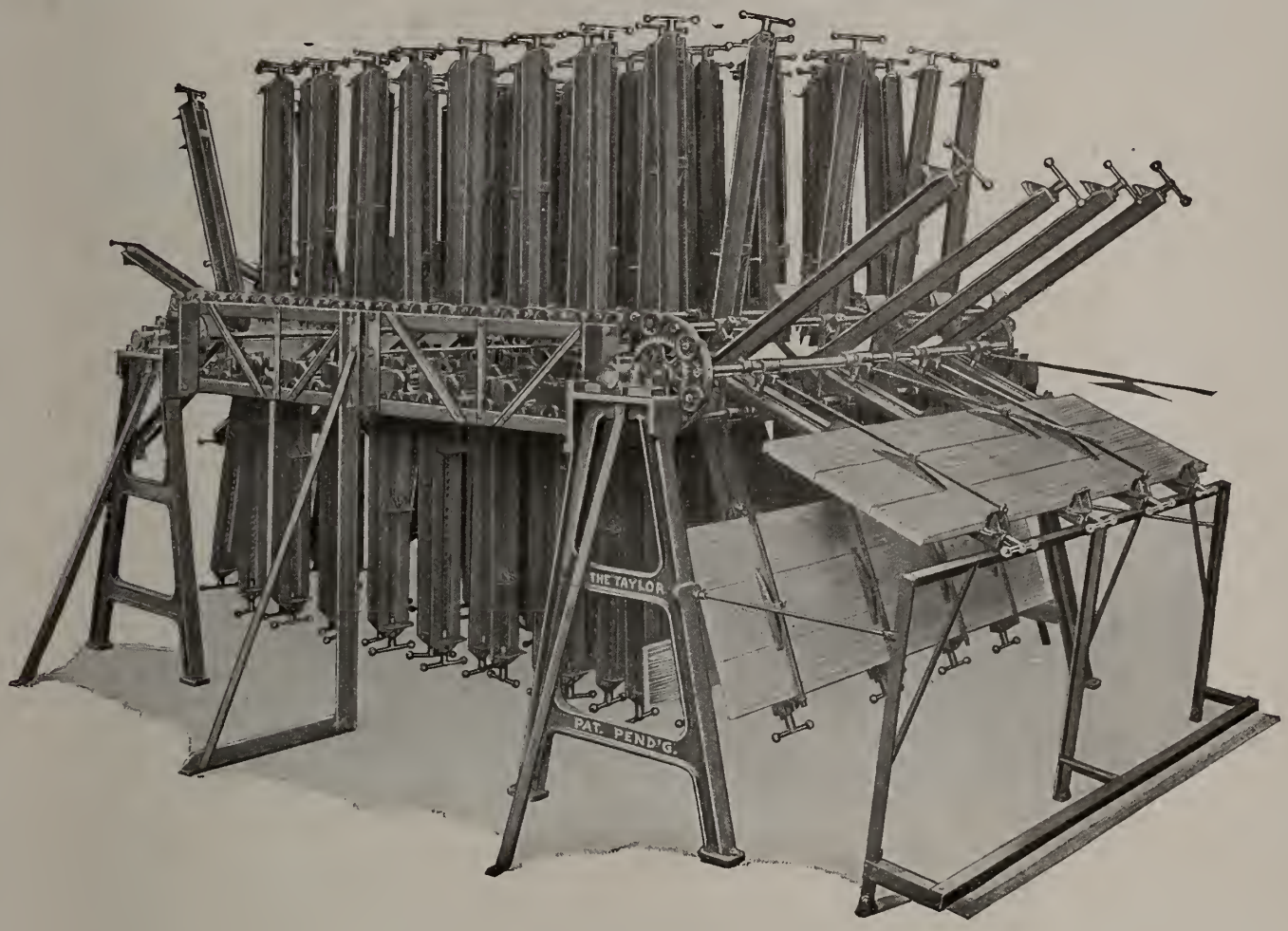
ROSETTES A new Period item to accompany the knobs.

Waddell Manufacturing Company

Coldbrook and Taylor, N. W. Grand Rapids, Mich.

CLAMP The Taylor CARRIER

REG. U.S. PAT. OFF. TRADE MARK



Forty section machine carrying 160 clamps, measuring 8 ft. 2½ in. between shaft centers.

The clamp is one of the most interesting features of the clamp carrier. A remarkable strain can be applied with greatest ease; the work it turns out—both thick and thin stock—is 100 per cent. perfect.

An Engineering concern recently wrote:

"I am recommending Taylor clamps to the Germain Mfg. Co. because I have proven the clamps more efficient through scientific time studies on both and all existing types of gluing-up machines and devices."

As a result of the above recommendations, The Germain Mfg. Co. referred to bought two Taylor carriers. They installed them, and tested them and have since purchased two more. We can tell you numerous instances where customers are using from two to nine Taylor carriers each as a result of similar experiences.

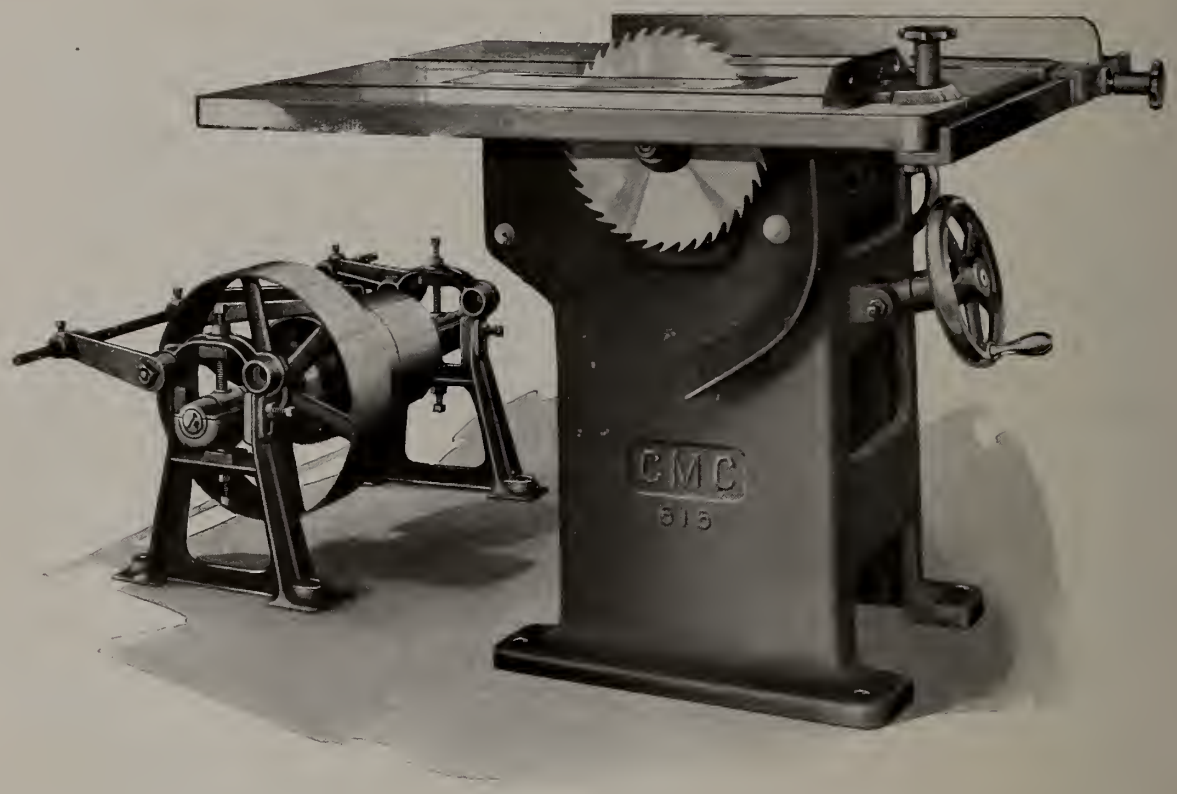
Let us prove the truth of these claims by showing you one of these carriers in operation, or you can try the clamps out on your own work. Ask for C. C. Folder and further information.

A. R. Williams Machinery Co., Toronto, Canada — Representatives

James L. Taylor Manufacturing Co.

POUGHKEEPSIE, N. Y.

C.M.C. No. 615 RIP SAW



A small handy Rip Saw that is big enough to do real work, yet is not too high priced for those odd jobs.

Stock 18½″ wide and 3″ thick can be ripped. Table is 40″ long, 32″ wide, and is hinged to permit removal of saw blades.

Supplied with or without countershaft.

Immediate shipment from stock.

Prices and full information given freely.

CANADA MACHINERY CORPORATION
LIMITED

GALT, - ONTARIO

British Woodworking Machinery

We are quantity producers of woodworking machinery of the following types:

Combined Thicknessers and Planers,
Overhand Planers,
Swing Cross-Cut Saws,
Jig Saws,
Wood Turners' Lathes,
Spindle Moulders,
Hand Morticing Machines,
Rise-and-Fall Table Saw Benches,
Wood Trimmers,
Bench Planers,
Treadle Saw Benches,
Saw Tables,
and other Woodworking Machinery.

Each Machine is made in a separate works in quantities of from 20 to 50 per week of each size.

Quality and finish is of the highest, and prices the lowest of any English Manufacturer.

Immediate Deliveries

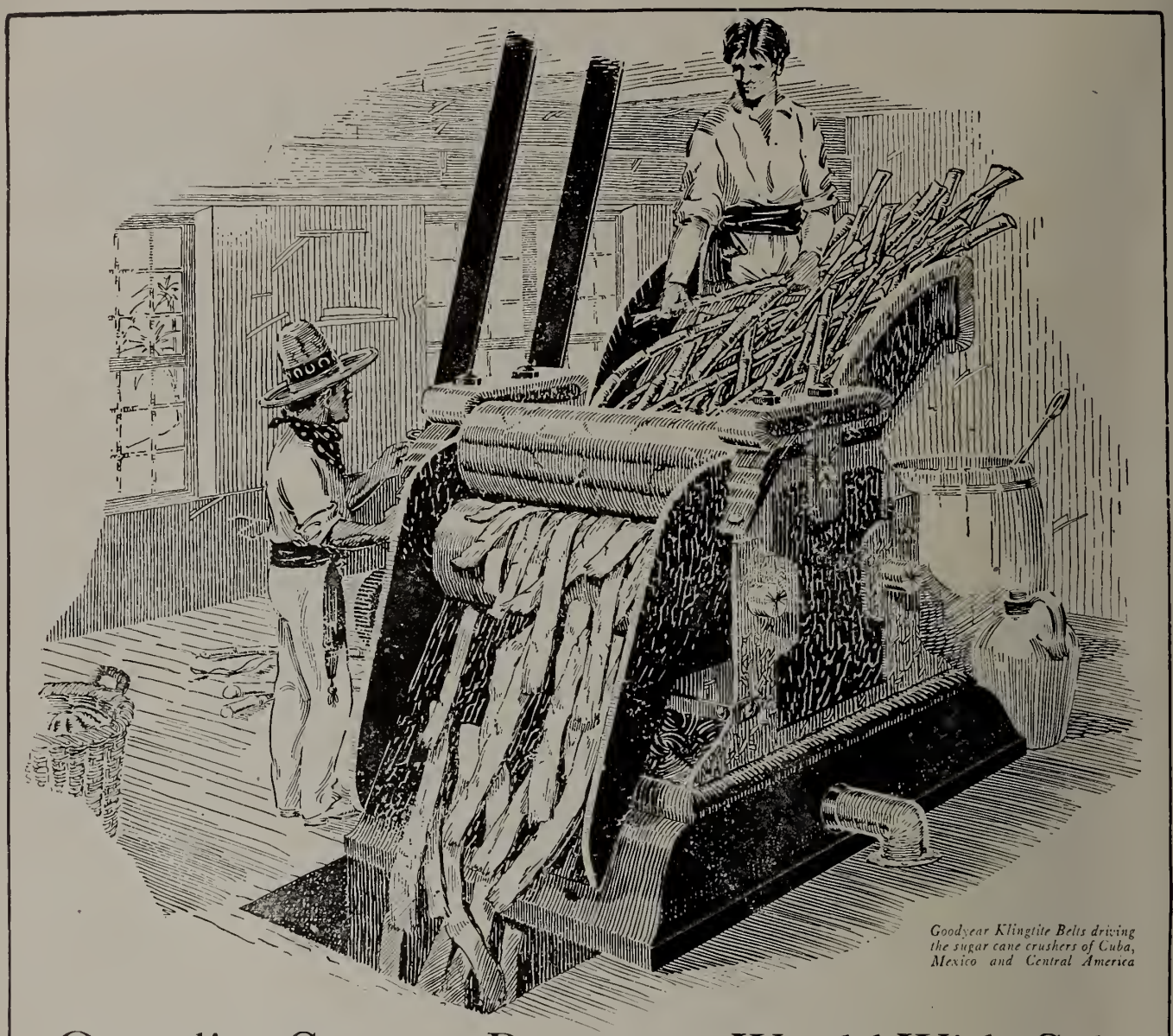
Enquiries are invited from merchants capable of handling our machines in Canada

The Hollis Wood Trimmer Company

GENERAL SALES OFFICES:

"Imperial" Works, Wylde Green,
BIRMINGHAM, ENG.

Telegrams: "Holltrim" Erdington, England.



Goodyear Klingtite Belts driving the sugar cane crushers of Cuba, Mexico and Central America

Canadian Success Promotes World-Wide Sale

As a result of the way Goodyear builds and sells belting and industrial hose in Canada, you will find these Goodyear products saving and serving in over 1,000 of Canada's finest industrial plants and mines.

The analysis of conditions, the scientific specification and application of belts, which Goodyear men make in Canadian plants they are now making all over the world.

To meet the requirements of world-wide trade it has been necessary to make some changes in the names of Goodyear Belts.

For example, Goodyear Extra Power is now Goodyear Klingtite Belt.

But the change is a change in name only.

This world-wide use of Goodyear Belting and Industrial Hose, Canadian-made, will multiply many times the fund of data and experience available to Canadian Goodyear users.

The problems overcome and the lessons learned in the factories of Japan and China, in the mills of India, in the workshops of South America, in the mines of South Africa, by the industries of every country, can now be applied by Goodyear men to Canadian industrials.

When the Goodyear belting man comes to talk to you, this information guides him in advising with you. His help is valuable —and costs you nothing. Phone, wire or write nearest branch.

The Goodyear Tire & Rubber Co. of Canada, Limited

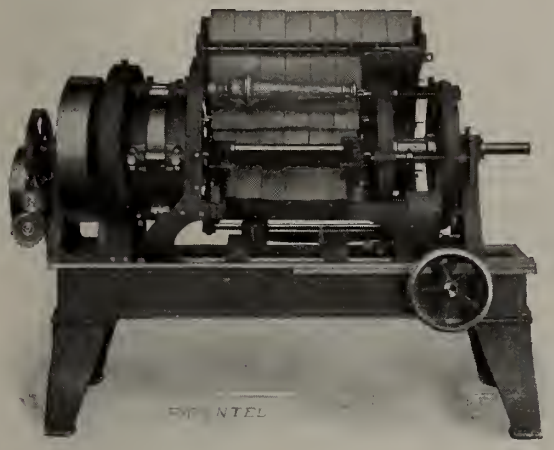
Branches: Halifax, St. John, Quebec, Montreal, Ottawa, Toronto. Hamilton, London, Winnipeg, Regina, Saskatoon, Calgary, Edmonton, Vancouver. Service stocks in smaller cities.

GOODYEAR BELTS

MADE IN CANADA

KLINGTITE GLIDE BLUE-STREAK

JUST A MINUTE

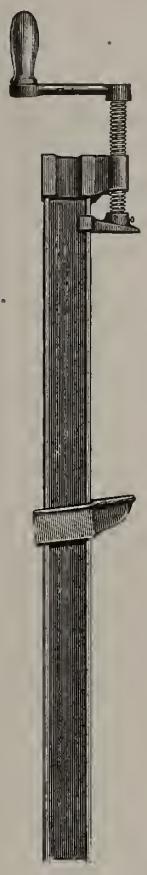


Saved may not amount to much, but a machine that can save $2,000 to $3,000 a year is well worth investigating.

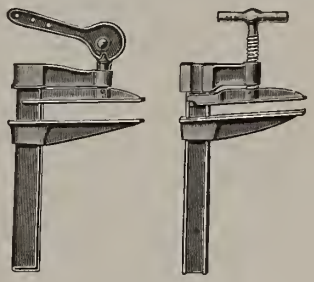
The Nash Sander for furniture turnings has done just that for many a furniture manufacturer.

Why not for you?

J. M. NASH, Milwaukee, Wis.



Colt's Clamps
for the
Woodworker



Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

For further information write for Catalogue No. 294.

Batavia Clamp Co.

235 Centre St. BATAVIA, N. Y.

The Elliot Bull Dog Planer

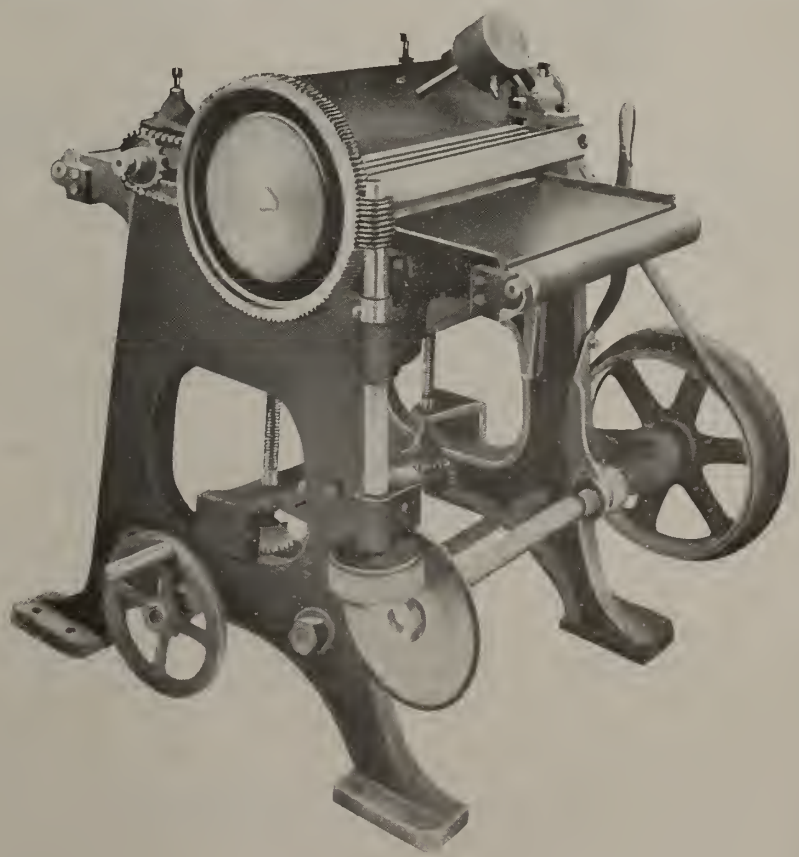
The illustration shows our new 16" x 6" Planer.

This Planer will fill a long felt want for a machine that will run from a 1½ or 2 H.P. Motor. It can be run from the Motor on an ELLIOT WOODWORKER, or from any other power by the addition of a counter-shaft.

We have eliminated all cut gears with which all other Planers are equipped, and drive the feed rollers with a worm gear thereby saving power.

This machine will do fine work and will soon pay for installation.

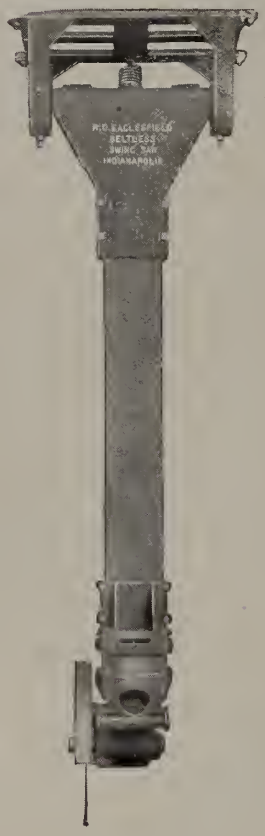
Write for prices and terms.



ELLIOT MACHINERY
Company, Limited
BELLEVILLE · ONTARIO

EAGLESFIELD

"Beltless" Swing Saw



Adaptable to close, accurate work

The "Eaglesfield" is the result of very careful study of swing saw requirements, and is designed with a special view to economy, reliability of operation and compactness.

This saw is operated by a specially designed and rated four-horsepower motor, the transmission being direct to the saw mandrel through a set of bevel gears, both saw mandrel and motor shaft being supported in S.K.F. ball bearings.

The hanger is of unified construction to insure rigid support and eliminate vibration. A rocker coil spring is provided instead of the ordinary counter balance weight.

The motor which is mounted in, and forms part of the head, is supplied in 60 cycles, either 2 or 3 phase, and any standard voltage. Speed of motor is 3,600 R.P.M.

One circular saw, which will cut five-inch stock, is included with each machine.

WRITE FOR BOOKLET

R. D. Eaglesfield

21st and Norwestern Avenue

Indianapolis, - Indiana

HART MIRROR PLATE CO.

IMPORTERS AND MANUFACTURERS OF

MIRRORS

GRAND RAPIDS QUALITY

Grand Rapids, Mich.

Largest manufacturers of high grade mirrors in America serving the furniture trade exclusively.

GLUE

FOR THE FINEST CABINET WORK AND VENEERING.

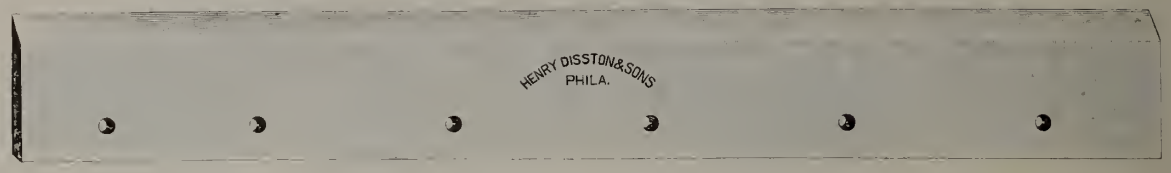
Suitable for All Climates.
Great Strength & Light Colour.

SAMPSON & WHITE, Ltd.

6, HOLBORN VIADUCT, LONDON, E.C.

DISSTON

ALL STYLES OF KNIVES FOR WOODWORKERS



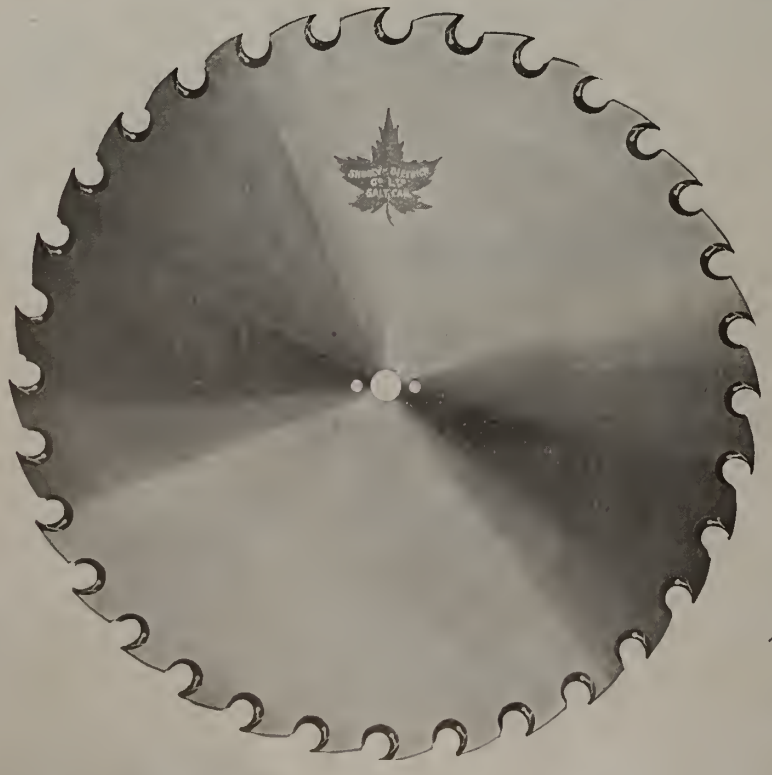
Are you getting the maximum production from your knife equipment? With the present necessity for greatly increased production, be sure your knives will give you the best possible results.

Disston knives cut fast and clean ,and hold their cutting edge.

Write for the Disston booklet on Machine Knives.

HENRY DISSTON & SONS LIMITED
TORONTO CANADA
Branch: Vancouver, B. C.

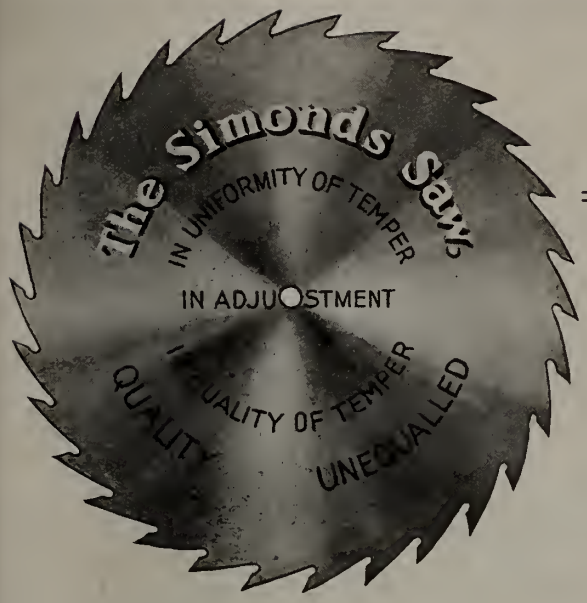
"MAPLE LEAF" SAWS



Inserted Tooth Saws
Solid Tooth Saws
Shingle Saws
Lath Saws
Special Grooving Saws
Dado Heads
Band Saws
Cross Cut Saws
Hand Saws
"Crowell" Swages and Shapers

Maple Leaf Saws are made by the largest All-Canadian Saw Manufacturers

Shurly-Dietrich Co.
LIMITED
Galt Vancouver Ottawa



SIMONDS
CIRCULAR AND BAND
SAWS

In every mill or woodworking shop in the land the demand for greater production is urgent. Devious methods to secure the desired results are being tried out. Some are making good—some are not. They have the manpower, but they can't get production. Many mills and woodworking shops have discovered one of the greatest hindrances to efficient operation are poor saws and knives. The saws dull easily and do not hold their tension, while the knives lose their cutting-edge quickly and this results in unsightly marks on the lumber, and consequently damage.

Inferior saws and knives are being discarded by many, and in most cases Simonds Products are replacing them. There is no question about Simonds Saws and Knives. They are made of the finest steel obtainable, hardened and tempered right and make mechanically perfect. They produce smooth lumber and cut down your operating expense.

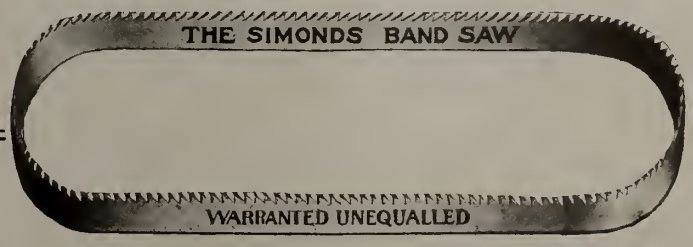
Write for catalog and prices.

Simonds Canada Saw Co., Limited

"The Saw Makers"

MONTREAL, Que.

VANCOUVER, B.C. ST. JOHN, N.B.



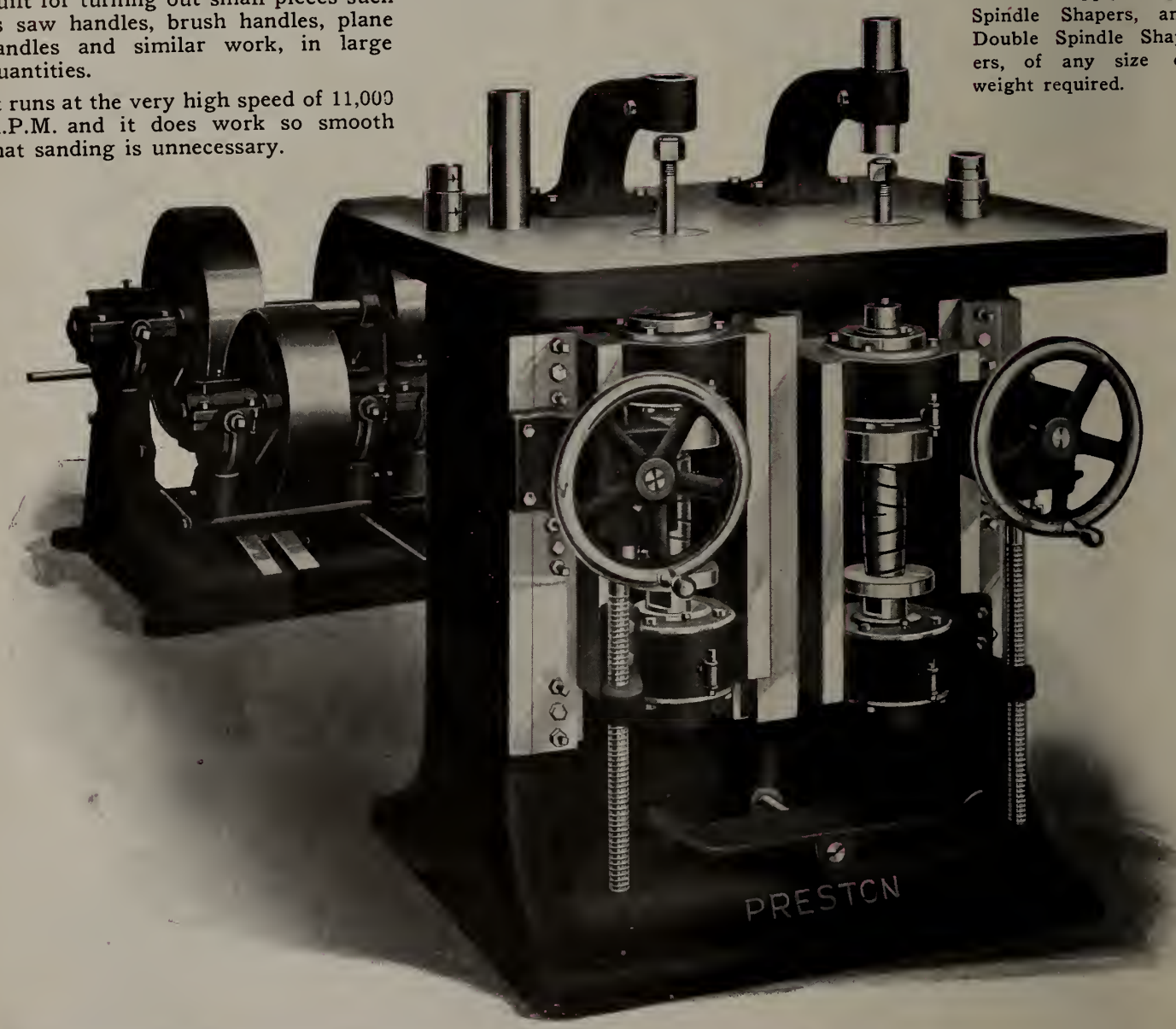
Another High Speed Shaper

12″, 14″ or 19″ Centres

This Shaper, just on the market, is built for turning out small pieces such as saw handles, brush handles, plane handles and similar work, in large quantities.

It runs at the very high speed of 11,000 R.P.M. and it does work so smooth that sanding is unnecessary.

We can supply Single Spindle Shapers, and Double Spindle Shapers, of any size or weight required.



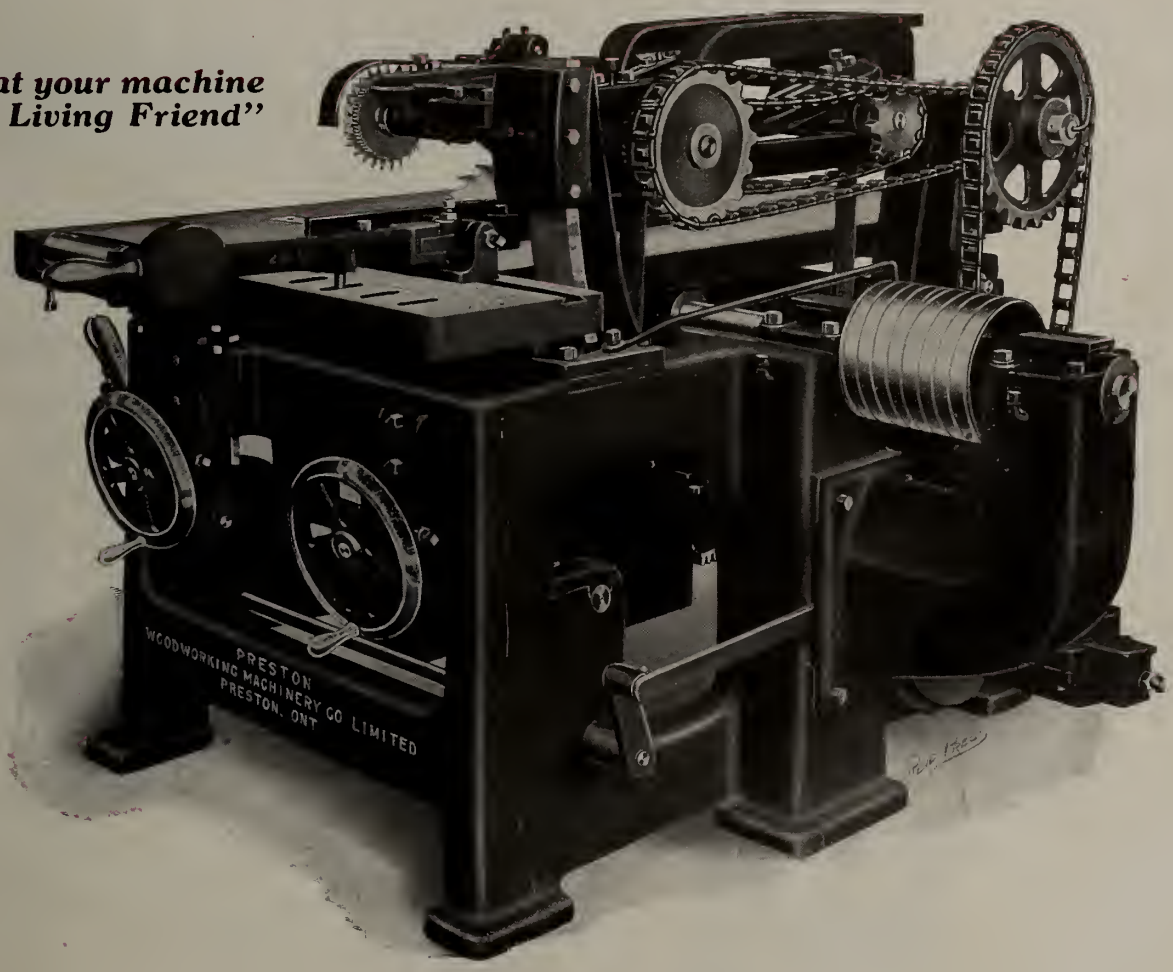
The Preston Woodworking

PRESTON

Made like all other "Preston" machines to give maximum service

No. 129 "PRESTON" POWER FEED RIP SAW

"Treat your machine as a Living Friend"



Carefully made to give genuine service the PRESTON No. 129 Power Feed Rip Saw, with variable feed will increase production and cut down your labor costs.

The frame is one solid casting, each bearing is self oiling and both table and upper works are raised and lowered by hand wheels.

The PRESTON No. 129 Power Feed Rip Saw will merit your approval by its efficient service.

Our catalogue describes this and many other woodworking machines that are worthy of investigation every time you contemplate a new machine. You should have a copy of it. Let us send one.

Machinery Company Ltd.

ONTARIO

"CASCO" Waterproof Glue

Mixed Cold—Used Cold

COST

FOR JOINTING—very much less than the hide glues.

FOR VENEERING—A little more per pound than vegetable, but little, if any, more per GLUE LINE FOOT.

Hundreds of large manufacturers are using "CASCO" to produce the BEST veneered products, at no increase in cost.

The Casein Manufacturing Co.

Manufacturers of Casein Glues for twenty-five years

15 PARK ROW NEW YORK CITY

NOTE. Send for Casco Red Book. It contains much information on glue, veneer and panels.

Improved Glue Heater

No heat controllers or other safety guards are necessary with this heater, **because it cannot injure glue.** It's simple, substantially made of copper and costs less than any other.

Let us tell you more about it.

We make any size desired.

Cincinnati Glue Heater Company

Cincinnati, Ohio

Highest in Efficiency-- Lowest in Current Consumption

"INTERNATIONAL" Electric Glue Heaters

Fireless cooker principle conserves and utilizes every bit of heat generated. Holds glue at correct working temperatures without guesswork. Average cost of operation about one cent per day. Keeps glue at correct temperature for greatest tensile strength. Properly glued joints never fail. This heater has a place in every shop and factory. Sizes, one pint to fifty gallons. Heavy spun copper construction. No seams or soldered joints. Three heats. No water bath. Clean, safe, economical. Portable. Fits any lamp socket. Used by prominent concerns everywhere.

Write for folder, "Correct Temperature in the Glue Room."

INTERNATIONAL ELECTRIC COMPANY

MANUFACTURERS

ELECTRICAL HEATING APPLIANCES

INDIANAPOLIS, U.S.A.

Canadian Distributors

R. E. T. PRINGLE, Limited

TORONTO
95 King Street East

MONTREAL
401 New Birks Bldg.

WINNIPEG
703 Confederation Life Bldg.

VANCOUVER
402 Vancouver Block

"International Electric Heaters are the best."

Concentrate on Quality

Every quality argument is strengthened by the use of

NAPCO Waterproof Glue

The first impression in the woodworking plant, is decidedly in its favor.

Napco, is a powerful glue that holds---is impervious to water, and absolutely odorless.

No glue on the market is as economical. It is mixed cold, and applied cold, thereby saving much time and trouble in preparing.

Introduce Napco Waterproof Glue in your plant.

WRITE FOR PRICES

Waterville Veneer & Panel Co. Ltd.

WATERVILLE, QUE.

Sole Agents for Canada.

Deliveries made from either Waterville or Toronto Warehouses.

QUICK REPAIR

Is a material very desirable for use by woodworking manufacturers of all kinds and is used for repairing splits, checks and other defects in both surface and core stock?

Made in colors to meet the requirements of the best finishes of all cabinet woods.

Put up in tubes for convenient use on surface stock and in quart cans for larger defects in core stock.

Quick Repair has been used by some of our customers for a number of years.

Small sample tube mailed free on request.

Manufactured and sold exclusively by
Makers of

PERKINS
183

Trade Mark Reg. U.S. Pat. Off.

Perkins Glue Company

Factory and General Offices:
Lansdale, Pennsylvania.

Sales Office:
South Bend, Indiana

Use these Products for Furniture Work

SELECT FIBRE CORD

is a first quality material for all kinds of Fibre Furniture. May be had with plain or wire centers.

STAKES

Stiff stakes are made for all kinds of weaving from A-1 material. These stakes may be had with or without wire centers.

UNAFLEX SEAMING CORD

is an everlasting cord for upholstered furniture. Used by many and pronounced highly satisfactory.

Select
UNIFORM STRONG
Fibre Cord

Select Fibrecord is dependable, uniform, economical, lasting and gives quality satisfaction.

This cord is made from carefully selected Micherlich All-Sulphite twisting paper.

It has an extra hard finish and is especially adapted to furniture work.

We also manufacture and sell UNAFLEX SEAMING CORD—a reliable, everlasting cord for upholstered furniture.

Write for Samples and Prices.

GRAND RAPIDS FIBRE CORD CO.

Myrtle Street and P. M. R. R. GRAND RAPIDS, Mich.

Perkins Vegetable Glue

The Glue of No Regrets

This Picture is the Home of

PERKINS 183

TRADE MARK (Reg. U.S. Pat. Off.)

Our Canadian Factory is located at Hamilton, Ont.

Process and Product Patents covering Perkins Glue were granted July 2nd and March 19th, 1912, and have been held valid and infringed by the United States Circuit Court of Appeals. Patents have also been granted in Canada, Great Britain, Germany, France, Belgium, Italy and other foreign countries.

PERKINS GLUE COMPANY

Factory and General Offices:
Lansdale, Pennsylvania

Sales Office:
South Bend, Indiana

Do Not Gamble on Your Veneer Tapes

BUY THE BEST.

Ideal Veneer Tapes

The material with the guarantee behind it

Profit by our many years' careful application to the subject of Veneer Tapes.

We have several qualities, cloth and paper, plain and perforated, which will cover all of your requirements.

Write for booklet.

IDEAL COATED PAPER CO.

Veneer Tape Specialists

Main Offices and Mills, BROOKFIELD, Mass.

MAGIC VENEER TAPE

is made of highest quality Kraft Paper that peels off your veneer in one piece, thus eliminating that tedious and expensive work of sanding or scraping.

YOUR especial needs of Veneer Tapes, whether Paper or Cloth, can be furnished by

The Gummed Products Co.

Troy - Ohio

Chicago Minneapolis New York

Veneer Tapes

Our Tapes are the result of twenty-five years' development and we take pride in the fact that we can guarantee them for use in your factory.

We manufacture QUALITY tapes at the LOWEST PRICE consistent with the PRODUCTION of high class goods, and are in a position to give you SERVICE which will please.

It is difficult to do credit to our tapes by written description, everyone knows that practical trial proves more than words. SEND FOR SAMPLE ROLLS—it obligates you in no way—and give them a thorough trial.

Yours for

QUALITY & SERVICE.

CANADIAN·NASHUA·PAPER·CO·LTD
SERVICE PRODUCTION QUALITY
NASHUA
TRADE MARK
PETERBOROUGH ONT.

CANADIAN NASHUA PAPER CO., Ltd.

Peterborough, Ont.

An Efemco Product

They Look Good— and Work Better

Efemco Acme Grip Neck Ball Bearing Casters Improve appearance and increase mobility. Because of their smooth, free action, strong axles and compact, sturdy construction, they meet the demands of furniture manufacturers and all users of good casters.

Acme Grip Neck Ball Bearing Casters are one of the biggest selling items of the EFEMCO line. They are made in sizes 3, 4, 5, 6, 7 and 8, with Maple, Lignum Vitae, Steel, Iron and Fibre wheels — brass-plated, nickel-plated or non-plated—for furniture of all styles and grades.

Write for catalog showing new lines of improved EFEMCO Casters.

FOSTER, MERRIAM & CO.

Meriden, Conn. Hamilton, Ontario New York City

Efemco PRODUCTS

Grip Neck Casters	Truck Casters	Piston Rings
Ball Bearing Casters	Furniture Trimmings	Cast Aluminum Ware
Roller Bearing Casters	Automobile Accessories	Grey Iron Castings

Standardized by 85 years of service

Efemco Products Efemco Products Efemco Products Efemco Products Efemco Products Efemco Products Efemco Products

Brown & Hackney

and INC.

Mark H. Brown Lumber Co.

of

Memphis, Tenn.

Would like to take this opportunity to wish you

A

Very Merry Christmas

and

Prosperous New Year

It is our desire to contribute to your prosperity by rendering you the most efficient service and by furnishing you with the most desirable quality of band sawn

Southern Hardwood Lumber

throughout the coming year

MEMPHIS
BRUCE
LITTLE ROCK

ANNOUNCING

OUR ENTRY INTO THE HARDWOOD FIELD AS

MANUFACTURERS

OF

ARKANSAS HARDWOODS

INCLUDING

BAND SAWN

RED AND WHITE OAK
ASH
GUM

CORRESPONDENCE INVITED

THE E. L. BRUCE COMPANY
LITTLE ROCK, ARKANSAS

Mercerau-Hawkins Tie Company

Huntington - W. Va.

Manufacturers and Wholesale Dealers

West Virginia and Southern

HARDWOODS

We specialize in

Oak Tie Siding
White and Red Oak
Yellow Poplar
Basswood
Chestnut and
Gum Lumber.

Canadian Sales in Charge of

C. W. PETERS

Vice President and Manager of Lumber Dept.

RUSH LUMBER COMPANY

Manufacturers Southern Hardwoods

Band Mill and Office - Memphis, Tenn.

	ASH			HICKORY	
2,000′	6/4	No. 3 Com.	10,000′	6/4	No. 3 Com.
2,000′	8-10-12/4	No. 3 Com..	8,000′	6/4	Log Run
18,000′	5/4	Log Run		SOFT MAPLE	
5,000′	6/4	Log Run	2,000′	4/4	Log Run
	CHERRY		200′	8/4	Log Run
500′	4/4	Log Run	2,000′	12/4	Log Run
	COTTONWOOD			QUARTERED WHITE OAK	
8,000′	4/4	FAS	12,000′	4/4	FAS
20,000′	4/4	No. 1 & 2 Com.	11,000′	5/4	FAS
3,000′	5/4	& 6/4 No. 3 Cm.	3,000′	6/4	FAS
	CYPRESS		100,000′	4/4	No. 1 Com
15,000′	4/4	Shop & Btr.	30,000′	5/4	No. 1 Com.
	ELM		12,000′	6/4	No. 1 Com.
11,000′	6/4	No. 3 Com.	15,000′	4/4	No. 2 Com.
15,000′	6/4	Log Run	4,000′	5/4	No. 2 Com.
11,000′	8/4	Log Run	4,000′	6/4	No. 2 Com.
14,000	12/4	Log Run	8,000′	4/4	Clear Strips.
	RED GUM		10,000′	4/4	No. 1 C. Strips.
5,000′	4/4	FAS.	2,000′	4/4	No. 2 C. Strips.
12,000′	5/4	No. 1 Cm. & Br.		PLAIN WHITE OAK	
18,000′	4/4	No. 1 Com.	3,000′	4/4	FAS
20,000′	4/	No. 2 Com.	40,000′	4/4	No. 1 Com.
	SAP GUM		40,000′	5/4	No. 1 Com.
7,000′	4/4	13 to 17 FAS	25,000′	4/4	No. 2 Com.
15,000′	4/4	6 to 12 FAS.	12,000′	5/4	No. 2 Com.
8,000′	5/4	FAS	14,000′	4/4	S.W.
3,000′	5/4	13 and up FAS.	15,000′	4/4	No. 3 Com. ....
30,000′	4/4	No. 1 Com.	12,000′	5/4	& 6/4 No. 3 Com.
40,000′	4/4	No. 2 Com.		PLAIN RED OAK	
21,000′	5/4	No. 2 Com.	15,000′	4/4	FAS.
25,000′	4/4	No. 3 Com.	70,000′	3/4	No. 1 & Btr.
21,000′	5/4	& 6/4 No. 3 Com	30,000′	5/4	No. 1 & Btr.
	BLACK GUM		75,000′	4/4	No. 1 Com.
12,000′	4/4	FAS Qtd.	20,000′	4/4	No. 2 Com.
30,000′	4/4	No. 1 Com. Qtd.		POPLAR (ROUGH)	
12,000′	4/4	No. 2 Com. Qtd.	8,000′	4/4	FAS
14,000′	4/4	Log Run Plain	10,000′	4/4	Saps.
	SYCAMORE		20,000′	4/4	No. 1 Com.
7,000′	4/4	No. 3 Com.	22,000′	4/4	No. 2 Com.
25,000′	4/4	Log Run	3,000′	4/4	No. 3 Com.
	QUARTERED RED GUM		6,000′	5/4	& 6/4 No. 3 Cm.
15,000′	4/4	FAS.		QUARTERED RED GUM	
5,000′	8/4	FAS		S. N. D.	
30,000′	4/4	No. 1 Com.	15,000′	8/4	No. 1 Com. & Btr.
11,000′	8/4	No. 1 Com.	16,000′	12/4	No. 1 Com. & Btr.

Dacus-Richards Hardwood Co.

A. P. DACUS - H. J. RICHARDS

MANUFACTURERS

Southern Hardwood

Specializing in

RED GUM
SAP GUM

PLAIN AND QUARTERED

OAK

Randolph Building,
Memphis, Tennessee.

Mills at EVANSVILLE, Miss., and PRITCHARD, Miss.

Perkins Brothers

Kelso, Ark.

Manufacturers of

Southern Hardwoods

Quartered and Plain White Oak, Plain Red Oak, Gum Elm, Maple, Ash and Cypress

We are also prepared to cut dimension stock to order in Ash, Oak, Gum, Hickory and Elm.

Let us know your requirements.

L. D. LEACH & COMPANY

FISHER BUILDING, - CHICAGO, Ill.

Manufacturers Hardwood Lumber

6 Cars 4/4 No. 1 Common Red and White Oak
5 Cars 4/4 No. 2 Common Red and White Oak
4 Cars each 8/4 in. No. 1 and No. 2 Com. R. and W. Oak
2 Cars each 10/4 in. and 12/4 in No. 1 and No. 2 Common Red and White Oak

Oak Furniture — Vehicle and Car Stock Dimensions Sawed to Order

4/4 in. Gum—All Grades
4/4 in. Cypress—All Grades
4/4 in., 8/4 in. and 10/4 in. Log Run Soft Elm

HARDWOOD LUMBER

Thirteen Band Mills
Six Planing Mills
Eleven Flooring Units

Annual Capacity, 130,000,000 Feet

We manufacture our lumber for the mutual benefit of ourselves and those who purchase it from us.

We desire to see all of our customers prosperous. This is neither exclusive selfishness, nor unadulterated altruism. It arises from our belief that in the course of proper dealings between buyer and seller, neither is enriched at the expense of the other, nor is one necessarily impoverished if the other is enriched.

Our belief is that our dealings should result equally to the benefit and profit of our customers and ourselves, at the same time.

We make this thought vital in our business, by inculcating into our Sales Department, and into the mind of every salesman, a thorough comprehension of our policy, founded on the Principle of Service. We say to them:

Co-operation not competition finds its place in this policy. Do not deal with our patrons in the spirit of competition, for this leads you to seek to get the most for the least. Serve them in a spirit of co-operation, by seeking to ascertain their needs, and then endeavor to render the most perfect, satisfying service possible in filling the need.

We believe that in final analysis we prosper, only as those we serve prosper.

Our interest and that of our patrons are so similar and so intimately united and inter-related that nothing can be ultimately helpful to us which is not also beneficial to them.

W. M. Ritter Lumber Co.

COLUMBUS, OHIO., U. S. A.

Canadian Representative: John Hall, 160 Huron St., Post Office Box 32, Toronto

BEDNA YOUNG Lumber Company

Jackson - Tennessee

Manufacturers of

Quartered White Oak
Quartered Red Oak
and Other Hardwoods

When in the market for

High Grade Lumber

please let us have your enquiries.

Sawed Veneer

Quartered White Oak
For Furniture and Panels

Plain Red Oak
For Interior Trim and Doors

Cypress
For Battery Separators

Manufacturing Uniformly Good.
Quality Unsurpassed

James E. Stark & Co., Inc.
MEMPHIS, TENN.

E. R. Spotswood & Son

INCORPORATED

MANUFACTURERS OF

Kentucky Hardwood Lumber

We specialize in soft texture Kentucky Oak—Plain and Quarter Sawed, also in Ash, Basswood, Chestnut, Poplar, Beech.

Let us quote you on your requirements—our prices are right and we can make prompt shipments direct from our mills.

LEXINGTON - - KENTUCKY

Stimson Veneer and Lumber Co.

(Inc.)

Office and Mill: McLean Ave. and Union Belt R.R.

Memphis - Tenn.

We sell only the product of our own mills and make band sawn lumber in all Southern Hardwoods.

We specialize in Quartered White Oak, Red Oak, and Red Gum.

With allied companies we make fifty million feet annually.

J. V. Stimson Hardwood Co.

Manufacturers and Exporters

Band Mills: Memphis, Tenn., Helena, Ark.

Memphis - Tenn.

STOCK LIST

QUARTERED WHITE OAK
- 3 cars 4/4" 1s and 2s.
- 5 cars 4/4" No. 1 Common.
- 2 cars 4/4" No. 2 Common .

QUARTERED RED OAK
- 5 cars 4/4" 1s and 2s.
- 10 cars 4/4" No. 1 Common.
- 4 cars 4/4" No. 2 Common.
- 2 cars 6/4" No. 1 Common and Better.

QUARTERED RED GUM
- 10 cars 4/4" 1s and 2s.
- 3 cars 4/4" 1s and 2s Fig.
- 2 cars 5/4" 1s and 2s.
- 2 cars 6/4" 1s and 2s.
- 15 cars 4/4" No. 1 Common.
- 2 cars 5/4" No. 1 Common.
- 2 cars 6/4" No. 1 Common.

QUARTERED RED GUM, Sap no Defect
- 5 cars 6/4" No. 1 Common and Better.
- 10 cars 8/4" No. 1 Common and Better.

ASH
- 4 cars 10/4" No. 1 Common and Better.
- 1 car 12/4" No. 1 Common and Better.
- 1 car 6/4" No. 1 Common and Better.
- 2 cars 4/4" No. 1 Common.
- 2 cars 4/4" No. 2 Common.

SAP GUM
- 10 cars 4/4" 1s and 2s.
- 20 cars 4/4" No. 1 Common.
- 10 cars 4/4" No. 2 Common.
- 2 cars 4/4" 18" up Panel.
- 5 cars 4/4" 13-17" Box Boards.

PLAIN RED OAK
- 2 cars 4/4" 1s and 2s.
- 2 cars 6/4" No. 1 Common and Better.
- 2 cars 10/4" No. 1 Common and Better.

PLAIN WHITE OAK
- 4 cars 4/4" No. 1 Common Plain.

COTTONWOOD
- 2 cars 4/4" 1s and 2s.
- 15 cars 4/4" No. 1 Common.
- 5 cars 4/4" No. 2 Common.

ELM
- 2 cars 4/4" Log Run.
- 10 cars 10/4" Log Run.
- 10 cars 12/4" Log Run.

MAPLE
- 4 cars 12/4" Log Run.

Band Sawn Poplar, Plain and Quartered White and Red Oak— Quartered Red Gum, Sap No Defect

Below we offer, subject to prior sale and immediate acceptance, the following stock:—

ASH

4/4"	Log Run	20,000	ft.
5/4"	Log Run	1,500	"
6/4"	Log Run	1,200	"
8/4"	Log Run	3,000	"

BASSWOOD

4/4"	No. 2 Com. & Btr.	35,000	"

BEECH

4/4"	Log Run	10,000	"
5/4"	Log Run	30,000	"
6/4"	Log Run	12,000	"
8/4"	Log Run	40,000	"
10/4"	Log Run	10,000	"
12/4"	Log Run	3,000	"

CHERRY

4/4"	Log Run	7,000	"

COTTONWOOD

4/4"	Log Run	10,000	"

QTRD. GUM, SND

4/4"	No. 2 Com. & Btr.	7,500	"
6/4"	FAS	20,000	"
6/4"	No. 1 Com.	40,000	"
8/4"	No. 1 Com.	30,000	"

PLAIN SAP GUM

4/4"	No. 1 Com.	45,000	"
4/4"	No. 2 Com.	30,000	"
5/4"	No. 1 Com. & Btr.	30,000	"

QTRD. BLACK GUM

4/4"	No. 2 Com. & Btr.	70,000	"

PLAIN BLACK GUM

4/4"	No. 1 Com. & Btr.	15,000	"

HICKORY

6/4"	Log Run	2,000	"
8/4"	Log Run	12,000	"

QTRD. WHITE OAK

4/4"	FAS	50,000	"
4/4"	No. 1 Com.	200,000	"
4/4"	No. 2 Com.	100,000	"
5/4"	Com. & Btr.	10,000	"

MAGNOLIA

4/4"	FAS	20,000	"
4/4"	No. 1 Com.	50,000	"
4/4"	No. 2 Com.	45,000	"

QTRD. WHITE OAK STRIPS

4/4"	Clr 2½ to 5"	13,000'	"
4/4"	Com. 2 to 3"	3,500	"

PLAIN WHITE OAK

4/4"	FAS	13,000	"
4/4"	No. 1 Com.	60,000	"
4/4"	No. 2 Com.	65,000	"

QTRD. RED OAK

4/4"	No. 1 Com.	75,000	"
4/4"	No. 2 Com.	14,000	"

PLAIN RED OAK

4/4"	FAS	65,000	"
4/4"	No. 1 Com.	130,000	"
4/4"	No. 2 Com.	110,000	"
5/4"	FAS	30,000	"
5/4"	No. 1 Com.	20,000	"

PLAIN OAK

4/4"	Sound Wormy	200,000	"
4/4"	No. 3 Com.	100,000	"

QTRD. POPLAR

4/4"	No. 1 Com. & Btr.	40,000	"

POPLAR

4/4"	No. 1 Com.	200,000	"
4/4"	No. 2A & B Com.	220,000	"
6/4"	No. 1 Com. & Btr.	33,000	"

SYCAMORE

6/4"	Log Run	21,000	"

WALNUT

4/4"	Log Run	2,000	"

We own our stumpage and operate our own band mill in Bude, Miss., manufacturing ten million feet annually, on which we specialize in Quartered White Oak, manufactured from genuine forked leaf White Oak and Yellow Poplar of fine soft texture grown in the hills of Southern Mississippi.

Our grades are dependable and the manufacture of our stock is unsurpassed. We respectfully solicit your enquiries, which will receive our prompt and courteous attention.

L. D. Murrelle Lumber Company

General Sales Office: 1524 Exchange Bldg., Memphis, Tennessee

Band Mill: Bude, Miss.

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

BROWN ASH

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	30,900	.....	17,000	12,000
1¼ in.	58,500	7,300	36,200	15,300
1½ in.	36,500	.....	35,000	7,500
2 in.	4,500	.....	20,000	2,000

WHITE ASH

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	8,000	.....	54,000	65,000
1¼ in.	117,000	4,500	140,000	40,000
1½ in.	16,900	1,200	39,000	65,000
2 in.	38,300	500	91,000	96,000
2½ in.	38,500	.....	58,000	37,500
3 in.	71,500	.....	30,500	38,500
4 in.	12,000	.....	8,000	10,500

BASSWOOD

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	148,700	3,000	350,000	226,000
1¼ in.	130,000	14,000	277,500	97,800
1½ in.	84,600	.....	41,800	15,000
2 in.	81,900	.....	27,000	14,500
2½ in.	90,000	.....	13,900	15,000
3 in.	13,550	.....	10,500	5,900
4 in.	1,300	.....	450	.....

CHERRY

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	187,500	182,200	98,500
1¼ in.	5,500	7,600	14,500
1½ in.	32,000	32,700	55,300
2 in.	.....	26,200	70,900
2½ in.	5,500	2,700	2,200
3 in.	28,700	3,500	2,300
4 in.	5,900	.....	500

CHESTNUT

	1 & 2	No. 1 Com.	S. W. No. 2 Com.
¾ in.	500	40,000	55,000
1 in.	3,900	10,300	153,500
1¼ in.	161,800	88,200	219,200
1½ in.	90,500	62,000	.....
2 in.	59,200	17,300	126,200
2½ in.	4,000	1,150	500
3 in.	2,100	1,300	500
4 in.	1,500	300	.....

CYPRESS

	1 & 2	Select	No. 1 Shop
1 in.	.....	.....	.....
1¼ in.	.....	8,800	.....
1½ in.	17,100	5,200	18,000
2 in.	7,000	11,200	4,600
2½ in.	8,000	3,200	.....
3 in.	69,400	23,100	12,000
4 in.	10,300	.....	.....

SOFT ELM

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	2,700	.....	.....
1¼ in.	41,500	38,200	6,800
1½ in.	12,500	16,300	5,400
2 in.	6,000	11,000	5,500
2½ in.	13,000	7,200	2,300
3 in.	26,280	8,500	8,000
4 in.	7,100	6,200	6,000

PLAIN RED GUM

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	30,300	13,000	15,500
1¼ in.	.....	.....	.....
1½ in.	8,000	10,300	9,500
2 in.	4,500	3,800	7,500

FIGURED RED GUM

	1 & 2
1 in.	7,800

QUARTERED RED GUM

	1 & 2	No. 1C
4/4	9,000	20,000
5/4	8,100	3,800
6/4	3,900	4,500
8/4	19,100	11,500

SAP GUM

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	3,400	6,000	200
1¼ in.	.....	800	.....
1½ in.	2,400	6,000	13,500
2 in.	.....	7,700	10,400
2½ in.	.....	1,500	1,200

QUARTERED SAP GUM

	1 & 2	No. 1C
4/4	.....	2,500
5/4	14,000	.....
8/4	2,000	400
10/4	350	29,000

HICKORY

	1 & 2	No. 1 Com.	No. 2 Com.
1 in.	3,200	2,400	11,600
1¼ in.	.....	2,500	2,050
1½ in.	3,600	11,300	25,000
2 in.	2,400	17,200	16,200
2½ in.	7,000	13,000	4,700
3 in.	3,500	7,580	7,200
4 in.	300	.....	275

Also Large Stock of BEECH, BIRCH and MAPLE

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

30 Million Feet Hardwoods Yearly

Manufactured by

Darnell-Love Lumber Co.

Leland, Mississippi

We own and operate two large band mills with sufficient timber to supply these mills, at present capacity, fifteen to twenty years

Cutting

Oak, Ash, Gum, Elm

Cypress, Cottonwood

and various other Native Woods

Our Specialties are—

3/8", 1/2", 5/8" and 3/4" in Gum and Oak

and

8/4" Quartered Red Gum

8/4" Quartered Red Gum Sap No Defect

WE SOLICIT YOUR INQUIRIES AND ORDERS

E. SONDHEIMER CO.

MEMPHIS, TENN., U.S.A.

Band Mills at
Baton Rouge, La., Sondheimer, La., Tallulah, La.
Office & Distributing Yard, Memphis, Tenn.

Manufacturers of Southern Hardwoods **Dry Stock Ready for Shipment**

Ask us for prices. We may be able to save you some money. We specialize in genuine Tensas Basin Red Gum—best in the world.

WHITE ASH
10 cars 1" to 4" 1s&2s
10 " 1" No. 1 Com.
5 " 1¼" No. 1 Com.
1 " 1½" No. 1 Com.
3 " 2" No. 1 Com.
5 " 1, 1¼, 1½" No. 2 Cm.

COTTONWOOD
10 " 1" 1s and 2s
15 " 1" No. 1 Com.
10 " 1" No. 2 Com.
5 " 1¼" 1s and 2s
10 " 1¼" No. 1 Com.
10 " 1¼" No. 2 Com.
15 " 1½" No. 2 Cm. & Br.

CYPRESS
1 " 1" Pecky.
10 " 1x4 & 1x7 No. 1 & No. 2 Com.
1 " 1x12" Pecky.
7 " 1½" Sel. & Shop
2 " 2" Sel. & Shop.
2 " 2" Pecky.
1 " 2x6 No. 1 Com.
1 " 3" Shop.

QUARTERED TUPELO
2 " 1" 1s and 2s
10 " 1" 1s and 2s
15 " 1" No. 1 Com.
10 " 1" No. 2 Com.

WILLOW
1 " 1x3 to 17" Box Bds.
10 " 1" 1s and 2s.
15 " 1" No. 1 Com.
15 " 1" No. 2 Com.
10 " 1¼" No. 2 Cm. & Br.
15 " 1½" No. 2 Cm. & Br.
5 " 2" No. 2 Com. & Btr.

MAGNOLIA
5 " 1" No. 2 Com. & Btr.

BLACK GUM
1 " 1" No. 2 Com. & Btr.

PECAN
5 " 6/4" Log Run
5 " 8/4" Log Run

SOFT ELM
2 " 3/4" Crating
3 " 6/4" No. 2 Cm. & Br.
3 " 8/4" No. 2 Cm. & Br.
3 " 10/4" No. 2 Cm. & Br.

QTD. FIG. RED GUM
1 " 1" 1s and 2s
1 " 1" No. 1 Com.

QRTD. RED GUM
2 " 1" 1s and 2s
3 " 1" No. 1 Com.
2 " 1¼, 1½, 2" No. 1 C&B
2 " 2½" No. 1 Cm. & Br.
2 " 3" No. 1 Cm. & Br.

PLAIN RED GUM
4 " 5/8" No. 1 Cm. & Br.
2 " 3/4" 1s and 2s.
10 " 4/4" 1s and 2s
5 " 4/4" No. 1 Com.
1 " 4/4" No. 2 Com.
3 " 1¼ & 2" No. 1 C&B

QRTD. SAP GUM
10 " 1" 1s and 2s.
3 " 1" No. 1 Com.
3 " 1½" 1s and 2s
½ " 2" No. 1 Com.
½ " 2½" No. 1 Com.
3 " 3" No. 1 C&Btr.

PLAIN SAP GUM
5 " 1x13 to 17" Bx Bds.
8 " 5/8" 1s and 2s
10 " 4/4" 1s and 2s
10 " 4/4" No. 1 Com.
10 " 5/4" No. 1 Cm. & Br.
5 " 5/4" No. 2 Com.

QRTD. RED OAK
5 " 1" 1s and 2s.
3 " 1" No. 1 & 2 Com.
3 " 1¼" 1s and 2s
2 " 1¼" No. 1 Com.

QRTD. WHITE OAK
2 " 1" 1s and 2s
3 " 1" No. 1 Com.
2 " 5/8" 1s and 2s.
2 " 5/8" No. 1 Com.

PLAIN RED OAK
3 " 1" 1s and 2s
10 " 1" No. 1 Com.
5 " 1" No. 2 Com.
5 " 1" No. 3 Com.
1 " 1¼" 1s & 2s

PLAIN WHITE OAK
2 " 5/8" 1s & 2s.
3 " 5/8" No. 1 Com.
1 " 5/8" No. 2 Com.
2 " 3/4" 1s & 2s
10 " 4/4" 1s & 2s
15 " 4/4" No. 2 & 3 Com.

Lumber
Walnut, Mahogany Plain and Quartered Oak, Ash, Cherry

Veneers
Walnut and Mahogany

WE specialize in AMERICAN BLACK WALNUT and can furnish straight cars from 3/8 to 4 inches in thickness. Also can load mixed cars WALNUT and MAHOGANY LUMBER and VENEERS, PLAIN and QUARTERED RED and WHITE OAK, ASH and CHERRY.

The Kosse, Shoe and Schleyer Co.

Eastern Branch:
BALTIMORE, Md.

Main Office and Band Mill:
CINCINNATI, Ohio

American Walnut Lumber

QUALITY

SERVICE

More evidence of our untiring efforts to procure the very best raw material for our product.

All Grades and Thicknesses

Pickrel Walnut Company

St. Louis, Missouri

Tustin Hardwood Lumber Co.

MEMPHIS TENN.

KILN DRIED AND AIR DRIED SOUTHERN HARDWOODS

We operate five mills and Memphis yard, specializing in KILN DRIED Sap Gum, Elm, Maple, Ash. *Send us your inquiries.*

Will quote low prices on following to points not embargoed

4 cars 4/4 No. 1 C. & B. Qtd. White Oak.
1 " 4/4 Fas Qtd. Red Oak.
1 " 4/4 No. 1 Com. Qtd. Red Oak.
2 " 4/4 Fas Plain Red Oak.
5 cars 4/4 No. 1 Com. Plain Red Oak.
3 " 8/4 No. 1 C. & B. Qtd. Red Gum.
4 " 8/4 No. 1 C. & B. Qtd. Sap Gum.

Johnson Brothers Hardwood Co.

(OUR NAME IS EASY TO REMEMBER)

Bank of Commerce & Trust Building MEMPHIS TENN., U.S.A.

Manufacturers and Wholesalers

SOUTHERN HARDWOODS

3,000,000 ft. dry stock on hand and 5,000,000 in process of drying—all thicknesses, ½" to 4", plain and quartered.
White and Red Oak—Red Gum—Sap Gum—Tupelo—Black Gum — Cottonwood—Salix—Willow—Pecan—Sycamore—Elm—Soft Maple—Magnolia.

We offer for quick Sale at bargain prices the following Bone Dry Stock:

1 c/l 4/4" No. 1 & 2 Common Qtd. White Oak
2 c/l 8/4" No. 1 Common Qtd. Red Gum, S.N.D.
2 c/l 10/4 Log Run Sycamore
1 c/l 10/4 Log Run Soft Maple
5 cars 4/4" FAS Cottonwood, Regular Widths
1 c/l 8/4" No. 1 C & B Red Gum
1 c/l 8/4" No. 1 C Sap Gum
1 c/l 6/4" No. 1 C & B Red Gum
2 cars 10/4" Log Run Ash

Wire us at our expense for quotations

Yellow Poplar Lumber Co.

Manufacturers of Band Sawed

Poplar Plain Oak
Quartered Oak
Chestnut Basswood

Capacity 50,000,000 per annum

SPECIALTY: Monogram Brand Oak Flooring

CANADIAN ENQUIRIES SOLICITED

COAL GROVE, OHIO, U. S. A.

We Offer For Prompt Shipment

PLAIN SAP GUM
4 100′ 3/4 Log Run Gum
14,000′ 5/8 No. 1 Com.
5,7000′ 5/8 No. 2 Com.
479,300′ 4/4 No. 1 Com.
131,800′ 4/4 No. 3 Com.
600′ 5/4 No. 1 Com.
35,600′ 6/4 No. 2 Com.
21,900′ 6/4 No. 3 Com.
9,000′ 8/4 No. 2 Com.
4,000′ 4/4 Panels
41,000′ Gum Shims

QUARTERED GUM SND
16,000′ 4/4 FAS
25,500′ 4/4 Com. & Btr.
53,500′ 4/4 No. 1 Com.
13,700′ 8/4 Com. & Btr.

PLAIN RED GUM
10,200′ 4/4 FAS
92,400′ 4/4 No. 1 Com.
193,100′ 4/4 No. 2 Com.
300′ 5/4 FAS
1,500′ 5/4 No. 1 Com.
9,500′ 6/4 FAS
1,350′ 6/4 Com. & Btr.
3,000′ 8/4 No. 1 Com.

QUARTERED RED GUM
21,500′ 4/4 FAS
87,400′ 4/4 No. 1 Com.
4,000′ 5/4 No. 1 Com.
9,000′ 6/4 FAS
3,200′ 6/4 No. 1 Com.
3,000′ 4/4 Com. & Btr.

PLAIN RED OAK
5,230′ 5/8 FAS
2,593′ 5/8 No. 1 Com.
5,915′ 3/4 FAS
3,392′ 3/4 No. 1 Com.
3,000′ 3/4 Com. & Btr.
47,100′ 4/4 FAS
431,000′ 4/4 No. 1 Com.
235,600′ 4/4 No. 2 Com.
59,600′ 4/4 No. 3 Com.
31,300′ 4/4 Sound Wormy

QUARTERED RED OAK
14,700′ 4/4 FAS
10,836′ 4/4 FAS
25,400′ 4/4 Com. & Btr.
30,000′ 4/4 No. 1 Com.
26,008′ 4/4 No. 1 Com.

COTTONWOOD
7,700′ 4/4 No. 2 Com.

PLAIN WHITE OAK
7,500′ 4/4 FAS
1,500′ 4/4 Com. & Btr.
114,300′ 4/4 No. 2 Com.
2,000′ Oak Shims

QUARTERED WHITE OAK
8,200′ 4/4 Com. & Btr.
15,000′ 4/4 No. 1 Com.

ELM
56,700′ 4/4 Log Run
4,000′ 6/4 Log Run
72,100′ 12/4 Log Run

ASH
15,500′ 4/4 Log Run
2,000′ 8/4 to 12/4

MISCELLANEOUS
3,000′ 4/4 Log Run Beech
6,000′ 4/4 Log Run Cypress
1,000′ 4/4 Log Run Locust
1,500′ 4/4 Log Run Maple
16,400′ 4/4 Log Run Sycamore
39,900′ 4/4 Log Run Black Gum

PECAN
3,000′ 4/4 Log Run
8,200′ 8/4 Log Run

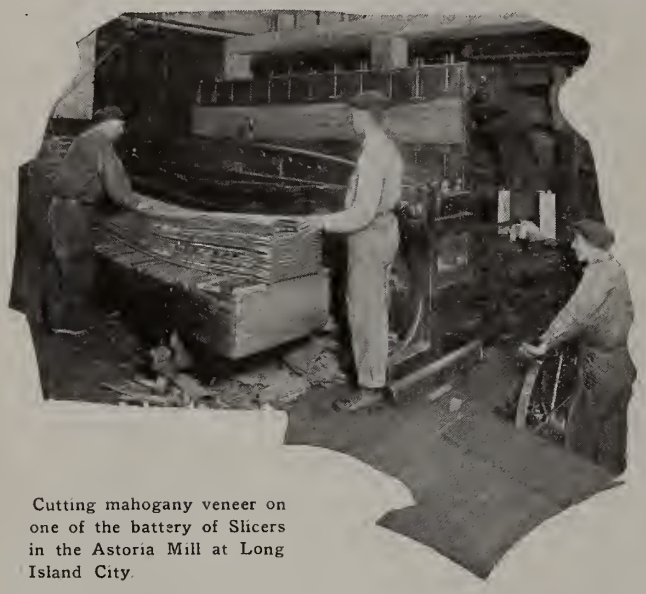
Send us your inquiries, as this is only a partial list of the stock we have at our mill

"CLAYTON QUALITY" TENSA DETA SOUTHERN HARDWOODS

UTLEY-HOLLOWAY COMPANY

General Office: 1226 Conway Bldg., CHICAGO, ILL. **Band Mill: Clayton, La.**

ASTORIA MAHOGANY
LUMBER & VENEERS



Cutting mahogany veneer on one of the battery of Slicers in the Astoria Mill at Long Island City.

Slicing Twenty-eight to the Inch!

THE choice, figured mahogany logs, which our experts select for fine veneer making, are cut by huge diagonally operating knives or "slicing" machines. With these slicers a remarkable degree of uniformity in cut is obtained—an Astoria feature which has long been appreciated by manufacturers of high class furniture. This uniformity of cut is but another element in the service which over a quarter century has made us the largest complete mahogany lumber and veneer organization in the United States.

Astoria Mahogany Co., Inc.
1031 Steinway Avenue, Long Island City, N.Y.
Successors to
Huddleston-Marsh Mahogany Co. F. W. Kirch, Inc.
Astoria Veneer Mills and Dock Co.,
Mills and Yard, Long Island City, New York
BRANCHES—44 North Market Avenue, Grand Rapids, Mich.; 2256 Lumber Street, Chicago, Ill.

OAK

Plain and Quartered
Uniform Color—Soft Texture

Poplar, Ash

and other

Hardwoods

We have 35,000,000 feet dry stock—all of our own manufacture, from our own timber grown in Eastern Kentucky

Prompt Shipments

The Mowbray & Robinson Co.
(INCORPORATED)
Manufacturers
Office: CINCINNATI, OHIO

MILLS
Quicksand, Ky.; Viper, Ky.; West Irvine, Ky.

Canadian Representative :
M. E. CUMMINGS, 814 Richmond Ave., Buffalo, N. Y.

West Virginia Oak

Thoroughly Dry, Accurately Sawn, Soft Textured, and Uniform in Color.

Write us when needing choice stocks. All lumber produced from virgin timber of large size and excellent quality.

Twenty Million Feet Hardwood Ready for Immediate Shipment

OAK

Yellow Poplar, Ash, Hickory, Beech, Chestnut, Basswood, Walnut, Maple

THE THOMAS HALL LUMBER COMPANY

Manufacturers

CHARLESTON, - WEST VIRGINIA

M. BROWN, Canadian Repres. **Address: 87 Neville Park Blvd., Balmy Beach, Toronto**

Tallahatchie Lumber Company

MEMPHIS, TENN.

Manufacturers of

Band Sawn Hardwoods

Graded so as to be especially attractive to Furniture Manufacturers.

Careful attention to every detail of service.

SEND US YOUR INQUIRIES

High Grade White Hickory

Why Pay High Freights on Waste Material? Stock sawed free and clear of defects to specified sizes. Waste eliminated at source. Operating numerous Mills throughout the choicest HARDWOOD BELTS in the United States.

"Buttcut" Brand

Hickory, Oak and Ash
DIMENSION STOCK

Ski Billets, Picking Sticks, Hockey Sticks, Coupling Rods, Handle Blanks, Furniture Stock, Dowel Blanks, Rim Strips, Spoke Blanks, Shaft and Pole Stock, Gear Woods,, Vehicles and Motor Woods for Bending Purposes.

Brown Brothers Company
MANUFACTURERS
11 Broadway - New York

Southern Michigan Beech

The lower peninsula variety excells any other locality in the soft, even texture and straight grained quality of this product. Cut from old growth virgin timber, this stock is representative of the highest standard of quality.

5/8 No. 2 Com. & Btr.	170M
4/4 Selected & Better	125M
4/4 No. 1 Common	100M
4/4 No. 2 Common	80M
5/4 No. 1 Com. & Btr.	175M
5/4 Selects & No. 1 Com.	25M
5/4 No. 2 Com. & Btr.	200M
5/4 No. 2 Common	50M
6/4 No. 1 Com. & Btr.	150M
6/4 Selects & No. 1 Com.	30M
6/4 No. 1 & 2 Common	52M
6/4 No. 2 Com. & Btr.	250M
6/4 No. 2 Common	75M
8/4 No. 2 Com. & Btr.	150M

Our complete assortment offers exceptional opportunities for replenishing your stocks. If the items listed do not offer the assortment desired, we will supply any grade or combination of grades.

We can kiln dry.

20 Million Feet of Assorted High Grade
NORTHERN HARDWOODS

THE BIGELOW-COOPER CO.
BAY CITY - - MICHIGAN

Thompson-Katz Lumber Co.

Manufacturers of

WHITE ASH EXCLUSIVELY

In dealing with us the wood worker and furniture manufacturer may rightly expect a better service, better value and a greater selection from which to choose his requirements. We have all grades and all thicknesses to offer—beautiful stock that we know will please you. Drop us a card to-day—we'll do the rest.

MEMPHIS, TENNESSEE

J. H. Bonner & Sons

Memphis, Tenn.

Mills:
Jonquil and Ruffwood, Ark.

Manufacturers

Band Sawn Hardwood Lumber

Write or wire for prices on

Gum, Oak, Elm, Etc.

The London Lumber Co. Ltd.

WHOLESALE LUMBER

We have to offer several cars of good Birch, Elm, and Soft Maple in all thicknesses; Write us for quotations.

487½ Richmond St., London, Ont.

Hardwoods

We can furnish you immediately Factory Stock including all grades and thicknesses of

Walnut, Chestnut Mahogany, Teak, Oak Ash, Cypress

ALSO

VENEERS

Oak, Maple, Walnut and other Fancy Woods

The McLennan Lumber Co.

Limited

MONTREAL

Palmer & Parker Co.

103 Medford St., Charlestown District
BOSTON, MASS.

MANUFACTURERS OF

African, Mexican and Cuban

MAHOGANY

VENEERS and Built-up Panels

TEAK and other Foreign Woods

Chas. Gill Lumber Co.

WAUSAU, WISCONSIN

MANUFACTURERS & WHOLESALERS

SPECIALIZING IN

MAPLE
BIRCH
AND
BASSWOOD

Complete Stock Crating Material

We solicit correspondence relative to all Northern Hardwoods

Chicago Office — 501 Lumber Exchange

Band Sawn West Virginia HARDWOODS

The W. C. Barlett Lumber Co.

Charleston, W. Va.

Manufacturers

ASH to WALNUT

We produce a complete line of Band Sawn Hardwoods, serving the Body and Wheel, Furniture, Piano, Cabinet and Interior Finish Trades.

If Superior Quality, Fine Width and Length, coupled with Real Service is desired, let us have your enquiries.

Hardwood Dowels

Plain, Straight and Spiral Grooved

"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co. Limited

ORILLIA ONTARIO

Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

D. E. Hewit Lumber Co.

Huntington, W. Va.

MANUFACTURERS

West Virginia Hardwoods

(Not Better than the Best but as Good as the Best)

FAS Plain White and Red Oak
No. 1 Com. Plain White and Red Oak
Implement Oak
Sound Wormy Chestnut
No. 1 Common and Better Chestnut
Hickory Plank
Poplar and Basswood

Burns & Knapp Lumber Co.

Manufacturers of

Southern Hardwoods

Plain White and Red Oak, Dimension Oak, Hickory, Ash, Chestnut, Poplar, Basswood, Walnut, Maple, Beech, Butternut.

CONNEAUTVILLE, ——————— PA.

We list below, items of our own manufacture, band sawn, that we are in a position to ship promptly.

1/2", 5/8, 3/4, 4/4, 5/4, 6/4 & 8/4 Quartered White Oak

3/4, 4/4, 5/4 & 6/4 Qtd. Red Oak

5/8, 3/4, 4/4, 5/4, 6/4 & 8/4 Plain Oak

4/4, 5/4, 6/4, & 8/4 Sound Wormy Oak

5/8, 4/4, 5/4 & 6/4 Plain Sap Gum

4, 5, 6, 8, 10 & 12/4 Qtd. Sap Gum

4, 5 & 6/4 Plain Red Gum.

4, 5, 6, 8, 10 & 12/4 Qtd. Red Gum

4, 5, 6 & 8/4 Tupelo Gum.

5/8, 4, 5, 10 & 12/4 Ash.

5/8, 4, 5, 6, 8, 10 & 12/4 Elm.

5/8, 10 & 12/4 Maple.

4, 5 & 6/4 Cottonwood.

MAY BROTHERS Office and Band Mills: MEMPHIS, TENNESSEE

St. Francis Basin Hardwoods
Tennessee Aromatic Red Cedar

SAP GUM

15,000′	4/4″	FAS
100,000′	4/4″	No. 1 Common & Selects.
100,000′	4/4″	No. 2 Common
100,000′	4/4″	No. 3 Common
100,000′	5/4″	FAS
100,000′	5/4″	No. 1 Common & Selects
100,000′	5/4″	No. 2 Common
50,000′	5/4″	No. 3 Common
25,000′	6/4″	FAS
25,000′	6/4″	No. 1 Common & Selects
100,000′	6/4″	No. 2 Common
100,000′	6/4″	No. 3 Common

QUARTERED RED GUM
(Sap no defect)

30,000′	4/4″	No. 1 Common & Better
75,000′	5/4″	No. 1 Common & Better
75,000′	6/4″	No. 1 Common & Better

PLAIN RED GUM

50,000′	4/4″	FAS
100,000′	4/4″	No. 1 Common & Selects
100,000′	4/4″	No. 2 Common
100,000′	5/4″	No. 1 Common & Selects
100,000′	5/4″	No. 2 Common
50,000′	6/4″	No. 1 Common & Selects
50,000′	6/4″	No. 2 Common

QUARTERED RED GUM

50,000′	4/4″	No. 1 Common & Selects
25,000′	5/4″	FAS
50,000′	5/4″	No. 1 Common & Selects
100,000′	6/4″	No. 1 Common & Selects
30,000′	8/4″	No. 1 Common & Better

BLACK GUM

13,000′	4/4″	Log Run, Plain
50,000′	4/4″	Log Run, Quartered

GEO. C. BROWN & COMPANY

General Office, - MEMPHIS, TENN.

BAND MILLS, PROCTOR, ARK. LAKE VILLAGE, ARK.

Season's Greetings

THE Holiday Season seems to bring us to a better understanding of the spirit of co-operation and good-will you have shown us.

We wish you most heartily
A Happy and Prosperous
New Year

THE FRANK A. CONKLING COMPANY

SOUTHERN HARDWOODS

MEMPHIS, - TENN.

The Arrow Lumber Co.

Manufacturers and Wholesalers of
West Virginia
Hardwoods and White Pine

Oak Timbers Our Specialty

PARKERSBURG, W. VA.
Mills: Raleigh, W. Va. Natural Well, Va.

McLEAN MAHOGANY & CEDAR CO., INC.

American Hardwoods

WE SOLICIT YOUR ENQUIRIES

742 Ellicott Square, Buffalo, N.Y.

Upham & Walsh Inc.

Throop St. South of 22nd St.
Chicago

Northern and Southern Hardwoods

We make a Specialty of

Oak, Gum, Elm, Maple Birch and Basswood.

We solicit your inquiries regarding lumber of any kind

J. W. Darling Lumber Co.

CINCINNATI, Ohio

Manufacturers and Wholesalers

Southern Hardwoods Cypress, Yellow Pine West Coast Woods

In addition to our operation at
BATON ROUGE, La.
we handle the sales of

J. H. LEAVENWORTH & SON, Greenville, Miss.
FISHER BROS. LUMBER CO. - Cruger, Miss.
KURZ BROTHERS- - - Helena, Ark.

The Bacon Lumber Co.

HARDWOODS:

OHIO and INDIANA
KENTUCKY and WEST VIRGINIA
NORTHERN BIRCH and MAPLE
SOUTHERN GUM, COTTONWOOD

306 Ulmer Bldg., Cleveland, Ohio

IMPORTERS EXPORTERS

MANUFACTURERS

Reed and Rattan Products

Overseas Reed and Cane Co.

Ionia, Michigan

WHEELER - TIMLIN LUMBER CO.

WAUSAU, Wisconsin.

You cannot beat the Birch for an all round wood for the furniture manufacturer. We have BEAUTIFUL BIRCH in all standard thicknesses from 4 4″ to 10/4″ and all grades. Write us for delivered prices.

Mills at DORCHESTER, Wis., and WITTENBERG, Wis.

AS the year Nineteen-Twenty draws to a close we extend our sincere thanks to our Canadian friends for their valued patronage. We wish them a Merry Christmas—and when the New Year dawns may it find them on the threshold of a bigger, better year of business than they have yet known

North Vernon Lumber Mills

NORTH VERNON, IND.

LOUISVILLE, KY. DYERSBURG, TENN.

WRITE FOR COMPLETE LIST AND PRICES

The Hyde Lumber Co.

and Mills: LAKE PROVIDENCE LA.

Southern Office: MEMPHIS, TENN.
Bank of Commerce Bldg.

Northern Office: SOUTH END, IND.

MANUFACTURERS

Plain Red Gum
Quartered Red Gum
Plain Sap Gum
Quartered Sap Gum
Cottonwood, Cypress
Tupelo, Ash, Elm, Oak

CHARLES O. MAUS
Canadian Representative

American Hardwood Lumber Co.

St. Louis, Mo.

Large stock of—

Dry Ash, Quartered Oak
Plain Oak and Gum

Shipments from — NASHVILLE, Tenn., NEW ORLEANS, La., and BENTON, Ark.

WARREN ROSS LUMBER CO.

JAMESTOWN, N. Y.

13,000′	4/4/ 1s&2s Bataan Mahogany	12,000′	8/4″ No. 1 Com. Walnut
		7,000′	8/4″ No. 2 Com. Walnut
5,000′	5/4″ to 16/4″ 1s&2s Bataan Mahogany	15,000′	4/4″ 1s&2s Pl. Red Oak
		4,000′	5/4″ 1s&2s Pl. Red Oak
25,000′	4/4″ 1s&2s Cherry	4,000′	6/4″ 1s&2s Pl. Red Oak
12,000′	4/4″ No. 1 Com. Cherry	20,000′	8/4″ 1s&2s Pl. Red Oak
5,000′	6/4″ 1s&2s Cherry	20,000′	4/4″ No. 1 Com. Pl. “
5,000′	8/4″ 1s&2s Cherry	4,000′	5/4″ No. 1 Com. Pl. “
2,000′	8/4″ No. 1 Com. Cherry	4,000′	6/4″ No. 1 Com. Pl. “
100,000′	4/4″ to 2″ No. 1 Com. & Btr. Beech	10,000′	8/4″ No. 1 Com. Pl. “
		15,000′	4/4″ 1s&2s Poplar S.N.D.
1,500′	5/4″ Select Walnut	3,000′	5/4 1s&2s Poplar S.N.D.
1,500′	8/4″ 1s&2s Walnut	3,000′	8/4″ 1s&2s Poplar S.N.D.

Direct mill shipments, etc.

Let us quote you.

Indiana

Quartered Red and White

OAK

1,000,000 feet of dry stock carried at all times

ALSO PLAIN OAK AND ASH

We manufacture all stock carried

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
GEO. H. FOOTE, Vice-Pres. & Treas.
JOSEPH WALTMAN, Secretary

Mills at EVANSVILLE, Indiana

E. M. Nicholson & Co.

Wholesalers of Canadian Hardwoods

201-2-3 Board of Trade Bldg.,

Montreal

Special Items of Interest

for Prompt Shipment

WHITE ASH

11,000′ 4/4 No. 2 C&B

BROWN ASH

60,000′ 4/4 No. 1 C&B
16,000′ 6/4 No. 1 C&B
8,900′ 8/4 No. 1 C&B

BASSWOOD

75,000′ 4/4 Sel. & Fas.
100,000′ 4/4 No. 1 & 2. Com.
75,000′ 6/4 No. 1 Com. & FAS
50,000′ 6/4 No. 2 Com.
40,000′ 8/4 No. 1 C&B

MAPLE

75,000′ 4/4 Log Run

BEECH

65,000′ 4/4 Log Run

BIRCH

30,000′ 4/4 FAS
90,000′ 4/4 No. 1 Com.
150,000′ 4/4 No. 2 Com.
30,000′ 5/4 No. 1 Com. & FAS
45,000′ 6/4 FAS
60,000′ 6/4 No. 1 Com.
75,000′ 6/4 No. 2 Com.
100,000′ 8/4 Sel. & Fas.
150,000′ 8/4 No. 1 Com.
100,000′ 8/4 No. 2 Com.
75,000′ 10/4 Sel. & Fas.
125,000′ 10/4 No. 1 Com.
250,000′ 12/4 Sel. & Fas.
100,000′ 16/4 Sel. & Fas.

SOFT ELM

45,000′ 4/4 No. 2 C&B
21,000′ 6/4 No. 1 C&B
22,000′ 8/4 No. 1 C&B

150,000′ 4/4 Basswood, Birch, Ash, Elm No. 3 Com. Under National Rules.

We can make prompt shipment any time of following

GUM

Sap Red Tupelo Black Cypress Cottonwood Oak Ash Elm Beech Sycamore Crating Fir Spruce Yellow Pine

Wire or write us for Prices

Manufacturers & Wholesalers

Cornelius Lumber Co.

Home Office—Arcade Building, St. Louis, Mo.
Northern Office—Lumber Exchange, Chicago, Ill.
Northwestern Office—Merchants Nat. Bank Bldg., St. Paul, Minn.
Southern Office—Memphis, Tenn.
Saw Mills—Drew, Miss., Osmeek,, La., Lake City, Fla.

OAK ASH COTTONWOOD MAPLE

Chapman & Dewey Lumber Company

GUM ELM SYCAMORE CYPRESS

Manufacturers of

Southern Hardwoods

Band Sawn at our Mills in the St. FRANCIS RIVER BASIN

We solicit your enquiries

Offices:

MARKED TREE, Ark. **KANSAS CITY, Mo.**

Mahogany Walnut

We Wish You
A Very Merry Christmas
and
A Happy and Prosperous New Year

Lumber Veneers

Lewis Thompson & Co., Inc.

Colonial Trust Bldg., - Philadelphia, Pa.

Greetings and Best Wishes for the New Year

WE wish our many friends in the trade the Compliments of the Season and hope that 1921 will bring them Health, Happiness and Prosperity.

EDWARD CLARK & SONS LIMITED

807-9 BANK OF HAMILTON BUILDING - TORONTO, Ontario

American Black Walnut

Enjoys World Wide Appreciation

In spite of most unfavorable rates of exchange, excessive ocean freight tariffs, and limited financial resources Europe wants America Walnut and is now buying. Europeans know walnut is the finest cabinet wood grown, and rightly refuse to consider substitutes.

Virtues of Walnut should be fully recognized on this continent as every phase of the cabinet wood situation today points out the advantage of featuring American Walnut.

All American Walnut is good but Iowa really affords the best.

We are prepared to supply you with
Walnut Lumber and Veneer

Des Moines Sawmill Company

Des Moines, Iowa

"Hartzell's Choice Walnut"

The way Walnut comes to us

COMING AND GOING

One constant stream of American Black Walnut from "Stump to Consumer" flowing through a steady, reliable and satisfactory channel.

"Geo. W. Hartzell"

Logs in the rough coming in Veneers and Lumber of the highest quality going out daily year in and year out covering a period of 35 years.

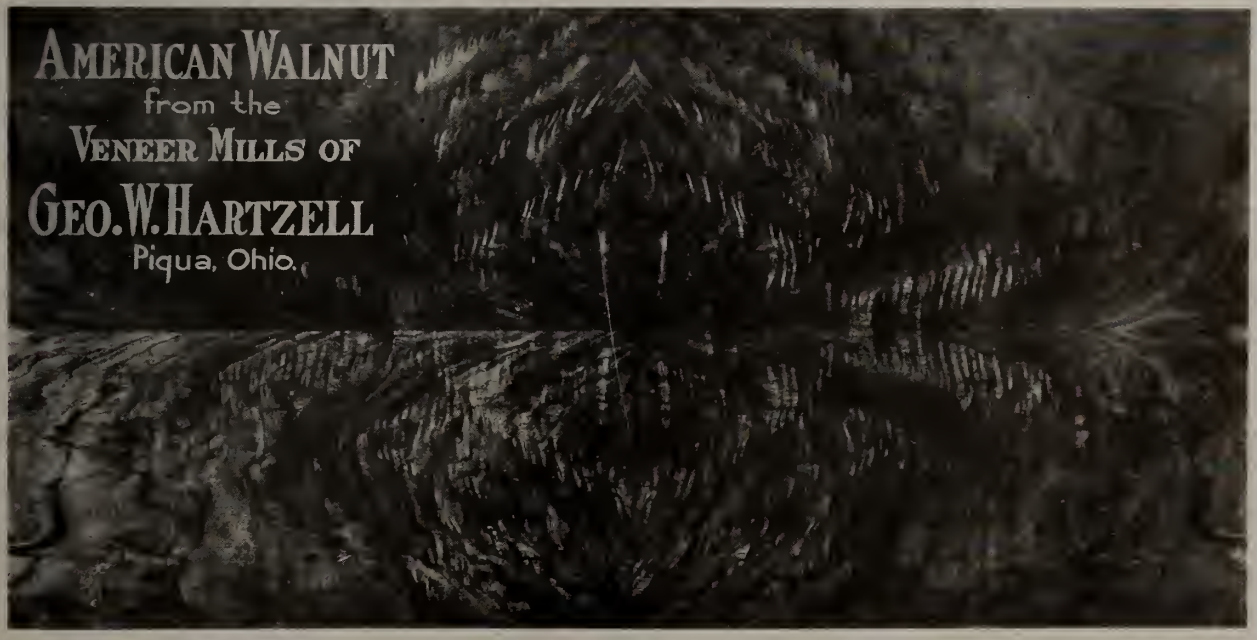
We rightfully claim your patronage because of "SERVICE and QUALITY," if there is any question in your mind about it

"Try Us and We Will Ship You the Convincer"

No Order too large, no Order too small to receive the close and careful attention it is our custom to give. That is a great part of our business, serving our customers.

"WRITE FOR SAMPLES AND QUOTATIONS"

Geo. W. Hartzell - Piqua, Ohio



The way it goes to our Customers

— *A name worth remembering* —

Thomas E. Powe Lumber Co.

St. Louis, Mo.

Manufacturers and Wholesalers of

SOUTHERN HARDWOODS

Specializing in

Ash-Oak-Gum-Poplar

Mills: PRESCOTT, ARK.—DOTHAN, ALA.

ST. LOUIS YARD

Mixed Carload Shipments — Carry stocks of the following:

Hickory	Magnolia	Elm
Maple	Willow	Sycamore
Tupelo	Red Cedar	Beech
Cypress	Plain Oak	Quartered Oak
Sap Gum	Red Gum	Mahogany
Poplar	Ash	Black Gum
Yellow Pine		

WAYNE LUMBER CO.

Manufacturers and Wholesalers

110 West 40th St. New York

Canadian Hardwoods

BROWN ASH

15,000'	1 "	No. 1 Com & Btr.
10,000	1¼	No. 1 Com. & Btr.
30,000	1	No. 2 Com. & Btr.
15,000	1	No 2 Common
10,000	1¼	No. 2 Common

BASSWOOD

70,000'	1 "	No. 2 Common
200,000	1¼	Log Run
1 car	1½	Log Run
1 car	2	Log Run

SOFT ELM

50,000'	1"	Log Run
40,000	2	Log Run

BIRCH

10 cars	1 "	No. 1 Common
5 "	1	No. 2 Common
3 "	1¼	No. 1 Common
7 "	1¼	No. 2 Common
10 "	2	No. 1 Com&1s&2s
7 "	2	No. 2 Common
3 "	2½	No. 1 Com&1s&2s
3 "	2½	No. 2 Common
4 "	3	No. 1 Com&1s&2s

HARD MAPLE

50,000'	1¼"	No. 1 Com&1s&2s
10,000	1¼	No. 2 Common

MAPLE AND BIRCH OUR SPECIALTY

BOXING & CRATING

3 cars 1" Basswood, Elm & Ash

10 " 1 Birch

All Lumber Shipped by Our Own Inspectors

A name that should be on your inquiry list for Hardwood Lumber

American Column & Lumber Co.

Brunson Building, COLUMBUS, OHIO

—Manufacturers of—

West Virginia

Soft Yellow Poplar
Plain White Oak
Plain Red Oak
Quartered White Oak
White Oak Timbers and Plank

Chestnut	Butternut
Basswood	Ash
Maple	Cherry
Hickory	Walnut
Beech	Sycamore
Buckeye	Black Gum
Birch	Hemlock

Oak and Hardwood Dimension Stock

Steele & Hibbard Lumber Co.

ST. LOUIS, MO.

52 Years in Business

We carry a large stock of dry

Hardwood Lumber

25 Different Kinds
Quick Shipment
Write or wire for Prices

We specialize Oak cut from Mild Texture Missouri Timber with thin sap both plain and quarter sawed.

We ship also from Sawmills direct; Red as well as Sap Gum and Poplar, both plain and quarter sawed Sound Wormy Chestnut, Cypress and Ash.

F. Huntington Smith

Canadian Representative.

Canadian Hardwoods

Good Stocks, Right Goods,
Prompt Shipment

C. A. SPENCER, Limited

LUMBER MERCHANTS

Offices—500 McGill Building
MONTREAL - - Quebec

British Columbia Forest Products

British Columbia Lumber Commissioner

No. 1 Adelaide St. E., Toronto
(Street Floor)

Personal calls or correspondence cordially invited from Dealers and others interested in British Columbia Woods

Telephone Main 6872. Note: We do not quote prices.

Stock on Hand in Kitchener

7,000	ft.	4/4 SAP Gum No. 1 Com. & Selects
9,000	"	8/4 Qtd. Red. Gum, No. 1 C&B
5,000	"	5/4 Pln. Oak FAS
30,000	"	6/4 Pln. Oak FAS
30,000	"	6/4 Pln. Oak No. 1 Com.
30,000	"	8/4 Pln. Oak FAS
50,000	"	8/4 Pln. Oak No. 1 Com.
12,000	"	8/4 Pln. Oak Sd. Sq. Edge
1,200	"	4/4 Pln. Oak No. 1 Com.
15,000	"	4/4 Tenn. Red Cedar Brds. No. 1 C&B
35,000	"	4/4 Qtd. Wht. Oak FAS
35,000	"	4/4 Qtd. Wht. Oak No. 1 Com.
7,000	"	4/4 No. 2 Com. & Sd. Wormy Chestnut
23,000	"	5/4 No. 2 Com. & Sd. Wormy Chestnut
50,000	"	6/4 No. 2 Com. & Sd. Wormy Chestnut
12,000	"	5/4 FAS Chestnut
10,275	"	5/4 No. 1 Com. Chestnut
		Odd lots of No. 1 Com. Chestnut 4/4, 6/4 & 8/4
1,847	"	3/4 No. 1 C&B Qtd. Wht Oak
69	"	4/4 FAS Qtd. Wht. Oak
2,065	"	4/4 No. 2 Com. Qtd. Wht. Oak
1,000	"	3/4 No. 1 C&B Pln. Wht. Oak
2,624	"	3/4 FAS Sap Gum 13/17"
2,152	"	3/4 Select Sap Gum 3/12
8,573	"	3/4 Select Sap Gum 12" & up
470	"	5/4 Select Sap Gum
15,000	"	12/4 No. 1 C&B Hard Maple
15,000	"	4/4 No. 2 Basswood

PERCY E. HEENEY

202 Weber Chambers, KITCHENER, ONT.

Hardwood Lumber

Wire collect, or write for delivered prices on any or all of the following DRY STOCK

100,000'	4/4 No. 1 Com. & Btr. Sap Gum
92,000'	8/4 No. 2 Com. & Btr. Sap Gum.
69,000'	4/4 No. 1 Com. & Btr. Plain Red Gum.
36,000'	8/4 No. 1 Com. & Btr. Qtd. Red Gum.
12,000'	3/4 No. 2 Com. & Btr. Plain Oak.
119,000'	4/4 No. 1 Com. & Btr. Plain Oak.
60,000'	4/4 No. 2 Com. Plain Oak.
68,000'	5/4 No. 1 Com. & Btr. Plain Oak.
29,000'	5/4 No. 2 Com. Plain Oak.
16,000'	8/4 No. 1 Com. & Btr. Plain Oak.
160,000'	4, 6, 8, 10 and 12/4 No. 2 Com. & Btr. Soft Elm and Soft Maple.
90,000'	4 and 8/4 No. 2 A&B Com. Poplar.
75,000'	8, 10 and 12/4 No. 1 Com. & Btr. Poplar.
75,000'	4/4 No. 2 Com. & Btr. Basswood.
120,000'	4, 8 and 10/4 No. 2 Com. & Btr. Sycamore
150,000'	4, 5, 6 and 8/4 No. 2 Com. & Btr. Beech.
200,000'	4, 5, 6 and 8/4 Sound Wormy Chestnut.

The Woodruff-Powell Lumber Co.

South Bend, Indiana

J. R. EATON & SONS, LIMITED

MANUFACTURERS OF HIGH GRADE WOOD PRODUCTS

Wood Turnings, Hardwood Dowels, Turned Table Legs, Kitchen Tables, Kitchen Cabinets, Oak Extension Tables, Oak Library Tables, "Empire Brand" Hardwood Flooring in Maple, Birch, and Plain or Quarter Cut Oak, Solid Pine and Veneered Hardwood Doors.

A Large Factory equipped with up-to-date machinery is at your service to furnish "WHAT YOU WANT"— WHEN YOU WANT IT."

YOUR ENQUIRIES SOLICITED

Orillia Ontario Canada

Wake-up, Mr. Furniture Man!
Walnut is Plentiful!

AMERICAN WALNUT

©AWMA

"The Cabinet-wood Superlative"

No "Jimmies" Needed

In *W*alnut furniture, no matter how old or how new, the drawers slide smoothly and the doors open and close without jamming. If the workmanship is good, give the cabinet-maker the credit. He in turn gives *W*alnut most of the credit—because often he has done just as careful work in other woods and then has been blamed, perhaps, because the moving parts "stuck." So *he likes Walnut.* ("It gives his skill a real chanst.")

The supreme beauty of *W*alnut, in addition to the above qualities (and plus its "workability" and its "carvability"), accounts for the world-old supremacy of *W*alnut as a cabinet-wood—and its price permits its use in *every grade* of furniture that the careful buyer is likely to ever consider.

It will help you in your furniture buying to *know all about* American Walnut. (The furniture man will respect your discrimination. He knows the facts—and is glad that you do.)

Don't fail to WRITE NOW for the WALNUT BOOK —edition de luxe—which will come by return mail with our compliments—and our confidence in your appreciation of its value.

AMERICAN WALNUT
MANUFACTURERS' ASSOCIATION
1019, 616 S. Michigan Blvd., Chicago

ALL BRANCHES OF THE FURNITURE TRADE

are feeling strongly the Effects of the series of tributes to our American Walnut which are running continuously in most of the Best Publications in America. Above is an example.

There are still a few Furniture Houses in the Country

who are giving some of their better-posted competitors a great advantage over them with the Best Trade. WHY? Simply because they "heard somebody say" that American Walnut was getting scarce. Let them ask us for THE FACTS! (See address above.)

Frank Purcell
Walnut Lumber Co.

Plenty of logs like the portion of our stock shown above have made possible the million and a half foot stock of well manufactured American Walnut Lumber which we now have to offer.

Prompt shipment
All grades and thicknesses
Guaranteed Inspection

12th AND BELT LINE

Kansas City - Kansas

SPECIALS!

For Immediate Shipment

QUARTERED RED GUM

8 cars 2½" Common and Better.
5 " 3" Common and Better.
8 " 1¼" Common
8 " 2" Common.

PLAIN SAWED RED GUM

6 cars 2½" Common & Better.
3 " 3" Common and Better.
5 " 2" Common and Better.

OAK

10 cars 1" No. 1 Com. and Btr., White, Pln.
10 " 1" No. 1 Com. and Btr., Red, Qtd.
2 " 1½" 1sts & 2ds Qtd. White.

Thomas & Proetz Lumber Company

No. 3400 Hall St. St. Louis, Mo.

Peytona Lumber Co. Inc.

HUNTINGTON, W. VA.

BAND MILLS OMAR, CHRISTIAN LOGAN COUNTY, W. VA.

Band Sawed West Virginia Hardwoods

WHITE OAK	BASSWOOD
RED OAK	MAPLE
CHESTNUT	BEECH
POPLAR	HICKORY

Our own facilities for Surfacing, Resawing and Kiln Drying

William S. Whiting Company

JOHNSON CITY, TENNESSEE

1 Band Mill *5 Circular Mills*

Hardwood Lumber

Oak	Basswood
Maple	Buckeye
Chestnut	Poplar
Ash	Birch

Rotary-Cut Soft Yellow Poplar Veneers
Quarter-Sawn White Oak Flitches
Sliced and Sawn Quartered White Oak Veneers
Oak and Maple Flooring
Dowel Pins and Dowel Rods
Glued-Up Chestnut Cores and Dimension

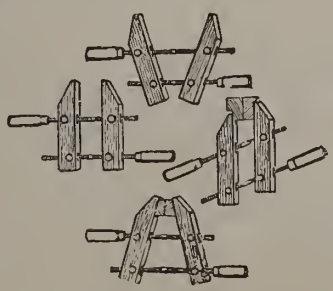
5-16' Oak Parquetry Flooring Strips and Squares carried in stock at our warehouses:
138 44th St., Brooklyn, N.Y., and at Elizabethton, Tenn.

BOX NAILS and WIRE for Every Use

We manufacture a complete line of nails and wire in every style and size. Your special needs can be supplied. Write us today, We manufacture special styles to order.

Laidlaw Bale-Tie Co., Ltd.

A. T. Diggins, Toronto, Ont. H. E. O. Bull, Montreal, Que.
Harry F. Moulden & Sons, Winnipeg, Man.
Mr. Norman Jessiman, 505 Hastings St. W., Vancouver, B.C.
Head Office and Works: HAMILTON, CANADA



"JORGENSEN"

the Efficiency Clamp

Adjustable Steel Spindle Clamps that hold better and are far superior. Their guarantee against breakage protects you. Write for further particulars.

If you cannot buy them from your Jobber write us direct.

Adjustable Clamp Company
216 N. Jefferson St., Chicago, U.S.A.

The Talge Mahogany Co.

INDIANAPOLIS, INDIANA

BURLS

MAPLE WALNUT OAK REDWOOD

MAHOGANY

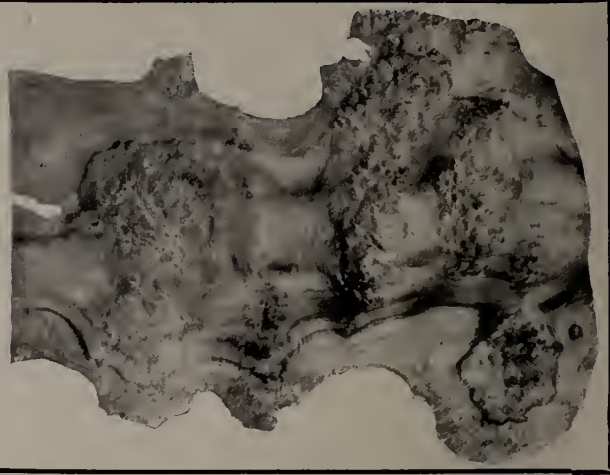
PENCIL STRIPE MEDIUM STRIPE BROKEN STRIPE
MOTTLE DRAWER BOTTOMS CEDAR FOR BOTTOMS

WALNUT VENEER

CURLY LEAFY STRIPE STUMPS BURL PLAIN

OAK VENEER

SAWED QUARTERED SLICED QUARTERED
PLAIN SLICED DOOR STOCK



F. T .DOOLEY, President. T. E. JONES, Secy.-Treas

F. T. Dooley Lumber Co.

Inc.

MANUFACTURERS and WHOLESALERS of

SOUTHERN HARDWOODS

Plain and Quartered Oak
Cypress, Gum, Ash
Soft Maple and Elm

Send us your inquiries

Memphis ∴ ∴ Tennessee

Chas. F. Luehrmann Hardwood Lumber Co.

Manufacturers and Wholesalers of

Hardwood and Yellow Pine Lumber

Office and Yard: 148 Carroll St. St. Louis, Mo.

Hardwood and Yellow Pine for Immediate Shipment from Stock

Complete Stock of Built Up Panels

3 and 5 Ply—Carried in Stock at St. Louis

FIR DRAWER BOTTOMS
FIR DOOR PANELS

Write us for our Stock and Price List

Aromatic Tennessee Red Cedar

CAR LOAD LOTS
OR LESS

Earthman Lumber Co.

Murfreesboro, Tenn.

Quality plus Service

AT RIGHT PRICES

Let us quote you on concave chair seat, turned office, piano, restaurant and bath-room stool tops.

Solid table tops, cabinet work; iu fact woodwork of all description.

Algoma Wood Products Co.

ALGOMA, WIS.

Assuring you of our most sincere appreciation of our cordial relations during the past year and of our earnest efforts for the continuance of the same. We wish you a Merry Christmas and a Happy New Year full of prosperity and all good fortune.

Gayoso Lumber Company
MEMPHIS TENNESSEE, U.S.A.

Canadian Representative:
W. R. YOUMANS, Park View Hotel, Toronto, Ont.

PERIOD CARVINGS

for

FURNITURE

Quality the Best

Prompt Shipment

Largest Manufacturers of Imitation Wood Carvings in the World

Unlimited facilities for the manufacturing of high grade period wood carvings in composition and wood fibre. Reproductions of exclusive designs our specialty.

CATALOGUE SENT ON REQUEST

THE DECORATORS SUPPLY COMPANY

ARCHER, LEO AND LIME STREETS

CHICAGO

LUMBER

Oak

Poplar

Gum

Memphis Band Mill Co.

"Quarter-sawn White Oak Headquarters"

Memphis, Tenn., U.S.A.

DRY AND PARTLY DRY STOCK

READY FOR SHIPMENT

Your inquiries will bring very prompt quotations. You can depend on straight grades, quick service, and well manufactured lumber.

RED GUM

11219′	8/4	FAS Qtd.
36728′	8/4	No. 1 Com. & Sel. Qtd.
700′	6/4	No. 1 Com. & Sel. Qtd.
4500′	5/4	1st & 2ds Qtd.
19260′	5/4	No. 1 Com. & Sel. Qtd.
3820′	4/4	No. 1 Com. & Sel. Qtd.
62834′	6/4	1st & 2nds
501944′	6/4	No. 1 Com. & Sel.
90395′	6/4	No. 2 Common
2527′	5/4	1st and 2ds Figured
49525′	5/4	1sts & 2nds
350130′	5/4	No. 1 Com. & Sel.
4400′	5/4	No. 1 Com. & Btr. FAS No. 1 Com. & Sel.
29180′	5/4	No. 2 Common
12186′	4/4	1sts & 2nds
103750′	4/4	No. 1 Com. & Sel.
3070′	4/4	No. 1 Com. & Btr. Figured
141775′	4/4	No. 2 Common
37986′	3/4	1sts & 2nds
38280′	3/4	No. 1 Com. & Sel.
26695′	3/4	No. 2 Com. & Sel.

SAP GUM

22000′	8/4	No. 1 Com. & Btr. Qtd. FAS No. 1 Com. & Sel.
6700′	8/4	No. 2 Common Qtd.
3600′	8/4	1sts & 2ds Plain
5680′	8/4	No. 1 Com. & Sel.
14120′	8/4	No. 2 Common
323670′	6/4	1sts & 2ds
677410′	6/4	No. 1 Com. & Sel.
38490′	6/4	No. 2 Common
8500′	6/4	No. 3 Common
168571′	5/4	1sts & 2nds
26745′	5/4	No. 1 Com. & Sel.
190865′	5/4	No. 2 Common
52400′	5/4	No. 3 Common
12502′	1x18″	& up Panel & No. 1
11472′	1x11″	& wider 1sts & 2ds
12790′	1x13-17″	Box Boards
53645′	4/4	9-12″ Box Boards
25490′	4/4	1sts & 2ds
294394′	4/4	No. 1 Com. & Sel.
84312′	4/4	No. 2 Common
69590′	4/4	No. 3 Common
48163′	3/4	1sts & 2ds
38530′	3/4	No. 1 Common
8669′	3/4	No. 2 Common
14142′	6 to 8/4	Dog Boards

ELM

87367′	10/4	Log Run No. 2 Com. Btr.
59221′	8/4	No. 2 Com. & Btr.
27882′	5/4	Log Run
15360′	1″ to 3″	No. 2 Com. & Btr.

PECAN—DRY

4500′	8/4	Log Run
4500′	8/4	Flitches
12000′	6/4	No. 2 Com. & Btr.

OAK

6700′	4/4	1sts & 2ds Qtd. Red
30413′	4/4	No. 1 Com. & Sel. Qtd. Red
6814′	4/4	No. 2 Com. Qtd. Red
25-9′	4/4	No. 3 Com. Qtd. Red
4196′	4/4	No. 2 Com. Qtd. White
9986′	4/4	No. 3 Com. Qtd. White
3450′	10/4	No. 1 Com. & Btr. Red FAS No. 1 Com. & Sel.
4500′	10/4	Common Red
8190′	4/4	1sts & 2ds Plain Red
191673′	4/4	No. 1 Com. & Sel Red
97500′	4/4	No. 2 Common Red
73179′	4/4	No. 1 Com. & Sel. White
22099′	4/4	1sts & 2ds Mixed
156530′	4/4	No. 2 Common Mixed
80237′	4/4	No. 3 Common Mixed
125921′	4/4	Sound Wormy

LA. CYPRESS

8200′	10/4	Shop & Btr. FAS Sel. Shop
3100′	8/4	1sts & 2ds
94601	8/4	Selects
3960′	8/4	Shop
2350′	8/4	Shop & Better
5830′	8/4	No. 1 Common
1800′	6/4	1sts & 2ds
18515′	6/4	Select
3420′	6/4	Shop
7500′	6/4	Pecky
3000′	5/4	No. 1 Common
8000′	5/4	No. 2 Common
3500′	5/4	No. 2 Pecky
3500′	4/4	No. 1 Shop
4872′	4/4	No. 1 Common
12496′	4/4	No. 2 Common
98719′	4/4	Pecky
13425′	4/4	No. 2 Boxing

LA. WHITE ASH

33990′	10/4	No. 1 Com. & Btr. FAS No. 1 Com. & Sel.
22200′	8/4	No. 2 Common
5100′	6/4	1sts & 2ds
16011′	6/4	No. 1 Com. & Sel.
34835′	6/4	No. 2 Common
16646′	6/4	No. 1 Com. & Btr.
28370′	5/4	No. 1 Com. & Sel.
4800′	4/4	No. 1 Com. & Btr. FAS No. 1 Com. & Sel.
10050′	4/4	No. 2 Common
43546′	4/4	No. 3 Common

ARKANSAS YELLOW PINE

196292′	4/4	No. 1, 2 & 3 Com. 6-8-10-12″ Widths

COTTONWOOD

19970′	Log Run	30% No. 1 Com. & Sel. 20% No. 2 Com.

ABERDEEN LUMBER COMPANY, Pittsburgh, Pa.

Wood Fiber Carvings

ORNAMENTATION FOR

Furniture
Offices
Churches
Schools
Altars
R. R. Coaches
Steamships
Show Windows

Thousands of designs to choose from

WE INVITE YOUR INQUIRIES

J. WALTER & SONS

KITCHENER - ONT.

"Gorham Quality"

built up stock

THE pride of attainment follows each piece of stock which leaves our hands, because we know that Gorham Quality serves the furniture manufacturers in an exceptional manner. Our built-up stock is the result of three generations' constant, diligent study of the problem of producing highest quality panels, desk beds and tops that will not warp, check, blister or loosen.

Gorham products will not fail you.

TRADE GORHAM MARK

Gorham Brothers Co.
Mount Pleasant, Mich.

Paepcke Leicht Quality Hardwoods

SERVICE

Prompt Shipments—Dry Stock—Uniform Quality and Inspection

Band Sawn and End Trimmed—Full and Uniform Thickness

Complete Product of the Log, in the Grade Purchased

Good Run of Widths and Lengths

QUALITY

ELM

4/4" Log Run .. .. .. 50,000'
5/4" Log Run .. .. ..100,000'
6/4" Log Run .. .. .. 50,000'
8/4" Log Run .. .. .. 30,000'
10/4" Log Run .. .. .. 35,000'
12/4" Log Run .. .. .. 30,000'
16/4" Log Run .. .. .. 2,000'

MAPLE

4/4" Log Run .. .. .. 35,000'
5/4" Log Run .. .. .. 7,000'
6/4" Log Run .. .. .. 50,000'
8/4" Log Run .. .. .. 25,000'
10/4" Log Run .. .. .. 18,000'
12/4" Log Run .. .. .. 50,000'

QUARTERED WHITE OAK

Thin No. 1 Common & Better .. .. .. 30,000'
4/4" No. 1 Com. & Btr. Strips 2½-5½...100,000'
4/4" Log Run .. .. ..125,000'
5/4" Log Run .. .. .. 25,000'
6/4" Log Run .. .. .. 10,000'

PLAIN RED GUM (PLAIN WOOD)

4/4" 1sts & 2nds .. .. 75,000'
4/4" No. 1 Common & Selects .. .. ..100,000'
1-⅛" No. 1 Common & Selects .. .. .. 15,000'
5/4" 1sts & 2nds .. .. 1,000'
5/4" No. 1 Common & Selects .. .. .. 50,000'
6/4" 1sts & 2nds .. .. 7,000'
6/4" No. 1 Common & Selects .. .. .. 8,000'

PLAIN RED GUM (FIGURED WOOD)

4/4" No. 1 Common & Selects .. .. .. 10,000'
5/4" 1sts & 2nds .. .. 8,000'

QUARTEDED RED GUM (PLAIN WOOD)

4/4" 1sts & 2nds .. .. 10,000'
4/4" No. 1 Common & Selects .. .. .. 50,000'
5/4" 1sts & 2nds .. .. 3,000'
5/4" No. 1 Common & Selects .. .. .. 15,000'
6/4" 1sts & 2nds .. .. 10,000'
6/4" No. 1 Common & Selects 10,000

QUARTERED RED GUM (SAP NO DEFECT)

6/4" No. 1 Common & Better .. .. .. 50,000'
8/4" No. 1 Common & Better .. .. .. 50,000'

SAP GUM

5/8" No. 1 Common & Better .. .. .. 7,000'
4/4" Panel & Wide No. 1 .. .. .. 16,000'
4/4" Box Boards 13-17" 75,000'
4/4" Box Boards, 9-12" 2,000'
4/4" 1sts & 2nds .. ..100,000'
5/4" 1sts & 2nds .. .. 30,000'
6/4" 1sts & 2nds 3,000
6/4" No. 1 Common & Selects .. .. .. 10,000'

PLAIN RED OAK

4/4" 1sts & 2nds .. ..150,000'
4/4" No. 1 Common & Selects .. .. ..200,000'
4/4" No. 2 Common ..150,000'

PLAIN WHITE OAK

4/4" 1sts & 2nds .. ..100,000'
4/4" No. 1 Common & Selects .. .. ..150,000'
4/4" No. 2 Common ..100,000'
6/4" Log Run .. .. .. 7,000'

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Are You Doing Your Part?

It is admitted on all sides that newspaper propaganda, heralding a return to pre-war levels and exaggerating every downward price movement, is largely responsible for the stagnation from which both industrial and business life is suffering, but that is as far as the average persons seems willing to go. If the present conditions art largely psychological, fostered by scare headlines and senseless chatter, what are you doing to counteract it, to induce the public to take a sensible view of the situation?

Resting on the oars of business and calmly awaiting results will not help any, neither will wondering what the future has in store. If one and all were to adopt an optimistic attitude, have faith in the future, talk good business, increasing sales and demand, and aggressively go after more business because of a faith in the future, it would not be long before a marked improvement would be noticeable. On the other hand, every time anyone expresses a doubt about the future, about conditions improving after the first of the new year or in the early spring, it adds weight to negative side and retards the approaching development and expansion.

The price recessions which have taken place in many lines do not indicate a healthful decline in values but rather were forced through a lessened demand, in realty a buying strike. When the volume of trade increases and conditions and values are more or less stabilized, it is doubtful if the frenzied demand and soaring prices of the past year will prevail. Instead sane competition, coupled with greater efficiency and increased production, will rule. It is likely that coming years will see a level of values lower than those which prevailed during 1920, but such decreases as do occur will be due more to increased production brought about by greater efficiency on the part of our workmen and our industrial organizations than to artificial conditions and deflation of prices.

That being the case, is the present not an opportune time for the manufacturer to analyze his plant and his methods, probe into the innermost details of his organization and relentlessly search out and remedy all weak spots. If keener competition is to rule, the manufacturer who is thus prepared to meet it, who is able to reduce his costs through efficient methods, new equipment or improved organization, will profit most. If slackened demand has resulted in decreased output or part-time idleness, every spare minute should be employed in putting the plant and its organization on a basis which will enable it to compete under coming conditions. There is no doubt about the future so why not act accordingly.

In the woodworking field at the present moment the building industry seems to be the key to the situation. This should not be taken to mean that if building does not revive conditions will remain quiet, but rather that as building increases, the whole industry will prosper. Housing conditions are bad, new houses and buildings are required by the thousands and hundreds of thousands. Experts say that some of this connot be put off any longer, a part of it must be gone ahead with next spring and summer. This seems reasonable. Building materials have in many instances receded from the high peak of the early summer. It is anticipated that money will be more plentiful and available in larger quantities. In all likelihood labor will be more efficient. Why then should building be delayed?

In spite of all some may think and say, the law of compensation still rules. The inevitable reaction from the present depression is bound to occur. It always has and always will. This is only a passing phase, one that will soon be forgotten. Business will pick up; orders will come.

We extend the season's greetings and wish you and those whose happiness is yours a full measure of Christmas joy and success for the New Year

Figure 1. View in cabinet-making department, showing tables for House of Commons, Ottawa, being assembled.

Reproduction of Old Models and Antiques

A Visit to Henry Morgan & Company, Limited, Montreal—Mahogany Desks for Bank of Montreal—Work Underway for Parliament Buildings, Ottawa

Good furniture, well designed and well made, is being more eagerly sought after by the discriminating home furnisher. This increasing demand for fine furniture is very gratifying, indicating, as it does, a growing appreciation of that which is beautiful and appropriate in home furnishings.

To satisfy this newly-aroused artistic sense, the designers of furniture have been forced to fall back on the old masters of furniture design—men who were seemingly born with an eye for pleasing proportion, attractive lines and fine detail—and reproduce and adapt the beautiful old period styles.

The accurate reproduction of antique and period designs, together with the remodelling and restoring of many fine old pieces, is one of the more interesting phases of the work of Henry Morgan & Co., Limited, cabinet makers, Montreal, P. Q. A walk through the cabinet-making department of this plant, reveals such transformations as the conversion of an old spinet piano into an attractive writing-desk; an old wardrobe into a lady's dressing table; an old-fashioned wooden bed being cut down to suit Milady's tastes and present-day requirements, and the restoration of many old antiques and heirlooms.

Figure 3 Chippendale table decorated with carvings in low relief.

Another and even more interesting phase of the work, as carried on in this up-to-date establishment, is the reproduction of old models and antiques. This work is carried out with the strictest fidelity to the design, details and construction of the original style. Much of the material used in this special work was taken from some of the old homes of England and the continent—once more to be used in beautifying the homes of the new world. A large part of this material consists of exquisite old pieces, inlaid with silver, mother of pearl, brass and precious metals, and may be said to have been brought from the four corners of the world. Thus, in addition to the attractiveness and gracefulness of the finished product, there is an added charm, due to the sentiment attached to such old material. If some of these old pieces could talk, what an interesting story they could relate.

The accompanying illustrations, which are reproduced from photos taken specially for the "Canadian Woodworker," show some of the work going through at the present moment. The first illustration, Figure 1, is a view of one section of the cabinet-making department, including some of the largest and more pretentious pieces on which they, at present,

Figure 2. One of a number of mahogany desks for the Bank of Montreal.

Figure 4. Three mahogany pieces attractively executed in Chippendale design.

Figure 5. A number of chairs in oak for the House of Commons, Ottawa.

are working. The lower part of the table, seen in the center foreground, nearing completion, is for the clerk of the House of Commons at Ottawa. It is Gothic in design, measures 5 ft. x 13 ft. 2 in., and is constructed with strict attention to permanency and strength. The top is made of nine-ply straight-grained oak, with a 4 in. cross-band decoration, divided by a 3/16 inch ebony line, around the top. The linen-fold panels, fine tracery work and the exquisite carving on the center panels, hardly discernible in this picture, are beautifully defined and enhance the attractiveness of the table.

The bottom is solid and fitted with a double track, which receives a sliding holder in which the mace reposes when not in use.

The large mahogany desk, shown in Figure 2, is one of a number of single and double desks being made for the St. James St. branch of the Bank of Montreal. The desks are made of mahogany with birch interiors. The standards, of which there are three for each dask, are constructed with 7/8 in. ash cores, cross-banded with 1/8 in. birch veneer and faced with 3/16 in. mahogany. The supports are attractively carved trusses 4 in. in thickness, moulded heavily on the front edges and finished at the base with claw feet. These standards are exceptionally well designed and convey the idea of strength and solidity, so becoming an institution of such conservativeness and dignity as the Bank of Montreal. This particular order is being carried out under the supervision of Mr. Hanna of McMann, Mead & White, a firm of well-known New York architects.

Figure 6. Type of small desks to be used in Parliament Buildings, Ottawa.

The small mahogany stand, shown in the third illustration, is designed specially to hold a large cabinet of fine cutlery. The lines are those of Chippendale and the table is decorated with carvings in low relief and claw and ball feet. This piece was designed to match a Chippendale suite which adorns one of Montreal's palatial residences and which was sold recently by the Henry Morgan Co. for the sum of $6,000.00.

The three pieces, comprising Figure 4, are intended for Milady's boudoir. These are executed in mahogany in Chippendale design. The writing table is exceptionally pleasing in line and proportion, and yet gives sufficient space for a full complement of writing-desk equipment. The front drawer is nicely shaped and it, together with the receptacles on the top, are fitted with loose racks to accommodate the necessary paper, envelopes, etc.

A close examination of these pieces should tend to convey an idea of the subtle charm which attaches to well-designed furniture. The fineness of detail might well receive special attention. This is especially noteworthy for to-day composition carvings are being employed to a large extent to replace hand-carving. Where the decorative scheme calls for carv-

Figure 7. View of the chair department in the plant of Henry Morgan & Co., Limited, Montreal, P.Q.

ings of any kind, this firm make a practice of cutting it by hand from the solid wood.

The chairs shown in the white, Figure 5, are intended for the chamber of the House of Commons at Ottawa. They are made of solid white oak with a deep birch stuffing rail. These chairs are built to give lasting service, both mortice and tenon and dowelling being used in their construction. In addition, heavy corner braces are accurately fitted in each corner and held there by glue and screws. The turnings on the front and rear legs are the same and are decorated with well-executed carvings and finished with square flared spread at the floor line. The front arms and backs are heavily moulded. The covering for these chairs is English pigskin in green. Large square head nails will be used on the gimp line. Only the best in hair springs, etc., will be used, insuring utility and comfort for generations to come.

The type of small desk to be used in the chamber of the Parliament Buildings at Ottawa, is shown in Figure 6. The lower one is for the sergeant-at-arms, while the upper desk, which is one of four, is for the Hansard reporters. There is a certain dignity and charm in the design and proportion of these desks. The embellishment of the ends, including carvings, representing the maple leaf, rose, thistle and fleur de lis, are exceptionally well executed. In fact, it is a matter of pride with the workmen to reproduce these emblems with the strictest fidelity and with every care, as each workman is given the emblem which represents his homeland. Thus the thistle would be carved by a Scotch artisan, while a Canadian would work out the maple leaf. The tracery and linen-fold panels add to the attractiveness of these pieces.

An excellent view of the chair department is shown in the last illustration, Figure 7. It is here where the thousand and one chairs manufactured by this firm are designed and finished. Some idea of the total output of this department may be formed from the fact that during the present year some two thousand chairs of different designs have been put through. The list would include chairs for all rooms of a home as well as for many large public and private buildings. The templates and patterns for these chairs are all numbered and carefully placed away for future use. Thus any of these designs may be reproduced or replaced at short notice and with a minimum of expense, even though several years have elapsed.

The experts in this department are all skilled chairmakers. Many have come direct from some of the larger chair factories in Great Britain. The methods followed are those used by the most noted of Old Country chair makers. This accounts for the fact that the Henry Morgan Co. of Montreal, have earned the reputation of having one of the finest special order chair departments in the Dominion of Canada.

Dignity and Economy in Interior Woodwork

Interiors Influenced by Present Day Furniture—Built-in Features Economical and Attractive—Lighter Interiors Growing in Popularity—How Furnitnre Influences Interior and Even Exterior of Home

By W. H. Shaw

Notwithstanding the troublous business times, and the uncertainty of the future, people must and will build , and if there is a further wave of prosperity will build lavishly. During times of stress they build soberly, cutting out all superflous things, restraining a tendency towards ostentation, limiting their needs as far as possible, and the results are often quite as satisfying in the second period as in the first.

There we are to live and enjoy the result of our labor and have the best part of our being is no place for any sort of pretense. To make the home a successful centre of living rather than simply an abiding place, is one of the most important problems of the day. This means not only the practical plan and pleasing exterior, but quite as much, the satisfying and home like interior. Admitting the substantiality of a house is of more importance to the owner of a house than the consideration of the aesthetic side, there is no reason why the artistic and the substantial should not go hand in hand. The love in the last few years experienced an awakening. After a long period of heedlessness we have come at last to a realization that beauty of form and color is essential to our home life.

Dignity and Good Taste.

An English gentleman gave the following advice to his son, whom he thought was old enough to marry: "Do not marry a prize beauty, because she will not last long enough, and do not marry one whose looks will do discredit to your taste." I have always thought that this gives a good hint to home builders. A home should neither be a peep show, nor a blot on the landscape.

No one knows, until he builds a house for himself, how many problems, of an entirely different nature, he will meet, and how each of these are inter-related with the others. No one problem can be left until the others are settled, because the latest one is likely to unsettle the first, so experienced ones plan the whole house, even to the finish of the interior woodwork and the furnishing of the rooms before the work is actually under way. Suppose for instance, my lady sees a new piece of furniture, which she must have in her living room. It is the very latest thing and upsets her first idea for the finishing of the woodwork. The new finish, which she decides upon is better upon a different kind of wood. With the other wood a different treatment in the hall seems advisable, and this in turn influences the type of design for the front entrance, possibly makes it colonial. A colonial entrance is in keeping with a certain type of exterior treatment and the whole design is modified, by the purchase of one piece of necessary furniture. When the house is planned the furniture should be placed drawn to scale on the plan, the color scheme and type of furniture decided upon before the working drawings and specifications are completed.

Proportions of Rooms.

The living room, in general should be proportioned in the ratio of three to five, which should mean that

the living room fifteen feet wide should be twenty-five feet long, or a room thirteen feet wide would be twenty-one feet long. Of course, this is by no means an absolute rule.

It may be noticed that in speaking of width of the living room the odd numbers of feet have been used, and this is not because there is luck in odd numbers,

Square paned glass in French cupboard doors

but because lumber comes sawed in even lengths. Twelve, fourteen, sixteen and eighteen, are the lengths usually carried in stock, and allowing for about six inches support at each end. If one desires to economize in a very sensible way the stock sizes of joists will naturally be selected. It has been found by experiment that joists two inches by eight inches deep can be used over a span of thirteen feet, and a joist two inches by twelve inches deep over a span of seventeen feet without the floor sagging or feeling shaky.

The shape of the living room should be such that several groups can assemble in it, concerned each with its own subject of conversation, and also so that every one in the room can form a general group. As the centre to which groups naturally gravitate is the fire place, this should be so placed that no one facing the fire place will have to sit immediately in front of a door, or block a natural passageway.

Placing the Furniture.

A fireplace immediately between two large doors, while picturesque in appearance, is often uncomfortable in practice. A large square living room is not as a rule desirable. As dining room tables run from four to five feet in diameter, and when extended to seat eight persons, are from six to eight feet in length, or extended to seat twelve are from nine to twelve feet in length. The width required, with pieces of furniture projecting into the room, for a five foot table is eleven feet. This will give plenty of room for people to sit at the table, and for a maid to serve them properly. This means that fourteen or fifteen feet is wide enough for the actual need of any dining room.

In length, a seventeen foot room is sufficient to seat twelve people, and a fourteen foot is sufficient to seat eight people, unless both ends of the room are blocked with large pieces of furniture projecting into it. Besides the dining table and chairs necessary to seat the expected number of guests, the average dining room furniture consists of a sideboard, from five to six and a half in length, usually projecting a foot and a half. And possibly a china closet projecting about one foot and four inches, and from three to four feet in width. For these pieces of furnitiure there must be wall spaces, and as the sideboard is usually one of the most interesting pieces of furniture which goes into the house, there should be wall space in the centre of one side of the room provided for it. There is a question about the advisability of placing a window above the sideboard, since the silver, glass and china show to much better advantage when lighted from the front, and lose in beauty when lighted from above or behind, for they cannot be well seen against a strong light.

Treatment of Interior Woodwork.

As the modern house is built, the woodwork of the rooms, to a certain extent dominates the room. Its treatment sets the key for the decoration and prescribes within limits, the type of furniiture which may be satisfactorily used. Finished in "Hardwood" or finished in "oak" is often given as the slogan of quality, when a house is placed for sale, as a fine wood calls for good workmanship. With the growing popularity of painted furniture comes a painted finish (enamel) for the woodwork, and in the better class of work, birch or other hardwoods are now generally used under paints. So the old classifications are lost. A painted job may be a very expensive job, with its fine wood and many coats of paint and enamel; while simple ways have been found in the finishing of a hardwood to show the beauty of the grain and enhance the natural color while giving the beauty of the dull finished surface.

The home builder who expects to get the most satisfactory results at the minimum cost, will do well to make a little study of the woods which are available for his purpose both with reference to the way he

Convenient and attractive built-in china cupboards

wishes to use them and also to the local conditions, and market.

Vogue of Light Interiors.

The living room of the small house of but a few years ago, was quite generally finished in some comparatively dark style, and very commonly in dark oak, or some stained pine imitation of it. To-day, however, the popular leaning is towards quite the opposite. The vogue at present is in fact that the room be finished in white or ivory, or in a very light tint. And indeed, it seems to represent a

most commendable notion. It means, for one thing, that, instead of something appearing dark and perhaps gloomy, especially in cloudy days, the room is always bright, and hence endowed with an atmosphere of cheerfulness. Yet, if the matter of it its decorating, finishing and so forth be propertly handled, it will at the same time be easy and in every way inviting. Then, too, this style of finish invariably suggests sim-

A bookcase one side of fireplace and writing desk at the other side

plicity, and this has also come to be regarded a desirable attribute.

The light finished living room is, of course, not restricted as a possibility to the builder of a new home only. The old style, dark finished room of the house built some years ago may be easily transformed into the new style by a thorough overhauling in respect to woodwork, decorations, and soforth. In fact, this is being done quite extensively, and if done correctly the result is no less satisfying than if it had been so handled in the beginning. In making any such changes however, it should be remembered that the furniture must be more or less in keeping with the altered interior and hence may require changing also.

Built-in Furniture Popular.

Built-in features must naturally receive more or less consideration in this connection. Bookcases to suit their position are especially favored, and writing desks and built-in seats are possibilities also. Towards the designing of such features the accompanying illustrations may offer a few appreciable suggestions at least. Bookcases, it will be observed, are shown in a number of them, while in one will also be seen a neat little writing desk of the built-in type.

The woodwork of a room of this sort, whether of ordinary casing and base or if the more elaborate woodwork which is again in vogue, viz., French panelling to the height of the window stool. The woods to be enamelled should be selected from those which are neutral in grain and color. Among the woods which are most suitable for this finishing are birch, gumwood, basswood, maple and the soft non-resenous pines. Especially for the better class of house many good architects, through long and intimate acquaintance with certain hardwoods, tend to specify certain woods as the only base for all enamel treatment. Many of the fine pieces of beautiful enamelled and painted furniture are made of costly woods. The first cost of woods, in such cases, is so small a part of the total cost, with its exquisite workmanship that there is not sufficient economic reason for using less expensive wood. The same may be true in an expensive house, but in much of our home building the same savings are of importance.

Finish Determines Wood Used.

White enamel is a little the more popular as a finish for the woodwork of a room, although old ivory enamel is at least used almost as often. Choosing between the two is probably only a matter of individual taste, for either makes a very appropriate and satisfactory treatment. Both may be obtained by creating either a glossy or a dull or eggshell surface but the eggshell kind is ordinarily to be preferred.

Frequently where the woodwork is enamelled there will also be introduced a limited use of mahogany, walnut or gumwood trim, as is the case in one of the living rooms here illustrated. When not used too liberally, they in fact lend a very pleasing decorating touch, and help to emphasize the colonial effect. However, the light finished living room does not necessarily demand the use of white or ivory, its woodwork is, instead, sometimes painted some very light tint, such as, a delicate shade of French gray. But that the tint be extremely pale, and probably restricted solely to grey or bluish-grey, deserves to be given special emphasis.

Securing Contrast in Finish.

For finishing the light-finished living and dining rooms. Mahogany and walnut are both popular and appropriate, for it not only lends contrast, but is in keeping with the colonial style. Wicker or reed furniture also has considerable favor and as may be realized by referring to the accompanying pictures, is productive of very charming results. It at least helps materially in maintaining the desired bright and cherry atmosphere, and however, is comfortable and somewhat less expensive than mahogany or walnut. Incidently such furniture is often upholstered in rather bright colors, and sometimes with material indentical with the room's drapes, oak furniture is used very rarely and is considered hardly appropriate.

The man who is building either for himself or for others is coming to realize the actual cash value of all these impalpable, and almost indefinable things, which in the past the commercial spirit disregarded. To realize that comfort, convenience and beauty will bring a higher rent and a bigger selling price, as well as secure a more satisfactory home.

Durability of Cypress

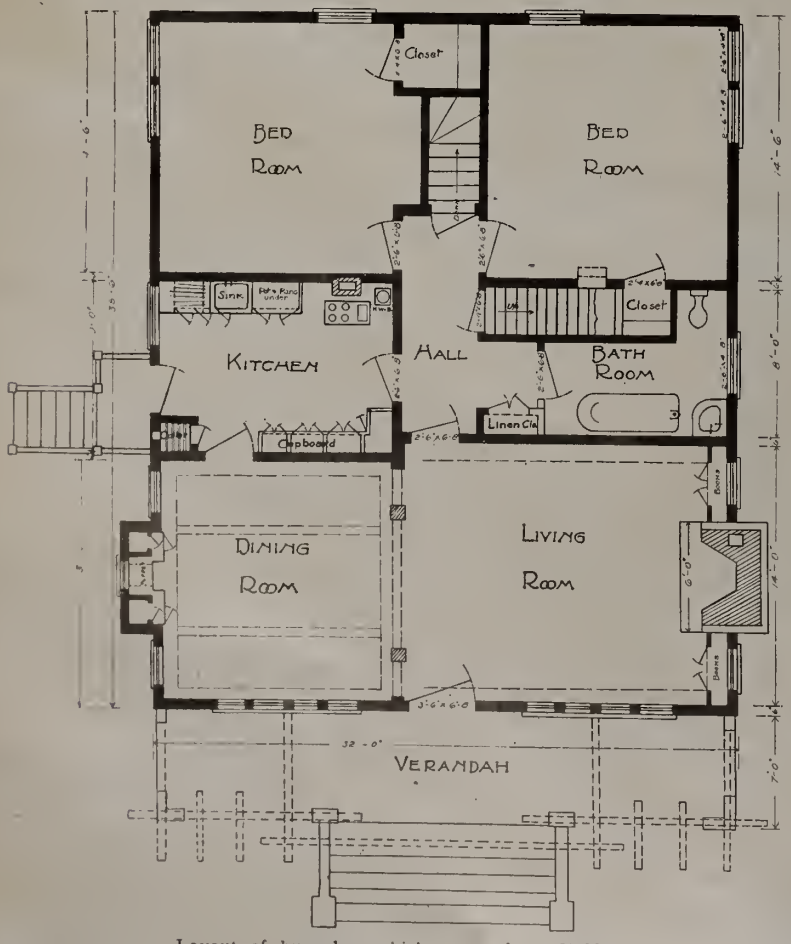
Southern bald cypress is about the most variable in color of any of our native woods, and in different localities is known as red cypress, yellow cypress, white cypress, and black cypress. There is a rather prevalent belief that cypress with dark colored heartwood is the most durable, but the opinion of the U. S. Forest Products Laboratory is that as far as durability is concerned the color of the wood makes very little difference. In service records obtained by the laboratory, any difference in the length of service of red cypress and yellow cypress appears to be due entirely to a difference in the amount of sapwood in the timbers. Cypress trees with light colored heartwood usually have more sapwood than those with dark colored heartwood, and sapwood is not resistant to decay.

The important thing if durability is desired appears to be to select the heartwood of cypress regardless of its shade.

Attractive Bungalows from B. C.

Popular Adaptation of California Design

BRITISH COLUMBIA is, and will be for some time to come, the home of frame building construction, and of late has been turning its energies to the construction of bungalows which are especially adapted to the climate of the Pacific Coast The California bungalow, with a few minor modifications to allow for the winter climate, is receiving special attention in Vancouver, and on account of the cosy appearance and ease in housekeeping is much favored by the young housewife.



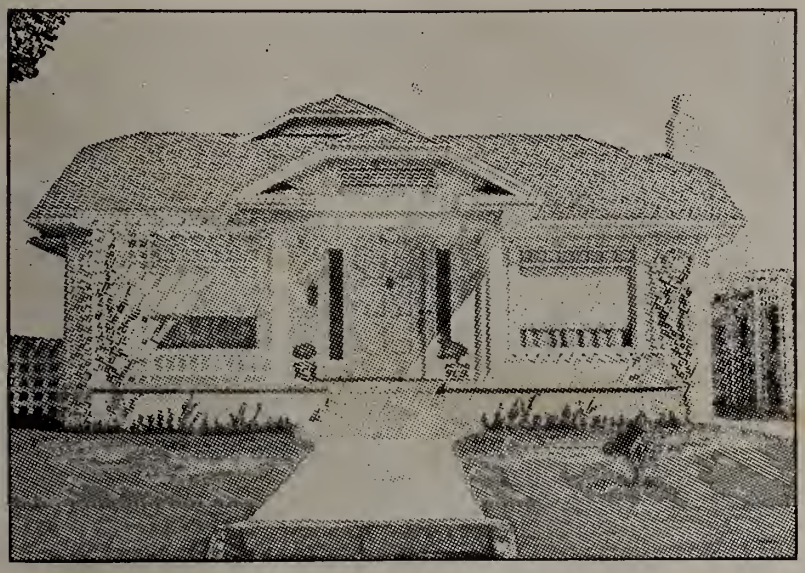
Layout of bungalow which costs about $5,000

To show that the bungalow type of home is adaptable to this climate one has only to inspect the many fine designs that have been erected in Vancouver by Messrs. Faulds, McQueen and Pearce Ltd., on their Shaughnessy Park subdivision. Twenty-one of these cosy, commodious homes have already been constructed and sold, and others are being sold as soon as they go up. Every bungalow is of a different design though all have the many time and labor-saving devices peculiar to this type of dwelling.

Built-in features, all of them convenient and not a few of them novel in their principle, mark the equipment of the bungalows this company has been constructing during the past year. Just as the designs for each of the bungalows are original and show individuality, so the built-in features speak of care and thought in planning. All are practical and useful, further indication of the study that has been put to their preparation. In the kitchens, most of which are buffet design, the cupboards have bins of capacity sufficient for full packages of flour, sugar, etc. Baking boards are drawn out for use and push back out of the way, ironing boards are simply arranged in snug recesses in the wall, a cupboard door closing them in when not in use. The electric wiring is arranged so that a socket for the iron is near the board. For perishable food the ventilated cupboard, with wall-vents to the open air, and slatted shelves, gives perfect air circulation. Similarly, in the bath rooms of these bungalow homes, convenient small cupboards are built in for stowing the many toilet and bath accessories.

Convenient Built-in Features

Interior finish in all these bungalows is distinctive. Plain surfaces mark base-board, window and door frames. Beamed ceilings give a substantial air to dining or living rooms. Wood panelled walls in halls and dining rooms, are the rule. In some of the living rooms tinted enamel finish is used with good effect. The plaster is, in many cases, finished



Comfortable Convenient and Cosy

"The House of the Seven Gables"

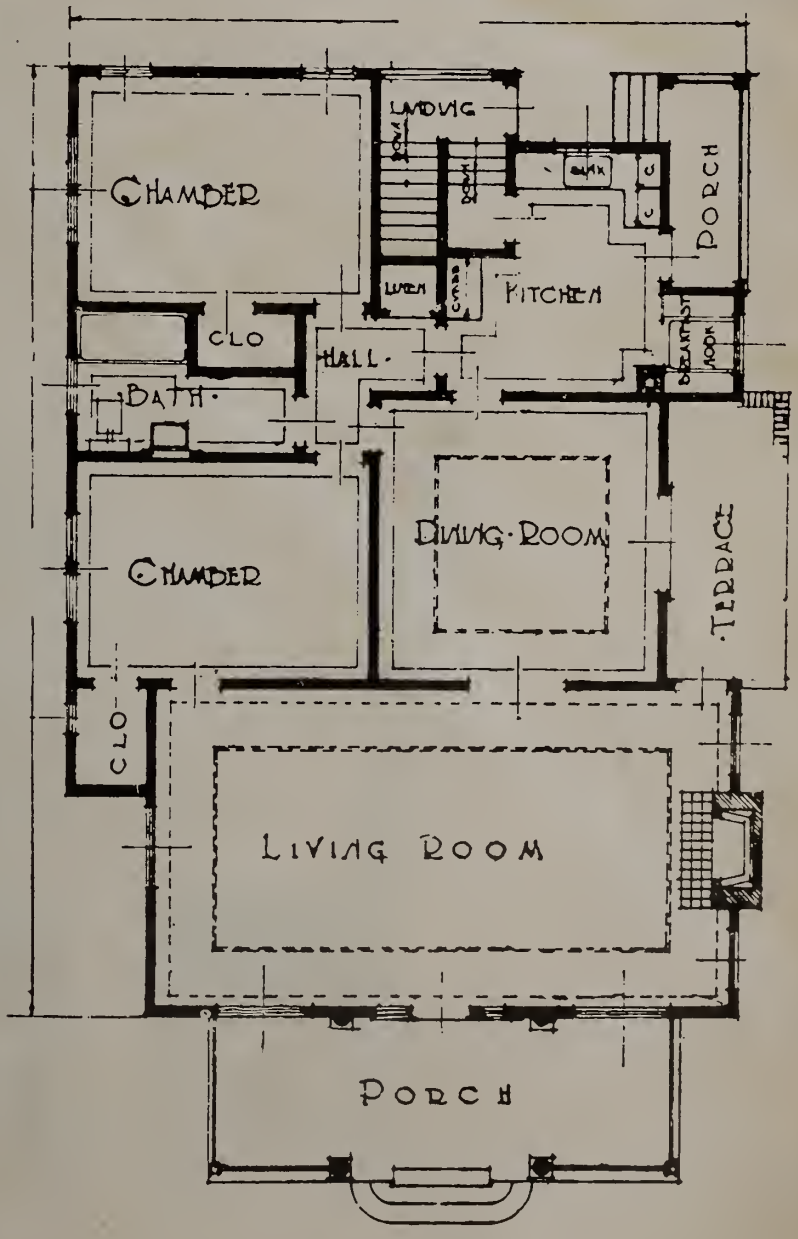
with a brush effect which lends itself to fine tints when the walls need decorating. Book shelves built in, or alcoves for library cases are arranged, in some cases at either side of the fireplace, and in others flanking the archway between dining and living rooms. Very original window arrangements are noted, the most being made of lighting effects. At the same time quaint and cosy curtain draperies are made possible by low casements.

Every house has a fireplace, in all this new bungalow suburb, and each is a guarantee of the height of home-like evenings by the flickering fire-light. The exterior of these model homes is done in cedar shingles, walls and roof. This material for the walls is an aid to giving the broad and comfortable lines which the designer seeks always for the typical bungalow. For color effects also, the cedar shingle is most adaptable. Some of these houses have striking combinations of weathered silver-gray walls, with warm red stained roofs, the trim being flat white. Others have brown stained walls and dark green or red roofs, while the color scheme is varied in others by having a solid green wall stain with a deep red or brown for the roof.

Mr. S. H. Shave, a practical architect and builder of wide experience, has been in charge for Faulds, McQueen & Pearce, Ltd., during the construction of nearly the whole of the houses in this suburb, and many of the designs are original with him, or adaptation of popular favories.

This Home is from Famous Model

"The House of Seven Gables" is the name given to the bungalow illustrated herewith. It is the latest of the many beautiful little homes which have been erected on what Vancouver now calls "Bungalow Row." This attractive dwelling is a creation of the different, the quaint, and the beautiful, and has incorporated in it many convenient features which larger houses often lack. A home of this type should commend itself to those wanting commodious



Layout of "House of the Seven Gables"

rooms, and a style of architecture quite different from the ordinary.

The design of the main floor is especially strong and attention is drawn to the location of the bathroom and its accessibility from either bedroom through the hall. This is a common-sense feature that is omitted in many bungalow plans, the passage from the bedrooms to the bathroom often being through the kitchen or living-room. The living-room is an immense, well-lighted room extending across the entire width of the house. At one end is a large fire-place finished in mineral brick and flanked by built-in bookcases. The treatment of the fireplace in mineral brick is very effective and its warm tints give an unusually cheerful and cosy tone to the room.

To the left of the living-room is a room which, by its location, can be used either as den or a bedroom. It contains a commodious clothes-press and is well lighted by two large windows. Passing from this room one enters a hall which opens in turn on the bathroom, a bedroom and the kitchen. The bathroom is large for this type of dwelling and is very conveniently arranged. To the rear of the bathroom is a large, airy bedroom containing a good-sized closet and lighted by two large windows.

The kitchen has many features which delight the heart of the woman who does her own housework and reflect the care and foresight of the architect who is evidently conversant with the limitations of the usual kitchen. One's attention is drawn to the way in which the architect planned to avoid the thousand and one unnecessary steps a housewife takes in the preparing of a meal in an ill-designed kitchen. The stove, cupboards and sink are so arranged that a step either way brings you from one to the other and the housewife has all her utensils and cooking materials within arm's reach at all times. A large casement window opens over the sink and gives light where it is most needed. To the right of the sink are two large cupboards with outside ventilation for the storage of food supplies. A breakfast alcove with built-in table and benches opening off the kitchen is another charming feature of this bright little room.

That Useful Tea Wagon

What the wheelbarrow is to the farm, the tea wagon is to the household, saving steps, time and danger of breakage every day in the year. With its help even a young girl can arrange or clear away the dishes in a twinkling. When a meal is desired in a hurry its value is accentuated, and the most attractive feature at this time is that the entire meal can be hurried to the table at the same time, thus obviating the vexation of having the articles first served lose a part of their freshness. Besides, even in the most careful hands there is more or less danger from breakage when carried on the tray, and only a small portion of them can be carried at once—these, perhaps, causing undue strain upon the back. But with the wagon, all is different. Treble the normal amount is but child's play.

Nor is the tea wagon a thing to be confined in its service to dining room and kitchen. All about the house there are articles which are shifted from one room to another in ordinary service or for some special reason. Books from the library stray to other parts of the house and are not always returned promptly. The housewife may find that these, with the current periodicals, become a real burden in the picking up, but with the wagon they can be easily returned to their own place.

Attractively proportioned walnut chairs in William and Mary style

Furniture Makers Hold Important Meetings

Publicity Campaign Reviewed—Stirring Addresses by Retailers—Dating and Tariff Matters Discussed

The Furniture Manufacturers' Association recently held two very successful general meetings in their board room in the Nordheimer Building, Toronto, one on November 23rd, the other on December 8th. The attendance in each instance was up to the mark, which was gratifying, as it shows the interest the individual manufacturers are evincing in the work of their organization.

In calling the first meeting to order, the chairman, Mr. Anderson, intimated that before any other business was transacted, it might be advisable to take advantage of this opportunity and have a meeting of the Home Furnishings Bureau. He also extended a hearty welcome on behalf of the furniture manufacturers to the retailers present, who had kindly consented to give their views on the publicity work which is now being carried on.

G. O. Luke, of Hamilton, president of the Retail Furniture Dealers' Association, then gave a stirring address. He congratulated the furniture manufacturers on the progressive step they had taken. He was strongly in favor of newspaper advertising and was convinced that if the manufacturers persevered in their publicity efforts, especially newspaper advertising, the industry was bound to reap the benefit.

Bound to Show Results.

Robert Coryell, president of the Adams Furniture Co., Limited, Toronto, Ont., also gave a short address. In his opening remarks he said it must be refreshing to the furniture manufacturers to get a pat on the back and hear kind words from the retail furniture dealers after what the manufacturers had been doing to the retailers for the last couple of years. The publicity work undertaken by the furniture manufacturers was the most forward step that had ever been made in the furniture industry. The results might be slow in developing, but if the activities of the Home Furnishings Bureau were wisely directed, gratifying returns would undoubtedly come. He considered that the work done so far was deserving of the highest commendation. He also stated that his company would be pleased to co-operate with the Home Furnishings Bureau in every way possible, at the same time suggesting that it might be advisable to work far enough ahead that the retailer could be advised in advance of all advertising which would appear so that they could co-operate to the very best advantage.

The different steps taken by the Home Furnishings Bureau since its inauguration were reviewed. Mr. T. Lyle Blogg gave a detailed account of the campaign and explained that at the present time advertising was being carried in 44 daily papers, 74 weekly papers and 11 farm journals. He also stated that the dealers were cordially co-operating. The remainder of the time was largely taken up by a discussion of the plans in regard to the future development of the Home Furnishings Bureau. Owing to the fact that a number of important matters were crowded out of the agenda, it was decided that another meeting would be held on December 8th, so that all arrears of business could be cleared up.

Tariff Brief Prepared

At this, second meeting, the report prepared by the Tariff Committee was accepted, as handed down, and it was agreed that a copy of the report prepared for submission to the Tariff Commission be given to the various trade journals for publication. Other matters in connection with the tariff were referred to the Tariff Committee, who will find it necessary to meet at an early date.

The question of "dating" came up for consideration. There was no reason why any changes should be made, which would have the effect of permitting spring dating. It was considered that dating had been one of the evils of the trade and its elimination had been distinctly beneficial, from every point of view.

Considerable discussion centered on general trade conditions. Mr. Ferguson read a telegram he had received from the secretary of the National Alliance of Case Goods Manufacturers, which represents seven case goods associations with headquarters in Grand Rapids, Mich.,—"Jamestown market on case goods approximately 10 per cent. less than former prices. No buyers. Grand Rapids have made no change in their prices, having some months ago guaranteed against decline to December 31st. Don't expect January prices on case goods in Grand Rapids and Chicago to average over a 12 per cent. reduction from former prices. Not five per cent. of reports that come to me concerning reductions and cut prices can be verified."

New Price Lists to be Issued.

The meeting re-affirmed the recommendation that new price lists be issued at an early date, and further recommended the advisability of issuing some assurance to the retail dealers regarding the stability of these prices, so that they may enter the market, secure in the knowledge that prices will hold for a definite period.

The report submitted to the Tariff Commission was an exceptionally well-prepared document, and dealt with the various phases of the question in a clear, concise and almost dispassionate manner. In speaking of the development of the furniture industry, mention was made of the fact that there are 238 furniture factories in Canada giving employment to 8,000 persons and having a total investment of some $25,000,000. The annual turn-over about equals the capital investment. The wholesale prices of furniture in Canada are to-day based on cost of production and are not in any way influenced by prices prevailing in other countries.

Owing to a much larger market, the furniture manufacturers in the States were able to specialize to a degree not possible in Canada, with the result that their costs on many stable lines are lower than the Canadian industry could hope to attain with the comparatively small population of Canada. Thus in times of slack business and over-production the mass production of American factories enabled the American manufacturers to sell both at home and abroad, and even with present protection, capture a large share of Canadian business. In view of the fact that the present measure of tariff protection has permitted the creation of such a large industry in Canada, it was requested that this same measure of protection be retained in order that the furniture industry may in times of trade depression continue to operate by being able to retain its home market.

Designing a Louis XIV. Phonograph

Outlining the Development of a Design from the Original Idea to the Finished Sketch Many Points that Mould and Influence Resultant Product

By Arthur Kirkpatrick*

There is no royal road to working up a design for a piece of furniture, although there are certain basic, fundamental principles which should be mastered and followed. In attempting to design a piece of saleable furniture, every designer proceeds according to the facilities he has at his command, the environment in which he finds himself and the class of trade that his peculiar ability and efforts are intended to supply.

In referring to facilities, I mean has the man to which the designing is allocated, a fully equipped library at his disposal or is he forced to draw on his imagination or memory for the formation of the attractive and marketable articles that he is supposed to produce? Has he the instruments of his profession—the drawing-board, suitable paper and inks and other similar articles? Is he trained in historical style and is he able to read character and spirit in furniture? It is this last, character and spirit, that give the subtle, inexplainable appeal so often noticed in well-designed furniture.

Environment would include the size of the organization with which the designer is associated. Is the factory a large or small one? Is it situated in the city or town? In what section of the country—east or west? Is he left to his own resources or must he listen to suggestions from the owner of the plant, superintendent and, perhaps, the sales force?

No Set Rules Applicable

The class of trade catered to is another important factor. By this is meant the customer or ultimate consumer. Does price enter into the buying of the raw material? Does the matter of cost influence the design and construction? Is the furniture to be designed so as to be of the greatest use, or is the prime motive to produce a money-maker—an article that will bring the highest price for the least possible outlay?

One will note, upon consideration of the above brief suggestions that no set rules can be applied to designing. There are no cut-and-dried methods, possibly such as enter into the manufacture and selling of lumber, cordwood or codfish.

In order to present a plausible and constructive story to the reader—one in which he will get an intelligent glimpse of the train of thought followed in a designer's mind, we will suppose a case. A salesman returns to the factory with a nice lot of orders and among them he has taken a special order from one of the big customers, say, Smith & Jones.

Smith & Jones are a good reliable house, so we will have to favor them to the extent of this special, "call in the designer," says the manager.

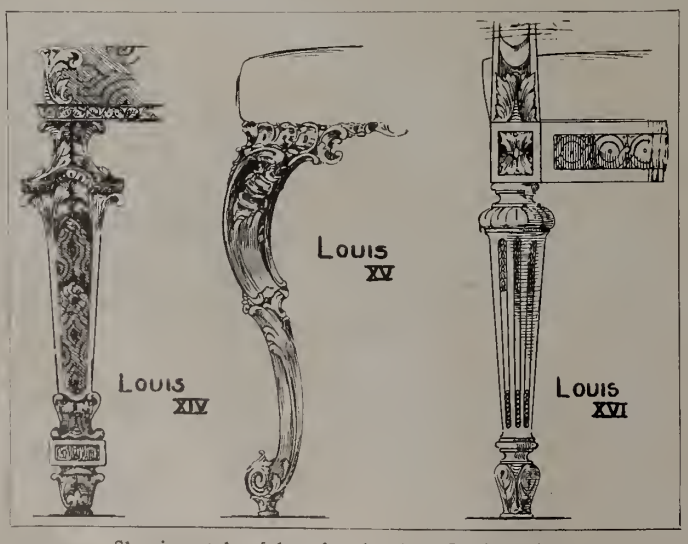
In explaining the situation to the designer the manager rehearses the points of interest as he has received them from the salesman, thus:

"Mac, we have a customer who wants a special made. The order comes to us through Smith & Jones, a house with whom we desire to cultivate and maintain harmonious relations. This customer who lives at Blank has a music room in Louis XIV. and wants a phonograph case in the same style."

Visualizing the Market

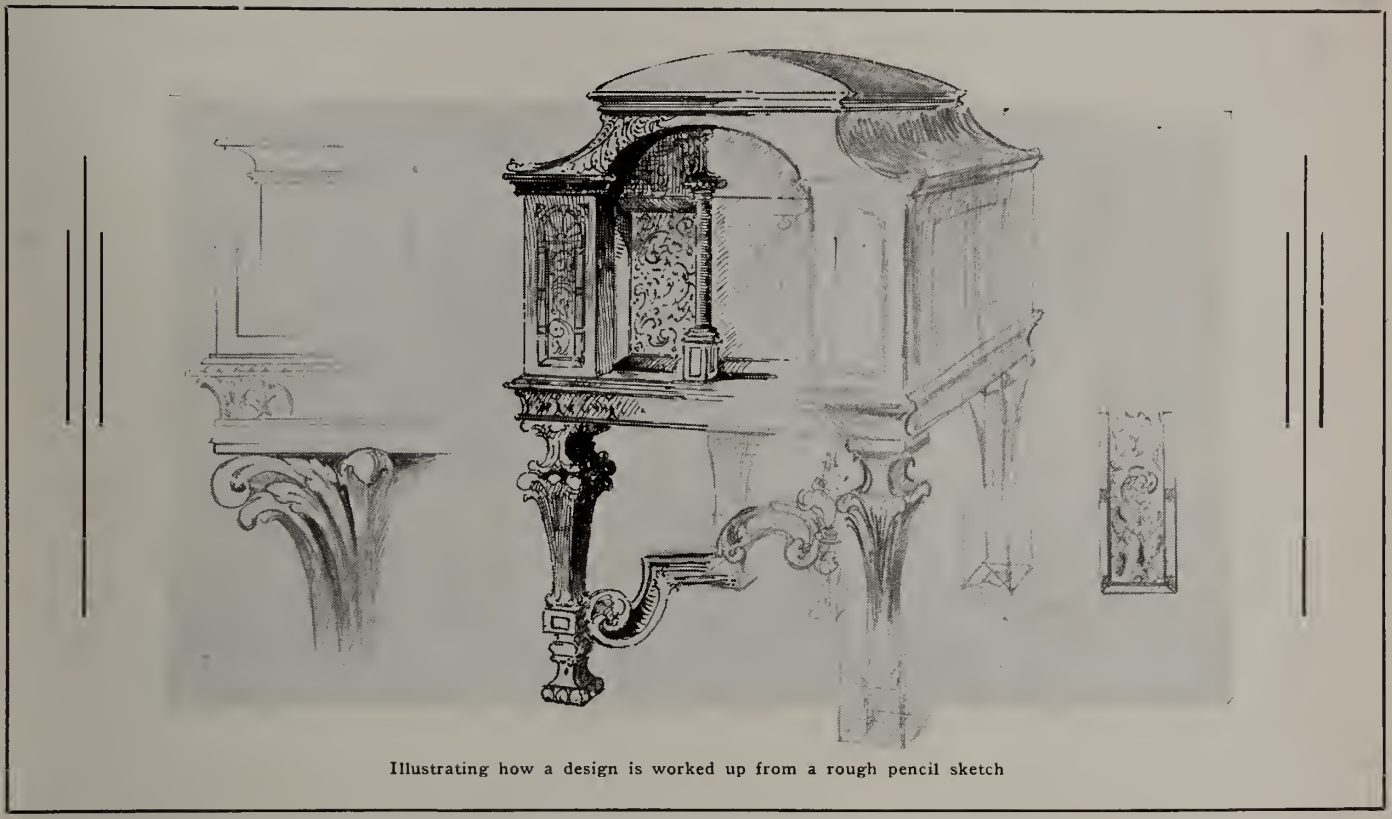
As soon as the manager commences his explanation, the mind of the designer begins to visualize, compare and compile thoughts regarding the task at hand. His first thoughts are of the source or the consumer. He knows that this order is the source from which every shade or degree of style must be drawn. His next thoughts are of location. The city of Blank is cosmopolitan, it has a reputation for culture and refinement. The particular citizen in question, and those with whom he associates, would very likely be of the critically proper kind, regarding a rigid accuracy of effects. Finally he would consider the style, the setting for a Louis XIV. music room would be a large and spacious home with an ample display of richness and grandeur. For the Louix XIV. time is the most spacious and grand in French history—not the gayest, for that was the Louis XV., not the daintiest for that was the Louis XVI., but the large uncompromising proud glory. That is the Louis XIV.

These three— source, location and style—are the mats which the mental kymnastics of the designer are performed upon while he is receiving suggestions and orders from the manager. His next operation is to refresh his memory upon the technicalities of the style. He does this by going over a number of books or illustrations pertaining to that period. After carefully absorbing same, he takes pencil, paper, and sketch-board whereon he makes several sketches or mental impressions which are used in part or as a whole, in making the detail drawing. As before suggested, not every designer can proceed in this way. It is, however, the way that I would proceed under the same circumstances. The method of course is not original, but it is general. Every furniture designer has obtained a part of his method from studies he has made or books he has read, also



Showing style of legs for the three Louis periods.

*Instructor, Grand Rapids School of Designing, Grand Rapids, Mich.



Illustrating how a design is worked up from a rough pencil sketch

from those designers with whom he was associated in his earlier career.

After the designer has formulated his idea into a perspective sketch of that desired piece, he proceeds to lay it out in detail in order that the workmen in the factory may have a pattern for every piece of stock which enters into the case. Each factory has its own technical ideas of construction, and as no two factories have the same kind of equipment, and the men in charge have their own individual systems of working, the general construction of furniture, and the laying out of drawings, rods, and stock bills will vary slightly with each factory. However, in general the workmen and the designer work in conjunction with one another to save time in production and cost to the manufacturer.

In closing it might not be amiss to mention that the break in the heavy scroll supporting the carved ornament under the cabinet is a distinct feature in Louis XIV. style. This break, which is made by a straight offset, is common to many of the ornaments and carvings which adorned the furniture of that period.

Chair Men Hold Record Gathering

The Seventh Annual Meeting of National Association of Chair Manufacturers, which was held in Chicago on November 5th and 6th, established a record in attendance. Sixty-three member firms out of eighty-three were present, not counting chair manufacturers who are not members of the organization.

The roll call established the undeniable fact that business with chair factories is flat and that in most cases production is being restricted and stocks are not being accumulated in the hands of the manufacturer. While hours of operation are being shortened and in some cases to the point of complete shut down of plants, and while undesirable labor is being eliminated and where vacancies occur positions are not being filled, it is noticeable that the invention does not exist with chair factories to reduce the scale of wages and that purpose is worthy of the widest publicity.

For the better part of two days the meeting considered ways and means by which chair values can properly reflect cost of manufacture and secure for the producer a satisfactory margin of profit. It was conceded by all that any reductions now effected would utterly fail to stimulate buying and that for the rest of 1920 no volume of business would be received by chair factories, hence the time in the interval until January 1st should be employed in analyzing the costs in each grade and type of chair produced. An exhibit was presented to the meeting covering a canvass made of retail furniture stocks in Chicago, the exhibit comprised illustrations of chairs now being offered the public and each chair was charted to indicate the price paid by the retailer, the price asked of the public and the percentage of increase of the latter. It is worth noting that on cheap lines of chairs the margin added by the retailer ranged from 40 per cent. to 100 per cent., whereas on medium and higher grades of chairs the percentage added to the factory price ranged from 125 per cent. to 200 per cent.

The opinion of those attending the meeting was equally divided as to the policy best for the chair industry to pursue at this particular time. One-half felt that the prevalent demand existing for price reductions necessitated adjustments of chair values even before the retailers and jobbers have liquidated the stocks which they have on hand. They felt that the lower costs of lumber and leather warranted a reduction in the factory prices of chairs even if losses had to be taken by the manufacturers covering whatever stocks of those materials were on hand and which cost more than to-day's replacement values. They urged that a reduction by the manufacturer of chair values would force the retailer to reduce the prices asked of the public and thus speed up liquidation of stocks in

the hands of the retailers and advance the time when of necessity orders would be placed for chairs with chair factories.

Manufacturers equalling in number those who felt the foregoing reasons should govern, expressed the desire that stability was paramount at this time for chair manufacturers and that any adjustments on a downward scale should be made in an orderly fashion and only through equalizing values in each type and creating new schedules for guidance could reductions be effected without demoralization. These and other arguments were most carefully considered and to avoid arriving at any undue judgment no conclusion was reached at the end of the first day's session. The meeting adjourned over night, and on the following morning the executive committee having conferred on the matter, it was decided that present manufacturing costs warranted a slight reduction in prices. While some lines would be effected more than others the average decline would probably amount to 10 per cent.

Use of Wood in Freight Car Construction

Discussion of Relative Value of Wood and Steel for Construction of Freight Cars—Wood Still Regarded as Most Economical Material—Condition and Grade of Lumber Important

By H. S. Sackett*

The fact that over two billion feet of lumber and timber are used annually in the United States for the maintenance of freight equipment and for the construction of new cars, representing an annual outlay for material alone of over 50,000,000, is ample evidence of the importance of wood in this big industry.

The first freight cars used for railroad transportation in this country were built of wood and this great natural resource has been an important factor in their construction ever since. In recent years steel has competed with wood, especially in the construction of gondola and other types of open-top cars, but whether this change has been an economical one or not remains a question.

Wood Most Economical Material.

From recent studies made of the subject by disinterested commissions, the indications are that even for open-top cars, wood is still the most economical material. With the growing scarcity of timber, however, and the apparently unlimited supply of steel available, it is probable that this latter material will always be a prominent factor in the construction of cars, and especially so, if some agent is found to reduce materially the present high rate of loss from rust and corrosion.

In the construction of the first cars wood was almost universally used for all parts, except of course the running gear. Within the past decade, however, with the introduction of heavy motive power which spells long and heavy trains, it has been found that wood is no longer capable of withstanding the heavy shocks incident to such operation, and it is generally conceded by all car builders that the freight car of the future must be of steel underframe and steel draft rigging.

This limits the use of wood to unimportant parts of the underframe, such as intermediate sills and crossbeams, and to the superstructure of the car. In the case of open-top cars this means only posts and side and end plank and decking, but in box, stock, and furniture cars, etc., it means also siding, lining and roofing.

Steel vs. Wood for Open-top Cars.

To take up the question of open-top cars first, statistics gathered by operating officials of some of the larger railway systems seem to indicate that the cost of maintaining steel gondola cars over a period of years is greater than for composite (wooden and steel) cars of the same type. The data collected show that all-steel gondola cars in their twelfth year of service cost over 36 per cent. more to maintain than did the composite gondola. Of course, it is probable that during the first five years of its life the steel gondola cost less to maintain, but it is felt that taking the entire twelve years as an average, the cost would be more for the maintenance of the steel than the composite gondola.

It is furthermore interesting to note that but 60 per cent. of the composite gondolas in service required repairs, while 72 per cent. of the steel gondolas were obliged to be brought to the shops. The actual time that a car is in service and earning money for the road is an important consideration in determining its general utility. It is also interesting to note the conclusions in favor of the composite gondola, which are as follows:—

The initial cost of the composite gondola with the present prices of steel is less than the all-steel gondola.

The composite type of car costs less to maintain than the steel gondola.

The sides of the composite car do not bulge as do those of the steel car.

The records show that while the composite car costs more to repaint than the steel car, it does not require painting as frequently.

A large portion of the repairs to composite cars can be taken care of at other than steel-car shops.

Certain properties in coal cause corrosion to steel, and wood is not affected by them.

Table 1 shows the annual cost of repairing freight cars since 1908. It will be noted from this table that the cost of repairs per car has increased from $59.30 in 1908 to $80.30 in 1914, an advance of over 35 per cent.

Table 1. Annual cost of repairing Freight Cars

1908	2,089,302	$59.30	1762	104.5
1909	2,073,606	59.70	1768	105.5
1910	2,135,121	65.50	1821	119.5
1911	2,117,644	65.10	1815	117.9
1912	2,140,687	65.50	1858	121.5
1913	2,209,533	.74.70	1802	134.6
1914	2,263,015	80.30	1565	125.8

This higher cost is due, of course, to a number of factors, but it is felt that no small part of it is due to the use of steel, which requires a greater outlay for material and a higher cost to repair, owing to the fact that it takes longer to make like repairs on a steel car than on a wooden one. It must also be borne in mind that this higher cost is very largely due to the much rougher usage to which freight equipment is now subjected. In recent years the freight business of the railroads has grown enormously, and has necessitated the construction of gravity yards for switching, and the use of fewer switchmen per cars handled than in

*Asst. Purchasing Agent, Chicago, Milwaukee and St. Paul Railway. Address before American Society of Mechanical Engineers, New York, December, 1920.

former years. This has resulted in severe handling of freight equipment, and is probably responsible to a greater degree than any other factor for the increased cost of repairs in recent years.

Steel vs. Wood for Closed-top Cars.

In the case of closed-top cars, such as for example stock, box, and furniture cars, there is but little doubt that under present railroading conditions the understructure should be of steel with a wooden superstructure. The steel understructure is required to withstand the shocks of service and to give rigidity and stability to the car, while the wood is desired to give lightness and general utility to the body. Some all-steel box cars are in use to-day, but their heaviness and the fact that nails and cleats cannot be used in them to brace and hold the lading, are strong factors against the use of this material. It has not met with favor with shippers generally and probably will not as long as wood continues to remain available. No material has yet been discovered which combines the properties of strength, lightness, availability, and ease of working such as possessed by wood, and until such a material is developed and made available, wood will undoubtedly continue to be universally used for the superstructure of freight cars.

The dead weight of cars is also an important factor in considering the cost of and earnings from freight haul. There is no doubt but what the excessive weight of the all-steel car has been one of the most deterrent factors to its general adoption in freight-car construction, and this fact together with its lack of readily available repair parts and the large expenditure required to equip shops to efficiently handle all-steel equipment, have combined to retard and limit its use.

Graded Lumber in Car Construction.

It seems pertinent to say a word at this time as to the grades of material required for the different parts of the body of the car. In the early days when the supply of wood in this country was thought to be inexhaustible, clear grades of wood were generally demanded by the car builders, and in the construction of new cars this is generally the practice at the present time, especially for car roofing and siding,—sound-knotted stock being used for decking and lining. Some of the more progressive railroads, however, have gone a step further in recent years and many are now using sound-knotted stock for siding and roofing for repair and maintenance work. There is no doubt but what such a practice is economical and based on sound judgment, for certainly there is no necessity for using clear material for the repair of many classes of freight equipment, the life of which may not be in excess of seven to ten years. One large railway system which not only constructs its own cars but does repairing on a large scale, has adopted the following practice as to grades:—

For New Cars

Siding	No. 2 Clear and Better Fir
Roofing (double board roof)	No. 2 Clear and Better and Select Common Fir
Roofing (metal-covered)	Select Common Fir
Lining	Select Common Fir
Decking	Select Common Fir

For Repair Work

Siding	No. 3 Clear and Select Common Fir
Roofing	Select Common Fir
Lining	No. 1 Common Fir
Decking	No. 1 Common Fir

On this particular railroad the saving on this amended practice amounts to over $500,000 per year, and its economy is apparent.

As far as specifications for end sills, door and side posts, belt rails, etc., are concerned, practice varies widely among the various railroads. Some will insist on oak for such purposes, and others have gone to fir and pine. With the rigid steel underframe it is believed the use of soft woods is more justified than ever for posts and belt rail, but unless well protected with steel plates it is believed the use of oak end sills is still to be recommended. Oak and other hard woods are becoming more scarce and higher in price each year and it is felt that the general practice very shortly will be pine or fir end sills properly reinforced with steel.

Some Advantages of Wooden Cars.

An important feature of car construction which is decidedly in wood's favor, is its general ease of working and adaptability to repair, and this is brought about not only from its qualities which make it easy to cut, saw and shape, but also by its almost universal availability. We have been a wood-using nation for over a century, and artisans familiar with its properties and able to work it, are always at hand.

It is also rather curious that the salvage value of wooden cars is greater than that of steel cars, and no one doubts this who has seen the two types of cars in a seriously wrecked condition. The wooden car may be quickly and easily repaired, while the steel car is only rehabilitated at a high cost, or for the most part is fit for the junk pile.

The Importance of Well-seasoned Wood.

Before using wood in the building of freight cars it is vitally important that it be well seasoned. When our grandfathers built a house they expected it to last a century, and it usually did, for they took great care to properly season the wood before putting it to use. In the houses nowadays, however, we use wood almost before it is dry from the saw, and the result is that our American frame houses to-day are old at fifteen or twenty years and we do not get anywhere near the service out of the wood that we should. Too often to-day we also see freight cars built of green lumber and timber, with the result that within a few months the bolts are loose, the wood having shrunk away from the original fastenings. This causes rapid deterioration and large timbers often quickly rot, particularly those containing sapwood.

It is safe to say that every railroad in the country should at all times carry on hand an eighteen months' supply of oak and other hard woods and a twelve months' supply of fir, pine, and other soft woods. All this material when received should be properly piled for air seasoning, and in the case of clear material used for important parts, such as car siding, should be run through the dry kiln just prior to use.

Increasing attention has been given in recent years to the preservative treatment of certain parts of freight cars, and experiments have been made by some of the more important railway systems in the treatment of such items as stock-car decking, side and intermediate sills, roofing, etc. While these experiments have not been conducted for a sufficient length of time to determine actual results, the indications are that the preservative treatment of such car parts as are particularly liable to decay is profitable and will shortly be adopted as standard practice by the more progressive railroads. The conclusion is inevitable that the superstructure of freight cars will continue to be of wood as long as it is available at a reasonable price.

All-Season Combination Door or Window

A Good Line for Spring or Fall—Strong, Attractive Frames with Removable Panels—Makes Efficient Combination Screen or Storm Door or Window—Many Advantages Which Make Strong Appeal

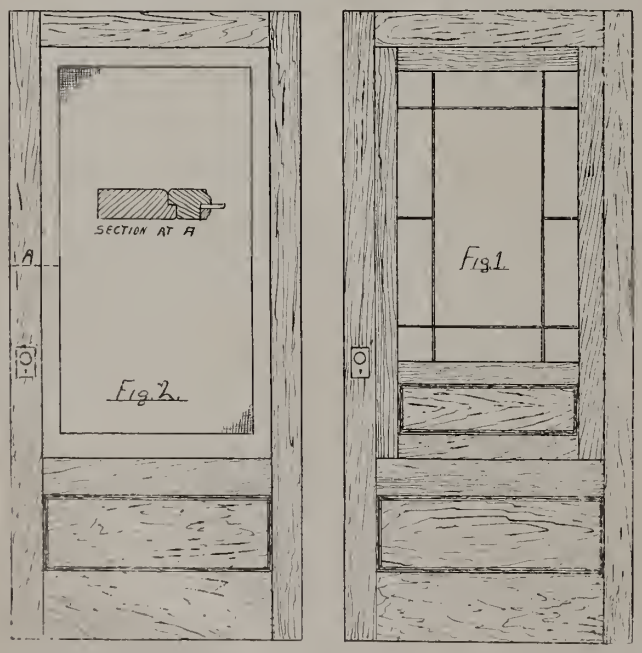
By H. A. Rolphe

It is at this season of the year that the thoughts of many home-owners are turning towards outside windows and storm-doors as a protection against the wintry blasts to come. Not only do well-made, snugly-fitting storm-doors and windows tend to make the home warmer and more comfortable but they also help to keep down the fuel bill and reduce the cost of heating the house. This reduction in heating cost will not only pay a handsome interest on the investment required for these doors and windows, but will return the entire amount, so invested, in a season or two.

In view of the fact that these doors and windows are used for a short period and then replaced by screens for summer service, a type of combination screen and storm door and window has been designed and placed on the market. The advantages of this type of door are such that they make a strong appeal to the average person and as a consequence are in strong demand.

Both Economical and Efficient.

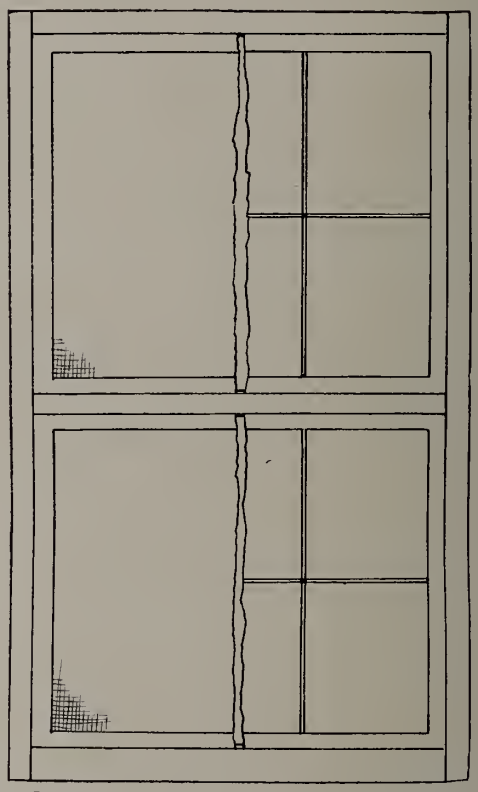
Combination sash and doors are shown in the accompanying sketches. The same frame is used the year around and need never be taken off its hinges, the panel, only, being changed to suit the different seasons.



Convertible all-season door for year round service

As the frames and insert panels may be used in different combinations, a choice of a number of pleasing designs may be offered. Thus for the storm door, the frame might have only one panel, as shown in the cut, while the removable section might be made up with one, two or three panels or might be made with a variation in the size and arrangement of glass. In such an event, with a minimum of stock, the customer could be offered a considerable range of designs. The same applies to the combination screen and storm window.

Enumerating a few of the advantages should indicate just how strongly this type of door, or sash, should appeal to the practical man. One door frame with two insert panels, one glass and one screen, replace two doors. Only one set of hardware and one fitting is required. The labor of hanging the storm doors in the fall and the screen door in the spring, is eliminated. The



Combination screen and outside window frame

change is made so readily and so quickly that there is no excuse for the house not being protected against flies in the early spring or against frosts in the early fall. As the doors or windows are well made, they should last as long as the house itself. Such an arrangement is convenient, economical and practical.

Details of Construction.

The inside of the opening in the frame is rabbetted to receive the insert or panel. This panel goes in flush, improving the appearance of the door. The panel may be held in place with either screws or buttons. Probably the best arrangement is an invisible steel button which is inserted in the edge of the frame and worked with a screw driver. Whatever method is employed it should be neat and inconspicuous so as not to detract from the appearance of the door and become an eyesore. The panels should fit snugly and be held in place in such a manner as to prevent rattling. In actual practice the storm panels for either window or door are sent out with or without glass as required.

Windows of this type are usually hung from hinges at the top, with a convenient catch at the bottom. Thus in winter they may be swung open for venti-

lation. This eliminates the sliding pane or ventilator or the holes at the bottom so common to storm windows. In the case of the window, two panels are used and may readily be removed for cleaning—an added advantage.

Here is an opportunity for the wide-awake planing-mill or sash and door man to take up a new and popular line and make a few extra dollars as well as providing work for his plant. It may require a little aggressive salesmanship to put it across, but that is all in the day's work. The next time you are asked for a storm sash or door, talk combination and see what happens. The same applies next spring when you are asked for screens and screen doors. In making the screen sections, it would be advisable to use non-rusting wire whenever possible. While the first cost of such wire may be high, it is the cheapest in the long run.

Are You Applying Your Burdens Properly?

A Review of Burden Applications—Very Elusive Factor of Cost—Division and Application of Overhead—Suggestions for Equitable Application—Inefficient Methods Fraught with Perils

By H. T. Diderch*

It is only in rare instances that a manufacturer will admit that his cost-procedure is faulty and, most emphatically, not hazardous—still, in the majority of cases an examination of their methods reveals the fact that these same systems are in direct violation of the fundamental principles on which equitable cost results depend.

Every authority on costs will agree that "Burden" is the most elusive factor of cost, not only as concerns its derivation but its application as well; and the final costs of a cost system that is most scientifically devised in all other respects, will be found sadly wanting if burden is applied incorrectly; i.e., if the "unit of measure" for burden is basically wrong.

What follows herein will, therefore, be directed toward pointing out the more glaring mis-applications of burden and also what is considered the ideal procedure, taking into account both the factors of accuracy and practicability.

Per M. Board Feet of Material Plan.

This plan of burden application is perhaps the least effective of all the plans commonly used. From a past operating period, it is determined that the total burden or overhead of the plant is equivalent to, say, a flat rate of $64.00 per thousand board feet of the material used. On the surface, this may appear to be a fairly equitable basis for applying burden, but the plan is very misleading and it actually invites disaster whenever used. Applying this principle to two widely different classes of work, viz., moulding and casework, will illustrate its hazards, thus:

Example "A"
1,000 lin. ft. Moulding

Material—400 board feet	$60.00
Labor—18 hours	12.60
Burden—400 ft. b.m., at $64.00	25.60
Total cost	$98.20

Example "B"
1 Kitchen Cabinet

Material—150 board feet	$22.50
Labor—42 hours	29.40
Burden—150 ft. b.m. at $64.00	9.60
Total cost	$61.50

It is apparent, from the foregoing illustration, that applying burden on a basis of the board feet of material involved, is a ridiculous procedure, even though the plan were further refined so as to produce different rates for the different types of work. The quantity of material required for a job bears only the slightest relation to the burden factor, hence this plan must be discarded.

*Millwork Cost Information Bureau, Chicago

The Percentage of Labor Plan.

Under this plan the burden element is provided for by adding a fixed percentage, say 145 per cent. of the direct labor cost. It is based on the theory that burden or overhead increases in direct proportion to the cost of the labor required to produce any given article. Undoubtedly burden consumption does depend, within certain limits, on labor expended, but not on the value of the labor expended.

This plan is preferable to a considerable extent to the "per M of material" plan but it is not conducive to fair or much less accurate results. Its fallacies are best demonstrated in this fashion: Two sawyers are engaged in cutting up plain red oak for finish. Brown, a very efficient sawyer, receives a wage of 70c per hour, while the other man, Smith, is less expert and is paid but 60c per hour. The cost calculation for both men, considering a work period of eight direct hours, would be:—

Example "C" (Brown)

Labor—8 hours at .70	$ 5.60
Burden—145%	8.12
Total cost	$13.72

Example "D" (Smith)

Labor—8 hours at .60	$ 4.80
Burden—145%	6.96
Total cost	$11.76

Whether or not Brown's cut resulted in a greater net footage than Smith's, it is evident that the burden charged against Brown is excessive, or otherwise that charged against Smith is too low. Both men work continuously for eight hours and in each case the actual burden consumption should be identical, or, at least, substantially so. The heavy factors of burden, floor space, heat, light, water, etc., are the same for each operative and, while Brown may have consumed a trifle more power and oil and perhaps the wear and tear on his saw was just a little greater, these differences would be hardly perceptible and, under no circumstances, would equal 17 per cent. more than Smith's burden.

Then consider also the case of two benchmen, Jones and Young. Jones, who is a skilled artisan performing such work as carving out stair rail crooks, assembling radius stringers, etc., is paid 80c per hour. Young is an apprentice, who nails up cap trim, com-

mon porch posts, etc. His rate is 50c per hour. Figuring their respective costs for a period of eight direct hours would show results as follows:—

Example "E" (Jones)

Labor—8 hours at .80	$ 6.40
Burden—145%	9.28
Total cost	$15.68

Example "F" (Young)

Labor—8 hours at .50	$ 4.00
Burden—145%	5.80
Total cost	$ 9.80

Here again is another pronounced miscarriage of the theory of the "percentage of labor" plan. The difference in applied burden is most astounding; in fact, it would appear on the surface that efficiency tends to high overhead, whereas, actually, the reverse is true.

The Per Man-Hour Plan.

This plan of burden application provided that a flat rate per hour, say 97c, is added to the direct labor cost per hour. Applying the man-hour burden rate to the time of a high-priced and low-priced man for a period of eight direct hours produces the following results:—

Example "G"

Labor—8 hours at .80	$ 6.40
Burden—8 hours at .97	7.76
Total cost	$14.16

Example "H"

Labor—8 hours at .50	$ 4.00
Burden—8 hours at .97	7.76
Total cost	$11.76

It will be observed that the "man-hour" plan of burden application, which involves charging for the ust of the factory's equipment and its maintenance, on a basis of the time during which these facilities were in use, is basically sound. It precludes the possibility—as in the "per M of material" plan—of placing an exorbitant burden against those types of work of which the bulk of final cost is material, or an inadequate burden charge on those classes of product that consist largely of labor. Neither will this method—as does the "percentage of labor" plan—saddle on the high-priced, efficient workmen an excessive amount of burden and permit less skillful workmen and novices to absorb only a small burden, when, by reason of the additional supervision that they require and the spoilages that they are responsible for (which offset the small saving in the supplies factor of burden), they, by every law of logic and expediency, should absorb the same factory burden rate as the efficient workmen.

The foregoing discussions do not contemplate any refinement of the several plans mentioned, but in justice to these methods it must be stated that they are sometimes developed to a higher plane. For instance, the burden rates used in the examples consider only one rate for the entire product. Quite frequently a line of demarcation is drawn between the burden as applied to lumber, machine labor and bench labor and for the disposition or sale of the product. These refinements tend to create a somewhat better balanced procedure but they will not dispose of the irregularities already pointed out.

The M. C. I. B. Plan.

This plan will be recognized as embracing the merits of all the previous methods without, however, maintaining their discrepancies.

Every woodworker engages, to a certain extent, in what may be termed a jobbing business; i.e., he sells some commodities that for one reason or another are not produced in his own plant; viz., glass, stock doors and sash, roofing, sash cord, pulleys, weights, screen wire and frequently all veneered doors, except, perhaps, those that cannot be obtained from other sources within a reasonable time. Hence, it is absolutely necessary to provide a burden rate for disposing of items of this nature and, with this end in view, the M. C. I. B. plan makes a clear distinction between the actual manufacturing and the disposing or selling units. In other words, the factory cost, or the cost of all items in their manufactured state is determined first and the charge for warehousing, packing, delivery, selling and administrative expenses is then added as a percentage burden of the factory cost, the addition of the two costs producing total cost.

This plan takes cognizance also of the fact that lumber before entry to the factory proper is subject to burdens that bear no relation—from a cost aspect—to the operation of the factory itself, for which reason lumber yard and kiln costs are diffused only over the material handled through these units. Those expenses relating solely to factory production are segregated as to machine and bench operatives, so that the direct machine and bench men may be burdened at a rate reflecting their respective proportion of the factory burden.

A distinction between machine burden and bench burden is clearly necessary when it is borne in mind that the machine men consume a much heavier portion of investment in the form of the machine equipment itself, repairs, power and supplies, than do the benchmen. Both classes, of course, are subject to one broad, general burden for floor space, heat, light, supervision, etc., and this element is distributed equally to each class of workmen.

Summarizing the unit burdens as they exist in this plan, there are then five basic rates, to wit:—

1. Lumber—yardage and handling burden, which is expressed as a flat rate per thousand gross board feet.
2. Lumber—kiln burden, which is expressed as a flat rate per thousand gross board feet.
3. Machine burden, which is expressed as a flat rate per man-hour.
4. Bench burden, which is expressed as a flat rate per man-hour.
5. Commercial burden, which is expressed as a percentage of the factory or manufactured cost.

Burden Compilation.

There are those who argue that a commercial burden is unnecessary and that by reason of its being applied as a percentage of the factory cost it produces results not in keeping with the burden actually expended through the commercial expense units. However, actual analysis of the operations of more than one hundred and fifty concerns, reveal the fact that the traffic in commodities not produced in the mills of those companies, aggregates quite a healthy figure and, therefore, there remains no alternative but to set up a commercial burden. Moreover, the percentage plan for commercial burden is not contrary to the burden that actually occurs for this portion of a mill enterprise. A mahogany job should be burdened with a greater amount of commercial expense than the same job in yellow pine, for the reason that the use of mahogany requires additional expenditures for insurance and taxes; the interest on borrowed money would

be proportionately higher and the amount of interest for vested capital would increase also. There are a number of other items coming under the head of commercial expense, such as bad accounts, errors not chargeable to the factory, executive salaries, and so on, which likewise would increase in proportion to the material value.

It must be remembered, of course, that a certain mean average cannot be dispensed with under any system of cost accounting and, while this condition cannot be entirely eliminated, it can be minimized and will be, through the employment of this plan. A recalculation of the earlier examples presented herein will furnish conclusive proof of the superiority of this method; and regardless of whether or not a mill operator engages the staff of the Millwork Cost Information Bureau for devising his cost system, he should, nevertheless, accept its burden plan as reflective of the best that is otainable.

Without any attempt at technical elaboration, this subject may be briefly depicted by means of the following statement of costs. These figures are taken from an actual cost audit and have been revised only so far as to eliminate odd numbers, thus making the process of burden compilation readily discernible. Each of the burden units; i.e., items five, six, seven, eight and nine, include its proper share of interest on investment for land, buildings, equipment and average stock; taxes on the same items; depreciation on buildings and equipment and insurance on buildings, equipment and average stock, and, of course, also the supplies, repair and labor expenses peculiar to each unit.

Cost Statement—12 Months

Direct Material		
1. Lumber (1,000,000 board feet)		$ 50,000.00
2. Glass, veneers, screen wire, pulleys, weights, cord, stock millwork, etc.		14,000.00
Direct Labor		
3. Machine labor (26,000 hours)		18,000.00
4. Bench labor (40,000 hours)		26,000.00
Direct cost		$108,000.00
Yard and Factory Burden		
5. Yard expense (1,000,000 bd. ft.	$ 6,000.00	
6. Kiln expense (500,000 bd. ft.)	4,000.00	
7. Machine expense (26,000 hours)	13,000.00	
8. Bench expense (40,000 hours)	12,000.00	35,000.00
Factory cost		$143,000.00
Commercial Burden		
9. Warehouse, delivery, selling and administrative expense		$ 28,600.00
Total cost		$171,600.00

The respective burden rates would be calculated in this fashion:—

Lumber—yardage and handling burden—Item No. 5, yard expense $6,000.00 divided by 1,000,000 board feet handled equals $6.00 per M.B.M. burden rate.

Lumber—kiln burden—Item No. 6, kiln expense $4,000.00 divided by 500,000 board feet dried, equals $8.00 per M.B.M. burden rate. This rate is in addition to the $6.00 per M.B.M. rate for yardage and handling.

Machine burden—Item No. 7, machine expense $13,000.00 divided by 26,000 hours, equals 50c per hour burden rate.

Bench burden—Item No. 8, bench expense $12,000.00 divided by 40,00 hours, equals 30c per hour burden rate.

Commercial burden—Item No. 9, commercial expense $28,600.00 divided by factory cost $143,000.00, equals 20 per cent. burden rate.

Application of the Burdens.

Under the M. C. I. B. cost plan, the burden application to a cost record of 6 yellow pine stair newels, using the foregoing rates, would be:—

Example "I"

Material		
Delivered purchase price 1" B & B yel, pine	$90.00	
Yardage and handling burden	6.00	
70 board feet BM (including waste) at	96.00	6.72
Machine		
Labor, 3 hours	2.00	
Burden, 3 hours, at .50	1.50	3.50
Bench		
Labor, 28 hours	20.10	
Burden, 28 hours, at .30	8.40	28.50
Factory cost		38.72
Commercial burden 20%		7.74
Total cost		$46.46

If the item in question involved the sale of a veneered door purchased from another plant, or perhaps some such commodity as a light of art glass—the assumption being of course that neither of these articles would be produced in the plant under consideration—then the cost of calculation would confine itself simply to taking the delivered purchase price and adding thereto commercial burden, viz.:—

Delivered purchase price	$30.00
Commercial burden 20%	6.00
Total cost	$36.00

If your present burden procedure is along the lines of either the first, second or third plans, you had best revise to the latter method. The others are too unsound, ineffective and perilous to be tolerated in an industry that, aside from its cost problem, involves probably an over-abundance of still other difficulties.

The Match as a Deadly Toy

The use of matches as a plaything is a very dangerous habit. In the province of Ontario during the year 1919, one fire in every eight originated through children playing with matches; and they thus wantonly destroyed more than $361,000 worth of valuable property, besides sacrificing several innocent lives. Even in the hands of careless men and women many fires are caused by thoughtlessly throwing a match in a waste paper basket, or pile of rubbish, before it is quenched. A good plan is to break the stick in two and then you will be sure that there is no fire in it.

We All Make Mistakes

In the rush of putting through the big Annual Furniture Number, several errors inadvertently slipped past the watchful eye of the proof-reader. On page 122 the Canada Furniture Manufacturers' line was referred to as C. M. C. instead of C. F. M., while again on page 147 Crooks-Ditmar Co., was spelled Crooks-Dettman.

If the operator of a planer were to count the number of threads per inch on the screw which raises and lowers the table, he will find this knowledge of assistance in setting up for different thicknesses.

Would Training Improve Your Foremen?

Foremen Training Not Receiving Attention It Deserves—Are We Behind Americans In This Respect?—Qualities Desirable for Successful Leadership—Enlist Aid of Department of Education

By S. E. Saunders

In every industry there are three links in its industrial chain, and as no chain is stronger than the weakest link, the writer wishes to lay emphasis on what he considers to be the weakest link, namely, the link which binds the executive to the working force—"The foremanship link." It must be more and more realized that no matter how competent the men employed, they are not able to do thoroughly satisfactory work without the aid of effective foremanship.

The foreman's job, the development of his talents and the developing of his character so that he may become a popular and genuine leader of his help and a reliable representative of his employer, requires attention. This attention cannot come too soon if we in the woodworking industry are going to follow the lead set by other industries, for we are reminded in nearly every industrial periodical that comes to us from our friends to the South, that they have already set the pace in this direction and it is "up to us" to fall in line.

Of Vital Interest to Industry.

Why should we be so far in the rear. We have the industries and they in turn have the equipment and men to operate them. We must "be up." The time is opportune. We should be developing, not only mechanics but leaders or "foremen." How then shall this be brought about Let us consider for a moment the responsibilities and duties of a foreman. The term "foreman," as commonly used, means a man having a bossing job, one who is in direct contact with the working force, without regard to any special name that he may be known by in any certain plant. A man taking a foremanship must also take on the bossing responsibility that goes with that particular supervising position. Within the limits of that job he is both a supervisor and a manager. The extent of his responsibilities as a superviser and as a manager are, of course, determined by the organization for which he works.

A foreman in a machine shop might be responsible for the quality of the steel used on the different jobs or a foreman might be responsible for the protection of his stock; as in the case of a lumber plant, viz., the proper protection of the stock from the weather and against warping. A foreman might be responsible for the use of the necessary equipment to turn out a given product, as in the case of a foreman of a furniture factory making desks, etc., where he might be responsible for using the various woodworking machines to carry on certain operations rather than doing the work by hand. Indeed the exact duties of a foreman depend on the product of his department and the organization with whom he is connected.

Qualities Desirable in Foremen

The duties vary according to the organization in which the foreman works. Another question—How are we going to judge or measure a man so as to decide his ability or suitability to fill a position as foreman, and what is required in him, In a modern plant a foreman must possess three outstanding qualities. First he should be a thoroughly practical man, well accustomed to and trained in the technical aspects of his work. Secondly, he must know how to plan and organize the work, how to route the material through his department in a manner most conducive to efficiency and with the least loss of time. Thirdly, he must be able to handle his men.

We all know this is the day of specializing. We have the cut-off man, the rip-sawyer, the sticker hand, the shaper hand, the bandsawyer, and so on, all the way to the shipping room, but the men who can take a drawing or sketch of a piece of furniture, and the machinery and lumber required to produce it, do their own machine work, then go to the bench and put it together, are becoming very scarce indeed, and such a man should be valued very highly, provided he has the speed to be profitable. The writer contends that a man to be a capable foreman in any factory, should be able to do so; otherwise how is he sure the work is being done systematically.

Co-operation of Department of Education.

Now if our employers of labor would get together and ask the Department of Education for a qualified instructor to train foremen, they would at least be accorded an attentive hearing, and in all probability their request would be granted. The writer feels sure that there is an immense, undeveloped field in which to work, and, taking the three divisions mentioned, there, certainly, is room for a large amount of instruction to the betterment of the whole industry.

The reader may surely ask,—Where is the Department of Education going to get instructors capable of instructing or training foremen? There are practically two sources from which instructors might be secured, —industry and the schools. Under ordinary conditions an instructor drawn from the schools would be called a "teacher instructor, and a man from the industry would be called a "foreman instructor." The writer contends that in neither case do they possess the most desirable qualifications.

Trend of Development.

The instructor of a foreman training class, whether he be drawn from the school or from industry, should have had considerable practicable experience with industrial processes and operations. He should be a good teacher, be able to develop a lesson and keep men thinking, and last, but not least, he should be a "live wire." Such a man is hard to find. The man that has put in years of successful duties as a foreman or superintendent and then trained as a teacher by the Department of Education, is the only solution.

The development of vocational training in Canada is just entering its first stages, of which the training of executives and trade experts is receiving attention through the Department of Education, and it will not likely be long before a regular system will be inaugurated for the training of practical men as instructors in their various vocations.

How "Proctor" Saw Tooth Happened

Shape of Tooth Governs Power Consumption and Feed Carried—Reducing Hook and Enlarging Gullet Lessens Sawdust Resistance—How Power Bill Was Cut Down

By A. E. Proctor

There seems to be a great deal of discussion in regard to the tooth I carry on band saws, of which I am in charge. For the benefit of those interested I will give my experience of the development of this style of tooth. I have had an experimental nature all my life and have tried many things in my seventeen years' experience as a filer, many of which I have discarded. A few have been of real benefit to me, of which the tooth I am now using is one. When I first came on the job I now am on, it was a head rig, 10-foot band mill, using 16-inch, 12-gauge, 60 feet long band saws with 3-inch space teeth, travelling 10,600 feet rim travel per minute.

We had some extra hard fir logs and had quite a little trouble with bull heads or goose necks, as some filers prefer to call them, due to high speed. I explained this to the superintendent and got him to slow the mill to 8,500 feet saw travel per minute, which done away with the bull heads, but then my saws dodged the knots at that speed. So I started to let out hook, which helped the dodging and the saws ran better than they ever had before.

Then I commenced to study sawdust resistance and saw that the no-hook tooth had practically none. I commenced to enlarge my gullet and in about a month had teeth down to a depth of 1 7/16 inches. At this depth they commenced to washboard in the cut so I dropped back to 1⅜ inches, which I now have and have had for the past four years.

The sawyer told me that I sure had the right thing as the saws ran much better than with the hook tooth. After getting the long side fixed up with the no-hook tooth, I turned my attention to the short side head rig which is a 9-foot mill on which I run the old head saws, 12-gauge saws, 3-inch space tooth and are worn from 16 inches to about 12½ or 13 inches when put on the short side. This mill is run by a 250 horse-power motor, saw travel of 10,300 per minute. I had the ordinary hook tooth, (see cut No. 1), 13 inches of hook in 16-inch saw, 1⅛ inches deep.

My saws were running as good as the average hook-tooth saw, but the electrician came to me on an average of twice a week and told me that my saws were pulling too hard and that the switch kept bothering him by kicking out every time the saw was in a cut above 30 inches. I told him that the motor was not large enough for the work and that was where his trouble was as other mills of a like size had 350 horse-power motors and did not have this trouble. However, I set to work to see what I could do. I was about ten days changing from tooth like cut one to tooth like cut two. The sawyer immediately told me that the saws cut much easier and that he could carry about one-third more feed.

This ran along for about a month when the electrician came to me and asked what I had done to the saws. In turn I asked why he wanted to know. He said he was not bothered any more by the motor kicking out and that the ammeter showed about a hundred horse-power less being used. Then I told him what I had done. We never have had the motor kick out since that time and have cut much larger logs than before.

Now I will tell you why cut two tooth pulled easier than cut one tooth. No one can dispute the fact that the hook tooth will cut through the timber easier than the no-hook tooth, but you cannot get the proper dust chamber with the hook tooth, therefore, you have sawdust resistance, which consumes much more power than does the scraping cut of the no-hook tooth. Now note that sawdust is forced backwards due to hook into the pocket or gullet and must make nearly a complete turn to release itself. Therefore, it consumes considerable power to force it down and out. There is practically no pocket in cut two back of the point, therefore, no sawdust resistance and as a natural consequence, less power.

Why will tooth two take more feed than tooth one? Because with the less hook you can make a much deeper, larger gullet with no sawdust resistance, which

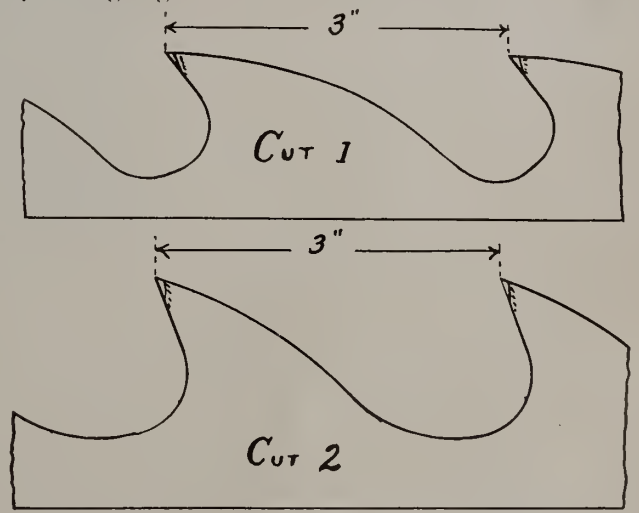


Fig. 1. Hooked tooth. Depth greater than width of gullet. Fig. 2. Less hook, more room for dust and less saw-dust resistance

will carry away a much greater quantity of sawdust per tooth than is possible with tooth like cut one. Therefore, less strain on the blade and it is natural without putting the saw out of line.

Here are a few reasons why all filers should use this style of tooth. First, it has reduced my work by half due to saws, running longer each turn. Second, they have reduced my bench work more than half by tension staying in much longer, due to less sawdust resistance making less strain on the blade. Third, increased feed and better manufactured lumber, with the use of less power and less power means less strain on the saws. Less strain means less bench work, less bench work means longer life for saws. Longer life for saws means longer life for the emery wheel, which means longer life for the filer, due to eating less emery dust, so I consider I have a wonder in the Proctor tooth. While these remarks refer to the larger band-mills the idea is applicable to the smaller saws. The saw filer in charge of the latter machines will have to do a little experimenting and work out his own salvation.—North American Filer.

Progressive Nova Scotia Organization

Piercey Supply Company Erect New Plant—Convenient Layout and Modern, Motor-Driven Equipment—Sawdust Collected and Disposed of Separately—Special Storage for Short Lengths

The new woodworking plant recently completed by the Piercey Supply Co., Limited, Halifax, N. S., is one of the most up-to-date organizations of its kind in the Maritime Provinces. Every effort was made to embody practical and labor-saving features that would tend for greater efficiency, economy and low manufacturing costs. Take, for instance, the way this business is protected against a heavy fire loss.

The fact that a woodworking factory presents many fire hazards is well known to those acquainted with this industry. In this particular instance the buildings themselves are so arranged and planned that, unless in the event of a general conflagration, it is extremely unlikely that more than one or, at the most, two buildings, would be destroyed by a purely local fire. Other precautions include firewalls, shown as double lines in the accompanying plan, sprinkler system, three centrally-located fire hydrants, a 42,000-gallon water-tower and a large reservoir containing 550,000 gallons to supplement the water supply if that should be found inadequate. In view of the above precautions, one would naturally think that this plant is amply protected.

W. D. Piercey, managing director Piercey Supply Co., Limited, Halifax, N. S.

The new plant is located on what is known as the "Cotton factory" site. The yardage facilities consist of about eight acres with four sidings, giving about three-quarters of a mile of trackage, together with storage buildings, stables, sheds, etc. The different warehouses and storage buildings have a total floor space of 150,000 feet. The main building, which houses the machine and cabinet shops, is 150x375 feet, one and two storeys, and is adequately lighted by numerous windows and a large monitor 290x23 feet, which throws light down the center of the building. The machine room in which is installed all the equipment, is heated by the hot blast system, using a Keith fan, manufactured by Sheldon's, Limited, Kitchener, Ont. The benchroom is steam-heated.

Separate Dust Collecting Systems

The usual complement of woodworking equipment, consisting of large and small machinery, is found in the manufacturing department. This is supplemented by an up-to-date filing and grinding room in which is installed the newest automatic equipment. Other departments include a glue-room and paint and finishing department.

Individual dust-collecting systems have been installed to carry off the shavings and sawdust. The shavings are used for fuel and any surplus is stored in a large fire-proof vault, having a capacity of five cars. The sawdust is run into a separate vault, from which it is taken and bagged. It has been found that the local demand for sawdust is in excess of the quantity produced. The idea of keeping the sawdust and shavings separate is in line with the practice followed in the more progressive plants.

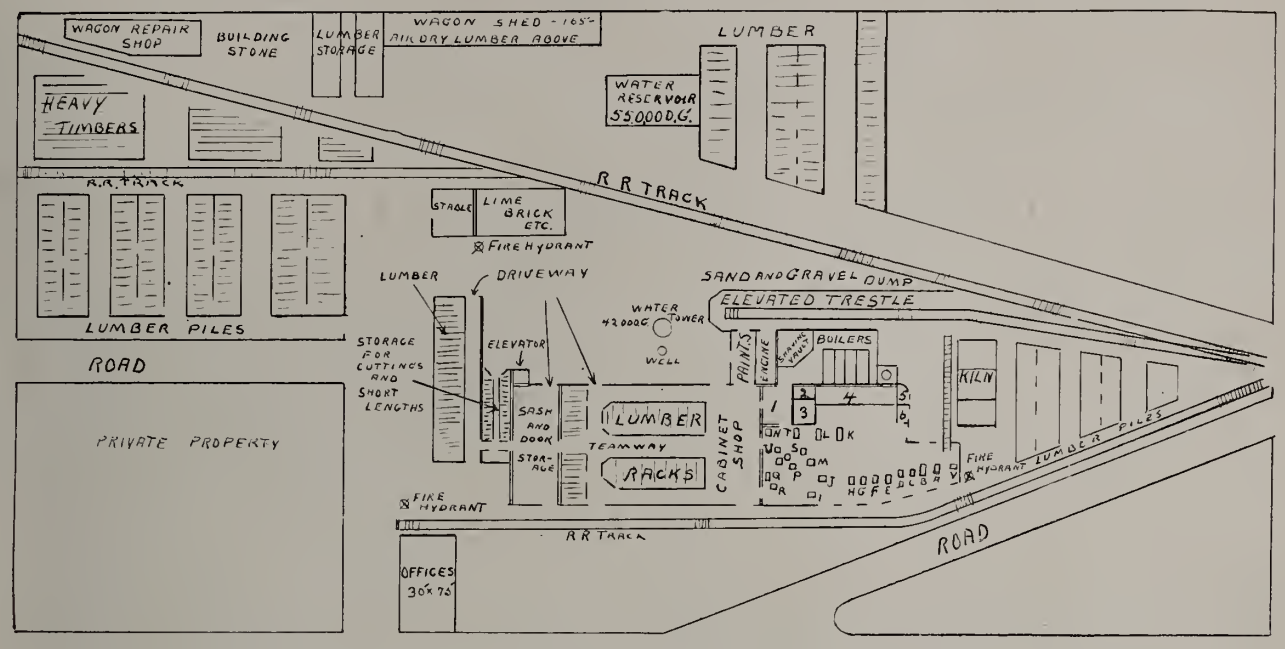
The dry kiln is of the compartment type and is constructed of hollow tile. It is connected with the factory by a track, so that the truck loads of stock may be run into the plant with a minimum of handling. The Piercey Company realize that dry lumber must be kept dry and must be stored under favorable conditions; otherwise the stock will take up moisture from the air, causing trouble and, perhaps, a certain amount of misunderstanding at a later date. To this end all kiln-dried material is stored in dry steam-heated warehouses. Under this system a customer can depend on securing thoroughly dried material. This point is featured on their letter head which bears the caption in red—"Our kiln-dried stocks are stored in steam-heated warehouses. Our customers know the results."

Short Lengths Always Available

The lumber storing buildings are fitted up with racks, which accommodate stock up to 20 feet in length. With such an installation, the stock is always in good shape and may be kept sorted as to lengths and is always get-at-able. One feature worth emulating is the warehouse for short lengths and cuttings. Here all the shorts are sorted and carefully stored away in suitable racks. A customer requiring a short piece of lumber or a few feet of moulding can readily be accommodated; in fact the stock is usually waiting for him. A special storage shed like this enables the short pieces that would otherwise accumulate, and perhaps be wasted, to be disposed of to advantage; to the profit of both the buyer and seller.

The space market "sash and door storage" is a two-storey warehouse with four floors in which is stored doors, sashes, mouldings, etc. One floor 35x120 is devoted exclusively to mouldings, while another floor of equal size contains sash and doors. An electric elevator facilitates the movement of stock in this warehouse.

This plant is fully electrically equipped, all the machines being electric-driven. The power is generated on the premises. The power plant consists of four 200 h.p. boilers, which are used for heating and power purposes. These are fed by the shavings and other refuse from the machine department. This material is conveyed direct to the furnaces by the blower system. A large generator has been installed to produce the current for the motors.



Layout of plant of Piercey Supply Co., Limited, Halifax, N. S., with list of equipment

1. Filing and Grinding Room.
2. Fan Room.
3. Glue Room.
4. Double-deck racks, sash and door stock, etc.
5. Sawdust vault.
6. Storage for binding wood.
A. Double Surfacer.
B. Planer and Matcher
C. Yates Band Rip Saw.
D. Re Saw—Yates.
E. Planer.
F. Yates Moulder No. 108.
G. Yates Moulder No. 108.
H. Buzz Planer.
I. Yates Band Rip Saw.
J. Sash Dovetailer.
K. Swing Cut-off Saw.
L. Turning Lathe.
M. Cabinet Surfacer.
N. Disc Sander.
O. Scroll Band Saw.
P. Sash Relisher.
Q. Sash Sticker.
R. Buzz Planer.
S. Boring Machine.
T. Belt Sander.
U. Chain Saw Morticer.
V. Cut-off Saw.

The personnel of this progressive company is as follows: W. D. Piercey, managing-director; F. A. Nightingale, secretary-treasurer; C. J. Piercey, superintendent; S. M. Zinck, works manager, with Arthur Kidston mechanical foreman.

Fine Cabinet Making in British Columbia

A common idea in the minds of many westerners is that fine cabinet-makers and their products are not to be obtained or found except in the East. This attitude may be due partly to the attitude of the western manufacturer, who, like the modest violet, prefers the quiet seclusion of his commercial retreat to the bustle and competitive strife of a national selling campaign. That British Columbia, at least, need not go outside its own boundaries for its fine cabinet work, show cases, and bank and office fittings, is evident after one has seen the Vancouver plant of Edward Cox, Ltd. Here are to be found examples of craftsmanship that are a credit to B. C. workmen and which, furthermore, compare favorably in price as well as quality with the eastern lines.

Particular attention is given to the finish of these articles and wherever possible native woods are used. Satin walnut, birds-eye maple, quarter cut oak and mahogany are some of the imported woods employed. The workmanship embodied in the products of this firm is in keeping with the high quality of the finished article. In store fittings, as well as in interior fittings of the house, native B. C. fir is used and panels of the same material in three and five ply enters into the manufacture of doors, counter panels and wall-cases. British Columbia cottonwood, in three-ply veneer stock, is used extensively for panels of wallcases, backs of cases and drawer bottoms. Bank, store and office fittings are manufactured of quartered oak satin walnut and mahogany.

At present the firm is engaged in manufacturing gramaphone cabinets in oak, walnut and mahogany and the finish and cabinet work on these articles compare favorably with the cabinets turned out by the phonograph manufacturers themselves. Equipment of the most modern type is used and, with the exception of the veneers, everything is machined and manufactured right in their own factory from the rough lumber to the finished product. A turning lathe, boring and sawing bench, two-wheel emery stand and a bandsaw supplied by Jackson & Cochrane are on the main floor. On the second floor are located a surfacer, a jointer, a bandsaw, a lathe, a ripsaw, crosscut saw, post boring machine, sanding drums and a shaper. Another lathe, a swing cut-off saw, the assembly and finishing rooms are located on this floor also. All glue work is heated in a specially constructed warming box of their own design. The company are making a specialty of fine wax finishes, as this finish is much in demand in all bank and office requirements.

The man who bought second-hand pulleys regardless of the size of his shafting, lost what he saved on the deal by the cost of making special bushes.

A high labor turn-over eats up a considerable amount of money for the new workman must become accustomed to the machine and operation before he can do good work.

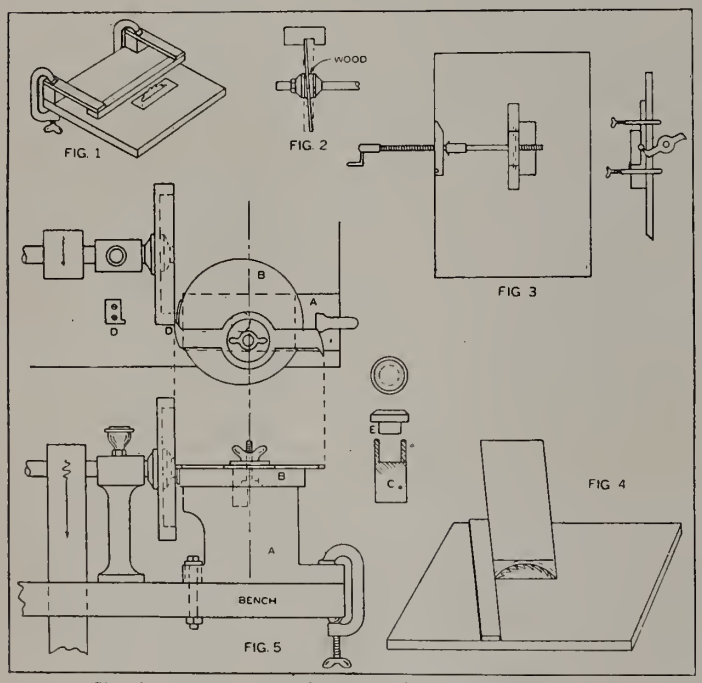
Try These Operations On Your Variety Saw

Writer Says Machine Correctly Named—Can be Used for Many Operations from Shaping Circular Panels to Cutting Threads on Wood Screws for Hand Clamps

By John W. Cake

The uses to which this machine can be put are so numerous that a study of it is usually profitable. The ordinary uses are ripping, cutting-off, mitering and dadoing, but in addition to these are many other things that can be done profitably, not as a makeshift, but in large quantities.

For ripping, cutting-off or mitering we use the ordinary guides that come as regular equipment with the machine. There is, however, another one we use a great deal, known as the overhanging guide, shown in Fig. 1. This guide is made of strips about ¾ x 4-in., braced and clamped to the table so that the work may pass under it, the edge of the guide overhanging the saw even with the outside of cut. If we have a quantity of small doors or drawer bottoms, wide drawer fronts, wide shelves or anything in that class, we make a templet or pattern the exact size and shape wanted. This templet is tacked on the piece to be cut (which has previously been gotten out a little over size), and by running the edge of the templet against the edge of guide every piece will be precisely the size and shape required, and as both ends and both edges are done at one handling, it is very efficient.



Showing how saw may be set up for different operations

Convenient Form of Guide

This guide is also convenient for irregular dadoing and making the fan-tail grooves in sink-drain boards. To do this, the only thing necessary is to lay off on the back of board the direction and distance the grooves are to run, tack a strip on the back at these lines and run strip against guide. This overhanging guide is also used to good advantage in ripping out staves for turned columns, by making a templet the exact size desired, allowing for the entasis or swell. With a smooth-cutting saw a good glue joint can be made, quicker and more satisfactorily than when the staves are run through the molder. After cutting the stave to exact size it can be grooved for spline with the wabble saw, as described farther on. When work is done this way no mistakes occur.

For grooving and tracing moldings we set the guide over the centre of cutter, and for this work we use the "Linehan" cutterheads, which are a great convenience when used on a cabinet saw arbor. For cutting in hinges on boxes or chests, these cutters cut perfectly, so that no trimming or handwork is necessary.

For dadoing grating or shelves in cabinet work the best method we have found is to make a strip the same thickness as stuff to be dadoed, by about 1-in. wide, cut dadoes in one edge of this strip exactly as wanted in the work, nail a block on cut-off guide just the size of dado and precisely over the cutter and tack this strip on edge of work, letting notches come in block on guide. One or both sides of stuff can be dadoed by this method and all shelves will line up perfectly. When grating is dadoed this way we do it in such widths as we find, afterward ripping the bars to width. It is well to make a mark in the bottom of end dado, so that when putting it together all ends come the same way, so that alignment may be perfect.

Grooving With Wabble Saw.

Not every small mill has a set of dado cutters, many depending on a wabbling saw for this work. A very clean and accurate dado may be made if the saw is in good order. For best results lay off on a board the size dado to be cut, and the size and thickness of saw used, and the angle of block will be readily found. Bore a hole in this block the size of saw arbor, cut the block with band saw on the angle so found, place one part of block on the arbor, the saw next and the other part of block next, then the collar and nut. The saw will then wabble so that the groove will be just the right size and very smooth and true. Fig. 2 shows more plainly how this is done.

Recently we had a lot of handscrews to make and did the job in the following manner: We took an inside cutter of a "Huther" dado head, ground it to fit the screw thread, and put it on the arbor in the usual way. We then turned the screw blanks in the lathe, leaving the handle 1-in. longer than necessary. In the end of this handle we bored a hole the size of the end on screw, about ½-in. deep, then bored a ⅛-in. hole through both handle end and screw end and pinned them together with a split cotterpin. We clamped a jaw with thread in it on saw table, clamped a block on table, with hole in it directly over cutter, put a crank on the old screw, and, by turning this old screw, the screw to be cut revolved in hole over the cutter and made a screw as perfect as can be cut by any method, and very quickly. Fig. 3 shows this method.

Shaping Circular Panel.

We often have circular panels to make, and these we do partly with the cabinet saw and partly on the jointer; of course, if we had a great many of same size to do, we would run them on the molder, but with a few of each radius the cabinet saw is quickest. We clamp a board on saw table, at such angle with the saw that the cut will be proper width and depth, and push the panels across the saw several times until cut

is complete. Fig. 4 shows this method. It is a little slow, but is quicker than can be done by grinding molder cutters to proper circle.

We have several sets of Huther dado cutters and find it rather hard to keep them all true to size, as we use the two outside cutters on all dado work, while some of the inside cutters are very seldom used. We designed a jig for grinding them true, which does the work very accurately and quickly. A cup-face wheel is best for the purpose, but any other may be used. Fig. 5 shows a plan and elevation of this jig. A is a hardwood block about 4-in. thick and wide enough to extend from bench to within 1-in. of centre of wheel; it can be moved to or from the wheel to accommodate any size cutter. B is a disc 1-in. thick and about ½-in. smaller than diameter of cutter to be ground. Through this disc two holes are bored, one in centre, to fit pin C, and one ½-in. hole about 1¼-in. from centre, recessed out on under side to accommodate head of bolt. On this bolt is a true concentric bushing to fit the hole in cutter.

Grinding Dado Cutters

To grind, the cutters are placed on the disc and clamped tightly with thumbnut, the throat of cutter being tight against guide D. The disc is then turned just far enough to grind one end of cutter, the thumbnut loosened and the other end of cutter brought against guide-pin. When grinding the outside cutters, each tooth must be brought against guide-pin D. C shows the centre-pin in detail section. It has a hole drilled in centre, about ½-in. In this hole is inserted plug E, with head the size of hole in cutter. After grinding the cleaner teeth of the outside cutters, we put them on the plug, set block. A back so that face of wheel is about 1/64-in. from point of cleaner teeth, and in that position revolve the saw slowly. In this way the spur teeth are struck exactly right, but we afterward file them with a hand file.

If the saw arbor is not long enough to get all the cutters on without falling into the threads, order them with hole about ⅛-in. larger than arbor, and have a set of bushings made to fit arbor and saw, and your dado cutters will always cut true if they are ground right. About five bushings will do—one each, 3/16, ¼, ⅜, ½ and ¾-in. long.—"The Woodworker," Indianapolis.

Drying Lumber with Superheated Steam

A kiln-drying process which will dry 1-inch softwood lumber green from the saw to 10 per cent. moisture content in 24 hours or less has been developed at the U. S. Forest Products Laboratory, Madison, Wisconsin. The novel feature of the process consists in forcing superheated steam at high velocity first in one direction and then in the opposite through the pile of lumber in the kiln. This treatment dries the lumber very uniformly and rapidly with a minimum of checking and warping.

The superheated steam process has been found applicable to Douglas fir, firs of all kinds, western hemlock (not eastern), white cedars (not western red), sugar pine, western yellow pine, and southern yellow pine. It is entirely unsuited for some softwoods on account of collapse.

Drying lumber by this process consumes more steam per thousand feet of lumber than ordinary kiln-drying processes, and is recommended only where economy in fuel is not essential. As it is deleterious for lumber to be exposed for more than two or three days to the temperatures used, the superheated steam kiln is not adapted to the drying of lumber in thicknesses of more than 2 or possibly 2½ inches. It should be stated, furthermore, that the treatment somewhat reduces the toughness of the lumber, so that where this quality is of prime consideration, as in airplanes and waggons, a low temperature process of drying should be used. On the other hand, the superheated steam method reduces the "working" of the board and the hygroscopicity of the wood and also "fixes" the resin and gum. The effect upon knots as compared with low temperature drying has not been fully determined, but apparently there is not much difference. A slight darkening of the sapwood occurs, increasing with the length of time of exposure, and in periods much over 24 hours the heartwood may darken also.

Owen Sound Baseball Champions

The city league championship of Owen Sound, Ont., was won by the baseball team of the North American Furniture Co., Limited. For the last few years this company have endeavored to foster a feeling of good fellowship and good sportsmanship amongst their employees and the management is gratified that their team was so successful. The idea is a good one. If employers were to take a greater interest in the sports and recreations of those in their employ, it should tend to strengthen the bond between management and labor and tend to allay the unrest that is all too prevalent.

Baseball team of the North American Furniture Co., Limited Owen Sound, Ont.

The picture shows the various members of the team and officers as follows: Back row: A. S. Muller, New York, patron; F. W. Harris, vice-president; J. A. Mincher, president; Joe Ramsay, 1st base; Geo. Foote, hon. vice-president; Edw. Irving, sec.-treas.; M. Tousley, executive; R. S. Brown, executive. Second row: J. Calcutt, c.f.; R. Flannigan, r.f.; E. Tuckwood, lf.; R. Miller, 3rd b.; W. Vance, pitcher. Front row: A. Levi, f.; L. McDonald, catcher and captain; Roy Taylor, mascot; Fred Foote, short-stop and manager; E. Jarvis, 2nd base.

A good hook on a saw tooth lessens the amount of power required to drive that blade.

High speed steel cutters are little better than carbon steel, unless they have been properly ground and tempered.

Record Attendance at Cooperage Gathering

Publicity Work and Mill Inspection Discussed—How Mold May be Overcome—Air Drying Worthy of More Attention

The fifth semi-annual gathering of the Associated Cooperage Industries of America, held recently in Cleveland, brought out a large number of coopers, the total attendance equalling, if not exceeding, the record set at the St. Louis convention last year. The reason for this gratifying showing seems to be that each member came out to hear what the others had to say about the industry in general and the probable trend of the market in particular.

One branch of the association activity that is receiving considerable attention is the Mill Inspection Service. This has for its prime object the production of a uniformly high grade of cooperage stock. Better stock means better barrels. In speaking of this phase of the work, Secretary Krafft has this to say: "It is recognized that inferior material has adversely affected the prestige of the barrel as the 'king' of all containers. It is also recognized that the fundamental requirement for the real development of the cooperage industry is better cooperage. It will, therefore, be seen that a service which makes for better material is bound to have a beneficial effect upon the industry.

Inspection Service Valuable.

"We are making every effort to perfect this service and make it as efficient as possible. In order that mill owners may be fully advised of the inspection of their mills, we will hereafter arrange to provide them with inspection report, which will show conditions as found by the inspector. In this connection it is confidently anticipated that the inevitable result of our mill inspection service will be the material lessening of the necessity for reinspections at delivery points. Since the inauguration of this service as an association activity, our inspectors have made 169 mill inspections and 86 cars have been inspected at delivery points on account of complaint or rejection."

The slack cooperage group meeting brought out about 100 members. During the past year about $40,000 has been spent on advertising, booklets, etc. This publicity work has been carried out in the face of great difficulties; in fact, the slack cooperage industry was up against a serious proposition. Barrels sold at high figures while due to a break in the cotton market, bags are away down. The publicity and trade extension work should be pushed aggressively.

At the tight coopers' group meeting, advertising was the chief topic for discussion. The publicity work of the past year was outlined and plans made for extending the campaign during the coming season. The tight coopers had experienced a good year but were awaiting with interest the decision on the manufacture of cider. Cider manufacturers are large buyers of tight stock.

Air Drying Staves.

Secretary Krafft read suggestions offered by the inspection department on the construction of stave sheds and the method of piling. The suggestions follow:—

Our inspectors have directed attention to the lack of uniformity in the construction of stave sheds and the manner of piling staves for drying. In many instances they find staves piled without any regard to the necessity of securing adequate ventilation, and while it is, of course, understood that the presence of mildew and mold is largely due to atmospheric conditions, experience has shown that proper ventilation will, to a large degree, minimize this "bugbear" of slack stave manufacturers.

In the first place it is obviously necessary that stave sheds be properly constructed. It is suggested that sheds be built as near north-and-south as possible in order to secure the benefit of a maximum amount of sunshine; also that the sheds not exceed 16 ft. in width. The piling of staves flush to the ground, or with but little space between the ground and the floor, or lower tier, results in insufficient ventilation at the bottom of the piles; unless the moisture from the ground can be carried away by a circulation of air it will aggravate the mildew and mold. It is therefore recommended that staves should be piled at least 20 in. from the ground, and accordingly posts should be placed in the ground just high enough to permit the truck's axles to pass, then timbers can be laid on top of the posts—not spiked, however, but so that they can be shoved aside and not hinder the movement of the trucks—or else cull blocks can be used in lieu of posts, letting pilers and boosters move these as needed. It is, of course, desirable to have the sheds constructed on as high ground as possible.

Reducing Trouble From Mold.

Another important feature of the construction of sheds that is apparently overlooked is provision for adequate ventilation through the roof or top of shed. This could easily be provided for by a cupola or vent such as is commonly seen on farm stock buildings. The rafters could go to the peak and 2 x 4 upright pieces on every rafter to hold up the top. It is found that staves are often piled too closely. It is suggested that, particularly during the moldy season, staves should be stacked not closer than 20 in to 2 ft. It is found that in many instances staves are stacked from 9 to 15 in. apart. Furthermore, for all practical purposes it is suggested that the wide staves be in the centre of the pile; this will prevent their flattening out.

During the spring of the year timber naturally contains a maximum amount of sap and it would therefore seem advisable that during the moldy season the staves be thoroughly steamed in order that as much sap as possible be driven out in the steaming process. As a matter of fact, properly steamed timber is at all times essential for the manufacture of good staves.

As stated, it is not to be understood that these suggestions will entirely prevent the accumulation of mildew and mold, and it is recognized that the construction of sheds and piling of staves in accordance with the above suggestions would be more expensive than the method generally followed. However, when it is considered that during the moldy season probably at least 25 per cent. of staves are disqualified from being graded as high-grade staves solely on account of the mildew and mold, the ultimate economy in using every precaution to minimize the mildew and mold will be clearly seen.

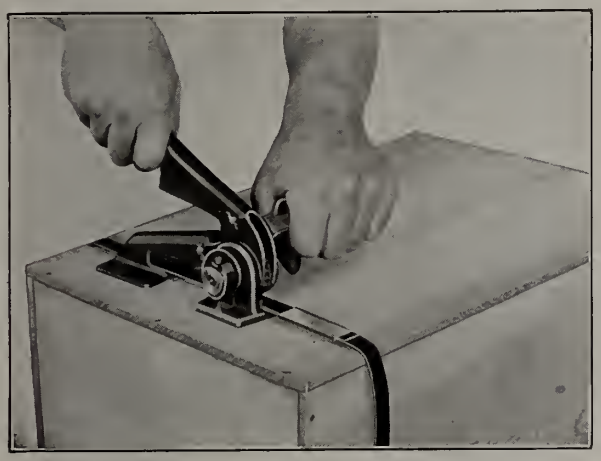
How Price of Boxes May be Reduced

Box Manufacturers Can Reduce Cost of Their Product and Render Distinct Service to Customers by Suggesting Lighter Boxes Reinforced with Tensional Binders

By R. D. Livingstone

All box manufacturers and most shippers are familiar with the use of metal straps as a means of strengthening cases and crates. Up to within comparatively recent years the accepted method was to nail a strap to each end of the box, the assumption being that maximum use was being made of the strength of the strap thus applied.

A study of box construction, however, and careful analysis of the strains to which a box is subjected



Stretching tool for tightening tensional binders

in transit, suggested that another method of applying reinforcing straps would give far greater returns for the metal and labor expended per box.

This latter form of reinforcement is commonly known as "tensional box binders" or "nail-less box strapping," and consists of encircling the cast with the metal strap (from three to five inches from ends), drawing same very tight by means of a stretching tool (Fig. 1), and interlocking the overlapping ends within a metal sleeve in such a manner that the joint has a tensile strength approximating the strap itself. This is accomplished by means of a sealing or crimping tool (Fig. 2). When tools are removed the strap remains, hugging the box under high tension, so that strains or blows are transferred to and absorbed by the steel band, and do not cause loosening of the box nails.

Effects Saving in Box Lumber.

The fact that a tensional binder can be applied to the box in from one-third to one-fifth of the time required to nail a strap on was sufficient reason to insure its immediate popularity with shippers; but by far the greatest benefit derived from its use—by the public, box manufacturers and shippers alike—is the enormous saving in box lumber effected.

Exhaustive tests have been made both by the U. S. Forest Products Laboratories at Madison, Wisconsin, and by large individual shippers, to ascertain the amount of reinforcement afforded by tensional binders, and the results of these tests are indeed remarkable. It has been shown that a given degree of box strength can be more cheaply obtained by the use of wood, nails and tensional binders than by the use of wood and nails alone. In other words, by reducing the thickness of the box shook, and adding one or more tensional binders, a stronger container can be had at a lesser cost. Such binders permit the use of boxes made of thinner lumber, because the tightened straps, set in several inches from the ends of the box, act in precisely the same manner as hoops on a barrel—the bursting strain thus being entirely removed from the nailed ends of the box.

Illustrating Saving Possible.

As a concrete example of the possibilities of nailless box strapping as a money-saver, the following quotation from an unsolicited letter to a manufacturer of this commodity is given: "We formerly used for the shipment of our products boxes with sides, tops and bottoms made from ¾-inch. lumber. Since using nailless strapping, we have found that lumber ⅜-inch thick is heavy enough."

The strapped box of ⅜-inch lumber referred to (including cost of applying strap) cost the writer of above letter 50c less than the unstrapped box he had formerly used.

An interesting laboratory test was recently made on a standard screw and bolt box containing 250 pounds of screws, packed in bulk. This box had ⅞-inch lumber throughout with 3 x ⅞-inch cleats on

Sealing or crimping tool for fastening lap

the ends to form what is known in the box-making trade as a "Style 4" box. This box (unstrapped) was dropped four times from a height of 12 inches when it failed, as shown in Figure 3.

Another box was made with sides, top and bottom of ¼ inch lumber, ends ⅞ inch and 2 x ⅞ inch cleats, known as "Style 2." This box, with same contents as

the first, reinforced with three 5/8 x .015 nailless straps, was dropped on diagonally opposite corners from a height of 12 inches, and failed on the fifty-fifth drop. Figure 4 shows this box after having withstood forty drops. The saving in this instance—including cost of applying straps—figuring lumber at $50.00 per M. base, is over 17½c per box, while the increase in strength of the ¼ in. strapped box over the 7/8 in. unstrapped box is 1375 per cent. The saving in freight on this container is over 40 per cent.

With freight rates increasing and box lumber not decreasing in cost, the attention of the box manufacturer should be focused on this subject,—not alone in the interest of lumber conservation—though this is all-important—but in the interest of his customer as well. The alert box salesman by suggesting to his prospect a lighter and cheaper container, reinforced with binders, can and frequently does, secure not only the order, but also his customer's gratitude for the service rendered.

Applicable to Green Stock.

It should, perhaps, be remarked that where green lumber is used in boxes, the reinforcing value of the binder is increased as the thickness of the shook is reduced. The reason for this is that the lighter lumber—such as 3/8 and ¼—more readily permits the sides, top and bottom being drawn in by the strap until the circumference at each strap is considerably less than the circumference at the ends of the box. This makes it impossible for the strap to come off the box, even in case of excessive lumber shrinkage.

While the purpose of this article is primarily to invite the box manufacturer's attention and study of tensional binders as a means of conserving lumber, the versatility of nailless strapping will occur to anyone giving the subject any thought. As a medium of reducing thefts in transit it probably has no equal, and this of course is an added advantage to manufacturers whose products particularly appeal to car thieves and pilferers.

Shippers who have heretofore regarded box strapping as an added and unnecessary expense, are fast recognizing the value of the nailless method as a real money saver, while in many instances railroad classification committees have granted preferential rates on containers thus reinforced.

A Pathetic Wail

Upon receipt of a collection letter, asking for cheque to cover his account, one business man replied as follows:—

Sir,—For the following reasons I am unable to send you the cheque asked for:

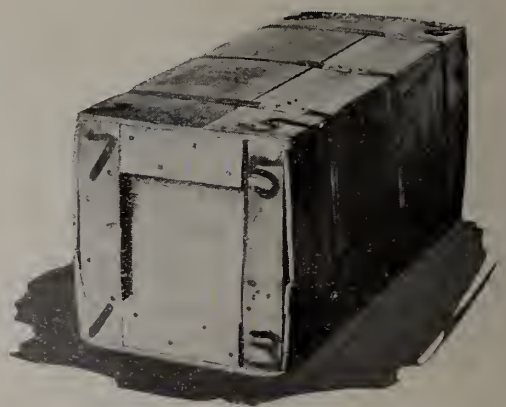
I have been held up, held down, sandbagged, walked on, sat on, flattened out and squeezed, first by the Canadian Government for Federal War Tax, Excess Profits Tax, Merchants License and Auto Tax, Victory Loan Bonds, Thrift, Capital Stock Tax, and every society and organization that the inventive mind of man can invent to extract what I may or may not possess.

From the Society of John the Baptist, the G. W. V., the Women's Relief, the Navy League, the Red Cross, the Purple Cross, the Black Cross, the Double Cross, the Children's Home, the Dorcas Society, the Y. M. C. A., the Y. W. C. A., the Boy Scouts, the Jewish Relief, the Belgian Relief, and every hospital in town.

The Government has so governed my business that I don't know who owns it. I am inspected, suspected, examined, re-examined, informed, required and commanded, so I don't know who I am, where I am, and why I am here, all I know is I am supposed to be an inexhaustible supply of money for every known need of the human race, and because I will not sell all I have and go out and beg, borrow or steal money to give away, I have been cussed, discussed, boycotted, talked to, talked about, held up, robbed and nearly ruined, and the only reason I am clinging to life is to see what in Hell is coming next.

Much of the waste found around woodworking plants can be converted into toys, but it requires special machines and special attachments to work this material up with a minimum of labor so that a fair margin of profit may be made.

Showing failure under test after being dropped four times



Box reinforced with nailless strapping after forty-fourth fall

Standardization of Canned Foods Cases

Address by Don. L. Quinn, Research Department, Chicago Mill & Lumber Co., Chicago, Ill., Delivered at the Annual Convention of the Iowa-Nebraska Canners' Association, Cedar Rapids, Iowa, November, 1920

The National Association of Box Manufacturers to whom your invitation was issued, wishes to express its appreciation of this opportunity of telling you something of its efforts to secure standards of construction for wooden boxes, especially as they apply to standardized cases for carrying canned goods.

The management asked me to deliver this message to you. They selected me, no doubt, because I have been identified with all the tests and the studies, and because I have participated in all the negotiations on these standard specifications since the project started.

Don. L. Quinn, Chicago, Ill.

First of all, I desire to refer to the National Association of Box Manufacturers and tell you why it has been so active in this work. This association is national in its scope and includes in its membership practically all the leading manufacturers of wooden boxes. Many of its members manufacture other types or kinds of packages, such as solid fibre, corrugated, wirebound, hinge-corner, etc., but the association itself confines its activities to the wooden box interests.

It is the largest, as well as the oldest, among the box associations, and has ever been a strong influence for progress in the industry. It believes, as a fundamental principle, that standardization of packing boxes, when based on scientific research studies, will not only stabilize the business of its members, but will result in both cheaper and better boxes for their customers.

The Forest Service of the Federal Government is authority for the statement that we are using up our timber resources at least four times as fast as they are being reproduced. This situation calls for new and more effective conservation measures. About six billion feet of lumber (nearly 15 per cent. of the total annual cut) goes into boxes and crates.

Those of us who are familiar with the economies which have resulted from redesigning boxes along scientific lines—this includes the leading box manufacturers of the country, leading engineers in Forest Products, as well as many of the packing experts in industrial plants—believe, as a result of what has already been accomplished, that at least 25 per cent. of the material now used in boxes and crates can be censored without any loss of efficiency in the packages themselves.

If this estimate be correct, then at least 4 per cent. of the annual cut of lumber, or nearly one and one-half billion feet, is wasted. This one and one-half billion feet, made up in boxes or crates, costs the ultimate buyer, at the present average price, more than 125 million dollars annually. To this waste we can justly add the many millions of dollars paid in loss and damage claims due to insecure packing-boxes failing to carry their loads safely to destination. The National Association of Box Manufacturers believe that in the elimination of this enormous waste there lies an opportunity for it to render a service that cannot be performed so well by any other organization, and that it is a true conservation measure.

Canned foods cases received its earliest and continued attention because such cases were not giving the service in transportation interests, who, because of lack of knowledge, threatened unknowingly, of course, to saddle onto the industry enormous increases in costs, without those compensating advantages which any such increases should always carry. The National Association of Box Manufacturers has looked after the interest of those canners who wish to continue using wooden cases, and in guarding the interests of the customer, it has also guarded that of its members, as the following recital of its activities will show.

In February, 1914, a conference was held in Baltimore, Md., between committee of the National Canners' Association, the National Wholesale Canners' Association and the Transportation Companies, together with some individual box manufacturers, regarding better boxes for carrying canned foods. Specifications calling for 5/8" ends, and 3/8" sides, top and bottom were tentatively agreed upon.

These tentative standards were opposed by the National Association of Box Manufacturers, because it believed the standards so provided would not, in themselves, give the transportation companies the measure of service they were expecting and had a right to expect; that they did not combine practicability and economy to the best advantage, hence would conserve neither the best interest of the box manufacturers nor of the canner. The box manufacturers promised, however, if given time, to have a thorough and comprehensive study of canned food case construction made in the United States Forest Products Laboratory at Madison, and as a result of that study present specifications which would combine practicability, serviceability and economy in their

proper balance. Thereupon began a series of tests in the laboratory, and studies in the field, followed by the promulgation of tentative standards somewhat similar to those finally adopted. Next came conference and negotiations between box makers, canners, box associations, the canners' association, the wholesale grocers' association, transportation interests, and the like, extending during the war to the War Department and the Food Administration. This work has continued even to the present time. Out of it all has come almost a unanimous agreement on every detail of the specifications, for it was demonstrated over and over again, that boxes, made according to those specifications, have the proper measure of serviceability; are practical to manufacture everywhere; and are, on an average, more economical than those now in common use.

In 1915 a joint committee representing the National Canners' Association, the National Wholesale Grocers' Association, and the National Association of Box Manufacturers, after many conferences, reached an agreement on standard specifications for cases to carry No. 2, No. 2½, and No. 3 cans, which specifications were officially adopted by each of the three associations at their next annual conventions. Early in 1916, the three associations jointly petitioned the various railroad classification committees, to incorporate these standards in the railroad classifications, but, because these standards covered only the cases for No. 2, No. 2½ and No. 3 cans, and not all foods, the railroads declined to act.

During the World War, the United States Food Administration and the Quartermaster Corps of the War Department applied these specifications, which, by the way, had by then been extended to cover all canned foods, to boxes for carrying subsistence stores in both domestic and export shipping. In that severe service, their entire practicability was demonstrated. Those of us who were in the midst of the packing problems during the war, know that if it had not been for those tests, studies and resulting specifications, and the fact that the box manufacturers were standing guard, both the Food Administration, and the War Department would have demanded stronger, heavier and more expensive cases than were used, and no better service would have resulted.

Following the war, the United States Railroad Administration appointed a committee of railroad men to study ways and means of reducing the rapidly mounting loss and damage claims. Among its activities, it drafted standard specifications for canned foods cases, which it docketed for a hearing before the Consolidated Classification Committee. This hearing was held in May, 1920. These specifications were drawn up without regard for the valuable knowledge and information gained during the past five or six years, and, as was to be expected, drew the fire of everyone interested. The specifications could not withstand the volley of criticisms aimed at them, so were withdrawn.

The National Association of Box Manufacturers then filed with the Consolidated Classification Committee, revised specifications for canned foods cases, which would apply to all cases carrying canned foods, instead of No. 2, No. 2½ and No. 3 cans only, and advocated their adoption. These new specifications combine the best that resulted from the laboratory studies, the many years of experience of practical box men, and the tests of actual service in carrying war stores. It is our understanding that these new specifications will be redocketed for an early hearing before the Consolidated Classification Committee, and we are quite confident they will be adopted.

Will Building Activities Start in Spring?

Well Known Builder Outlines His Views— Lower Costs Not Anticipated

The public is not going to buy houses one whit cheaper in the spring, and building activity will recommence with a bang, according to S. B. Green, who points out the incalculable harm the present rumors of lower prices in the spring are going to have in further accentuating the number of people who will be living in cramped and unhappy conditions. "I offer my opinion as a builder in Toronto who completes from 30 to 60 houses a year and who is acquainted with building in general throughout Canada and the United States," said Mr. Green. The rumor that there is no money for loans is absolutely false, he declares. "There is more private money for acceptable loans on houses now than at any time in the past year, with conditions getting brighter."

Mr. Green believes that he can say with absolute safety that there will be no drop in the wages of skilled business mechanics, and that the prices of building materials show no trace of a revision downwards. On the contrary, he feels that in many items there may be a slight rise very soon. "I frankly admit that, in some retail lumber yards spruce and jack pine can be bought for practically wholesale prices. What we have seen lately in the clothing market, is true of many local lumber yards. They are overstocked, and are forced, because of the temporary absence of building, to turn their stock into money. But I submit that 'he who runs can read the signs.' No merchant can buy and sell at the same price. Their overhead must be met, and there must be a profit. Prices will advance the moment their stock has reached the point where buying is necessary. Doors and sashes and various kinds of mill work are also slightly lower now because mill owners find it necessary to keep their mills going and retain their better men, even if, for the present, the cost equals the selling price.

As a result of this waiting policy there will be a greater shortage in all kinds of building materials and houses, says Mr. Green. "As to brick, especially the finer grades, there is not one per cent. of a decline and none in sight, because the labor used here is specialized to a degree. The price of coal which is one of the biggest factors in the manufacture of brick to-day, also shows no trace of becoming cheaper. Cement, lime, and sand, too, show no decrease. Heating, both hot air and hot water, instead of showing any decline, continue to advance."

The average home builder would far rather borrow his money from loan companies than from governmental housing commissions, says Mr. Green, because of the delays and restrictions that are always connected with governmental departments. "It has been my experience, that, no matter how tight the money markets, there are some good sources never closed, and never more than 7 per cent."

The workman is defended by this big builder against the common attacks from people who do not employ him. "He is turning out just as honest a day's work as he ever did, quality and quantity jointly considered."

Machinery & Equipment

New Electric Ball Bearing Moulder

To satisfy the growing demand for a real, high-powered, flexible, heavy duty moulder of greatest production capacity, the Mattison Machine Works, Rockford, Illinois, U. S. A., have developed a completely motor-driven machine. It was designed and built from the ground up to overcome the limitations of the belt-driven sticker.

One of the main features of this new machine is its complete electric drive. Individual, built-in motors drive the ball-bearing spindles which carry the cutter-heads. The feedworks are also driven by an individual motor.

As the illustration shows, this moulder is of heavy, rigid construction throughout; yet it is very easily accessible for quick setups. The side heads are adjustable vertically, as well as in and out, and may be tilted to forty-five degrees. This, together with many other improved features, provides a flexibility which constitutes a very desirable feature in any moulder. Circulars and full information may be secured by writing the makers, the Mattison Machine Works, Rockford, Ill.

Ball Bearing Shaper Collars

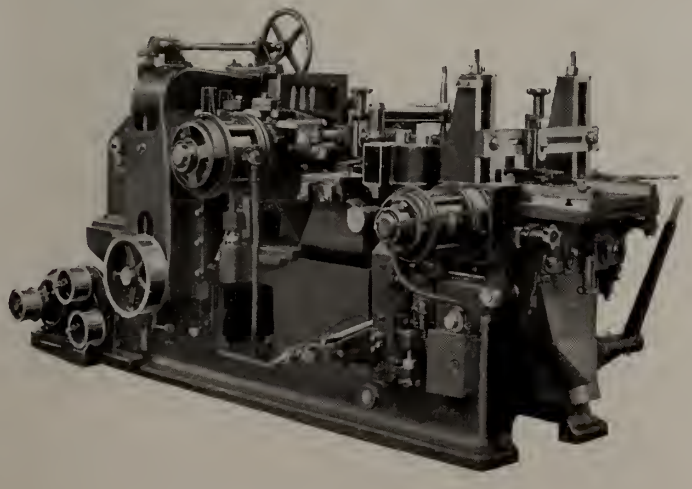
An attachment for shapers that should be found very handy in any woodworking plant, is the ball bearing shaper guide collar, which is being placed on the market by the Woodworkers' Tool Works, Chicago, Ill. This ball bearing guide collar is designed to eliminate the friction set up by the stock being held against the ordinary type of solid collar. It tends to save the patterns, increasing the capacity of the machine, reduce spoilage and helps cut down the power bill. In operation the cutter shell is free from the slotted collar proper and ceases to revolve when the pattern or stock touches it. This type of guide collar has this advantage over any form of stationary guide, and that is that it rolls with the work and, therefore, does not interfere with the free movement of the work past the cutter. The ball bearing type may be had with either grooved or solid ball-bearing collars. Full particulars may be had from the Woodworkers' Tool Works, Department A, Chicago, Ill.

Close Joint Drum Sander

A new close-joint sanding drum is shown in the accompanying illustration. In this machine a very close joint is possible. This results in greater service being secured from the sand-paper as the tendency to

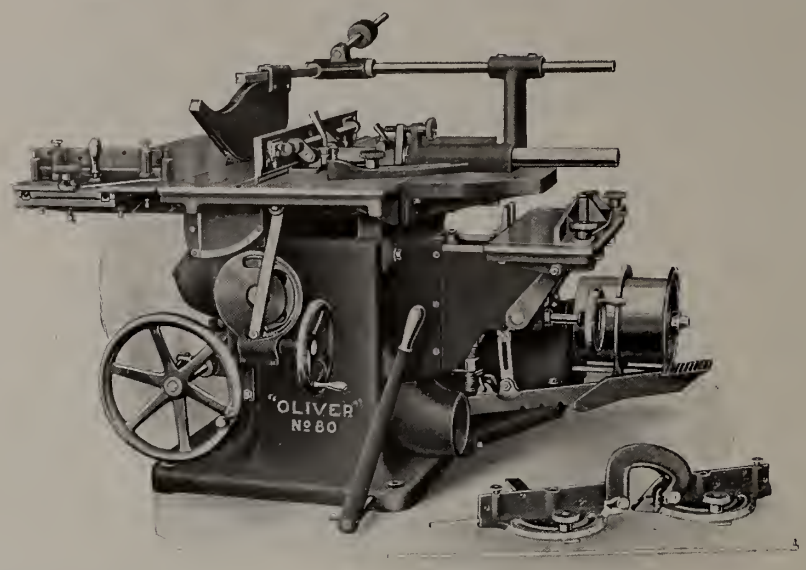
Note close joint where paper meets

slip or break away at the joint is eliminated. The paper and carpet are fastened in a very simple manner and the sand-paper can be changed in five minutes. The drum is constructed from a single casting and turned to a perfect running balance. Owing to the method of attaching the sand-paper, it is stretched tightly, insuring a smooth, even-running drum. A glance at the illustration will show how close a joint it



Mattison ball-bearing electric moulder

Efficient ball-bearing shaper guide collar

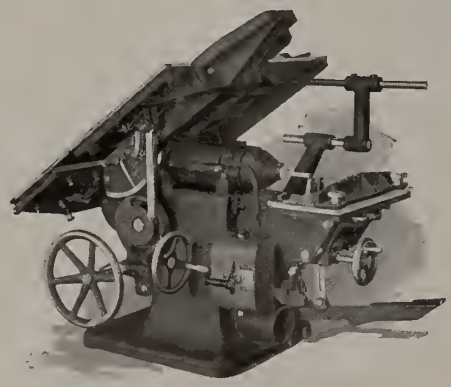


The New "Oliver No. 80"

is possible to make on this machine. Circulars and full particulars may be had from the Wm. Loeffler Machine Co., Sheboygan, Wis.

Efficient, New Type Variety Saw

The accompanying illustrations show two views of the new No. 80 Oliver variety saw, which is being placed on the market by the Oliver Machinery Co. of Grand Rapids, Mich. This machine is designed for



Oliver No. 80, showing built-in motor

either belt or motor drive. When equipped for electric drive, two installations are applicable. Where a two or three-phase, 60 cycle alternating current is obtainable, a compact motor on arbor can be installed by mounting the motor directly on the saw arbor in place of the ordinary pulley. The other installation consists of mounting a 5 h.p. motor on a sub-base bolted securely to the frame of the machine. When the mounted-on motor is used, the rotor of the saw-arbor and the rotor of the motor are one and the same. The rotor is mounted in ball bearings so that practically all the power is transmitted to the cutting edge of the saw. In the belt-drive machine a roller bearing countershaft is supplied, thus reducing the power consumption to a minimum. The saw-table is 36x44 and tilts to 45 degrees to the left. It has a vertical adjustment and may be had either plain or universal. The universal type is shown in the accompanying illustrations. One part of this table, 15″ wide, is called the "rolling section." This is located at the left of the saw and rolls on ball-bearing ways which have a vertical adjustment for alignment and wear. The table may be moved several inches from the saw, permitting the use of a dado or special cutter-heads. This machine will rip up 23″ wide and as a cut-off saw, has a capacity of 32″ wide. A mortiser and boring attachment can also be secured, which would bore holes 6″ deep and up to 2″ in diameter and mortise holes ¾″ square and 4″ deep. This variety saw is designed and built strictly up to the most modern demands of the woodworking industry and is adaptable to a wide variety of uses and operations. A circular and full particulars may be secured from the Oliver Machinery Co., Grand Rapids, Mich.

Maintaining Authority of Foreman

The decisions of the foreman must be upheld by the management, or failure to command respect will result. If the management appreciates the importance of the duties, both official and unofficial, which are attached to the appointment of a foreman, it will take pains to observe the men, their methods and habits, and will not appoint a man foreman unless they have every factor carefully weighed, as a bad Having decided on their man, the factory heads must Havin gdecided on their man, the factory heads must place no restrictions on him within his appointed field and must be prepared to give his authority all the backing wtihin their power. In this way only can success be achieved by the man of their choice.—"Ways and Means."

The big increase in wages make poor belts a very doubtful proposition.

The electric motor when coupled direct to the spindle saves the belt.

Why waste a lot of labor screwing in screws when they can be driven automatically, with a big increase in production ?

Upholstering and Trimming

Upholstered Furniture Men Meet

Enthusiastic Gathering at West Baden—Conditions in Industry Discussed—Manufacturing Costs Do Not Warrant Price Reductions

The twenty-second general meeting of the National Association of Upholstered Furniture Manufacturers was recently held at West Baden, Ind. About fifty members were in attendance.

The president, A. D. Gorrell, in his address, dwelt on the necessity of sane price reductions, based on lowered manufacturing costs, as radical reductions were bound to have an adverse effect on the whole industry. He said, in part: "When prices of raw material have been reduced to a point where the increased overhead does not absorb them, it is only right that prices should come down in proportion. No one expects that the present price scale is permanent, yet we want to warn against radical reductions at this time when manufacturing costs absolutely forbid them. We know of some small manufacturers who are actually offering goods below cost, and we want to warn them that this proceedure will put them out of business in the end."

The general opinion of those present was that prices should remain at about the present level until there are real reductions in coverings and other similar materials.

D. D. Fennell, director of industrial relations, touched on the work of his department. The members showed a lively interest in this particular field and plied Mr. Fennell with questions. This questioning brought out the fact that according to the best information available, only a little in excess of 40 per cent. of the men previously employed are now at work in the upholstering industry. If all of the upholstery factories were to use their present equipment to capacity, there would be an over-production to-day of at least 25 per cent. Practically 100 per cent. of the membership in the Upholsterers' Association have open shops. The forty-eight hour week has been determined upon as ideal by the association, although the character of the work is such that a fifty-five hour week would not develop harmful fatigue. The last demand made by the mattress makers in New York City was for a forty-hour week, $65 minimum weekly wage and fifty-two continuous weeks, paying straight time for holidays—if they did not work—and if they did, double time, and double time for overtime. These demands were rejected by the manufacturers.

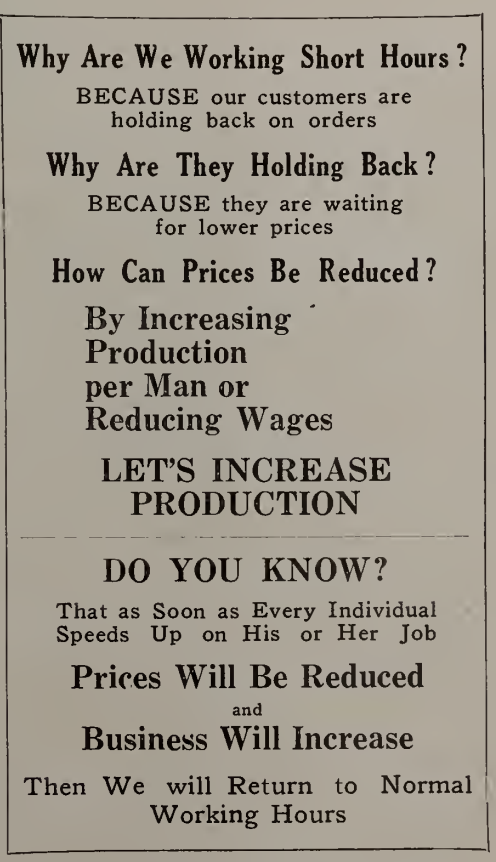
The cancellation of orders was cussed and discussed the question being tackled from every angle. It was decided that some form of uniform contract or order form that would bind the manufacturer to make delivery of the goods at a stated time and at a fixed price while the retailer would be bound over to accept the goods, should be adopted. A contract of this kind would not be subject to cancellation unless mutually agreed upon by both parties. The executive committee were empowered to draw up such a form.

The advisability of guaranteeing prices against a decline was also discussed. No decision was reached on this subject, it being left to the initiative of each individual. In all probability many of those present will guarantee that there will be no reductions in their lines until July 1, 1921, if at all.

Frank J. Seng, of The Seng Company, Chicago, gave a brief talk. He touched on industrial relations in his plant as follows: "When the slump in demand came, we were forced to cut hours to labor and to let some men go. We tried, first, cutting to thirty hours per week and keeping a rather full force on the job, but we lost many of our good men who could not make a living on such hours, so we weeded men out who we could get along without, and went up to a forty-hour week. We are constantly striving for greater production per man to bring down manufacturing costs.

Our superintendent is a very efficient man, and he has used our shop paper, formen's talks and every other means available to show our men that it is very necessary to produce more if they expect to better their own positions. He recently made up a set of four large cards which contain very pointed remarks as to production, and these are placed in conspicuous places throughout the plant."

The logic of the appeal made through these posters is indisputable. The demand is for lower prices. At the present moment the buying public seem content to sit back and wait for satisfactory reductions. Prices can be lowered by increased production on the part of the workmen in our factories. Failing such increases wages must come down. This will be brought about by unemployment. due to the curtailed demand. Even when the present slack period has passed greater efficiency must rule for keener competition will prevail.


Why Are We Working Short Hours?
BECAUSE our customers are holding back on orders
Why Are They Holding Back?
BECAUSE they are waiting for lower prices
How Can Prices Be Reduced?
By Increasing Production per Man or Reducing Wages
LET'S INCREASE PRODUCTION
DO YOU KNOW?
That as Soon as Every Individual Speeds Up on His or Her Job
Prices Will Be Reduced
and
Business Will Increase
Then We will Return to Normal Working Hours

Reproduction of poster used in Seng plant. Original size 14" x 22"

How to Secure Industrial Stability

Too Much Attention Given to Industrial Unrest and Its Causes—Not Enough to Industrial Stability and How It May be Brought About

D. D. Fennell*

I have taken the subject, "Industrial Stability," because I have with other men in industry been engaged in an attempt to solve some of the problems in industry to-day on the negative side more or less abstractly instead of on the positive side, concretely. We have discussed "industrial unrest" continuously; we have gone the limit in an endeavor to determine the "why" of the high cost of living, and have variously dealt negatively with the most profound subject of the day. What we shall concern ourselves with chiefly at this time is the development of a positive constructive attitude toward securing a measure of industrial stability.

There have been presented to industry all manner of remedies for the ills that are affecting us. Big men with large vision and large plans have become impatient of the disheartening obstacles that continually arise to nullify their best endeavors. It is hard for the man devoting his time to labor matters, as I have been doing for a great many years, not to become impatient. It seems sometimes as though we stood before a great stone wall and could not pass it, could not get through it. As soon as we find a remedy that is applicable to a given situation, we try it some place else and it does not apply. A shop committee is effective in some places because of the personality of the management, but in other places it is ineffective. So with all the various management systems. Some of our leaders in industry are inclined to become discouraged at the slowness with which adjustments are taking place and seem unwilling to take the time and pay the price of working this thing out through thought, purpose and sheer patriotic consideration for industry.

I am inclined to believe that Roger Babson's hope that we might be able to find "God's plan" to obtain industrial stability, as expressed at the recent conference at Wellesley Hills, Mass., was the appeal of a discouraged man so concerned with labor problems that he would find some superhuman means of arriving at a solution of our problems. Such efforts and such conclusions will surely get us nowhere. A committee which endeavored to determine for the conference what "God's plan" might be, finally adopted the "Golden Rule" as approximating its conception of what God's plan might be. In adopting this plan the conference went around in a complete circle, ended where they started, viz., with the plan that every farseeing employer anad every earnest employee is using for a basis and a premise in arriving at right conclusions.

God gave to every man a mind, a conscience, a soul and a heart and with these he said, "Go forth and accomplish." Babson indicates the attitude of many leaders who, in the face of present conditions, have not the patience, the perseverance nor the resourcefulness to think with a clear head, exercise the obligations of leadership with a warm heart and a just purpose, utilize the ingenuity of every phase of engineering science that some time we may secure a reasonable measure of industrial regularity.

Parker points out that conservative biologists estimate that man is about 500,000 years old. It took 350,000 years for man to develop enough mentality and enough inventive genius to sharpen one side of a flint stone and make a knife of it. It was, perhaps, 75,000 years ago that he learned how to handle fire and become the master of fire so as to utilize it for his daily welfare. It was, at least, 10,000 years ago that man entered Europe, and he has not changed very much in his psychology since that time. Between 1760 and 1800, more progress was made by mankind than in the preceding 500,000 years, because over night the whole scope of man's life was changed, and possibly this was done by three men, Arkwright, Compton and Watt, who, through their inventive genius gave to mankind machinery, and then the real progress of the human race commenced. Prior to the introduction of machinery men puttered much and produced little.

The present day industrial unrest is not because of the high cost of living that is merely a manifestation; it is not because, gentlemen, of war or of the inflation of the currency; it is, if you please, the result of a century and one-half of the opposition of man to use his own creation, the machine. In other words, the machine has progressed so rapidly and man's inventive genius have gone so far that it has run ahead of man's power to control and hold it, and so to-day we are just feeling our way, trying to find out what are the right relations of mankind to the tremendous machine technique which he has established and whichever insists on human conformation.

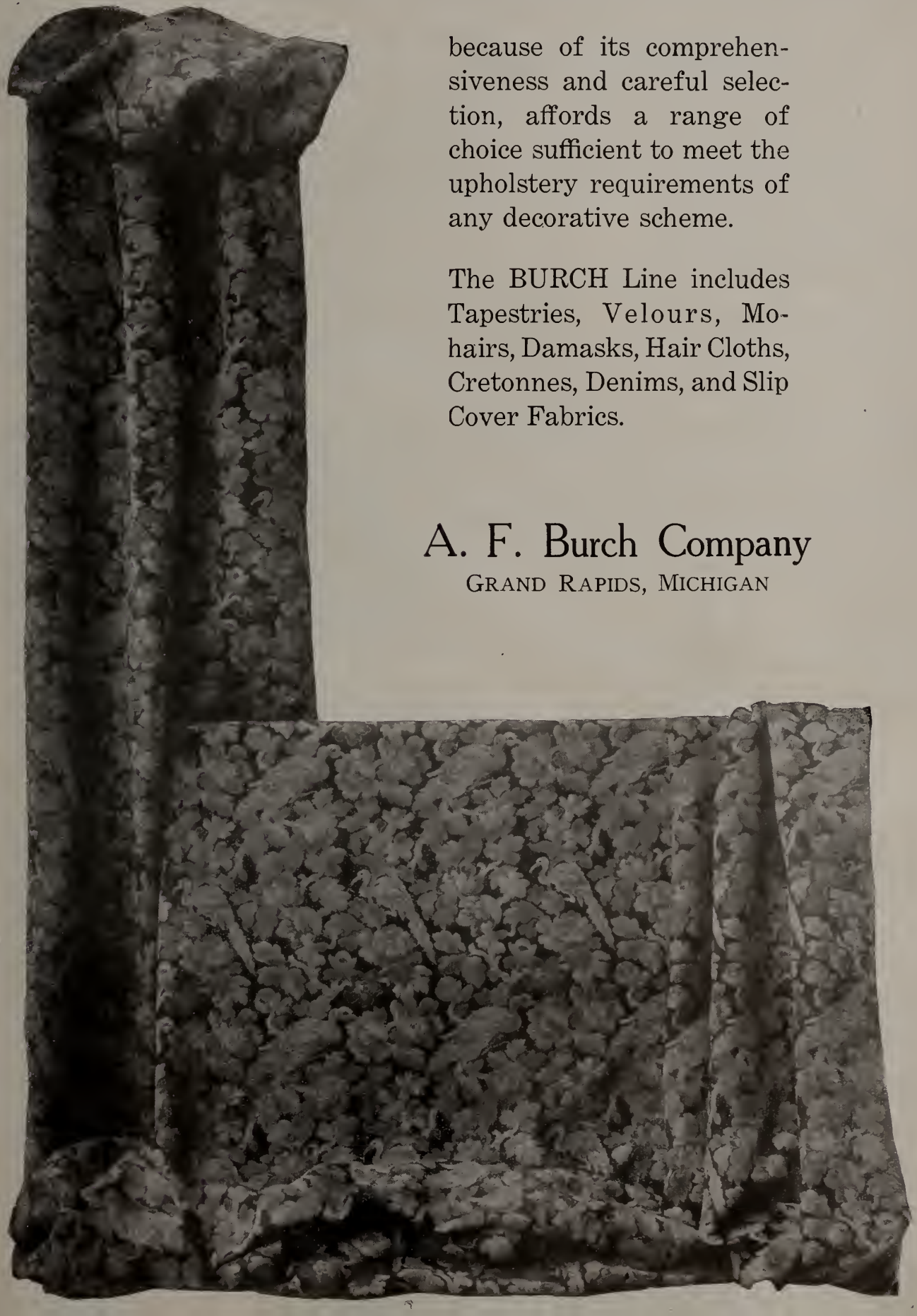
In the last analysis we are all students in the great school of life, the beginnings of which are in the hidden past with all the future before. Our best endeavors, consciously or unconsciously, we are contributing to the solving of immediate problems for immediate needs and if our accomplishments are constructive we are building for all the future relations of men. It is presumption for us to conceive that we can effect permanent industrial stability by any acts that we may perform to-day. We can only direct the actions of men. We can only afford, if you please, a vehicle and an avenue whereby men are enabled to go forward. Mankind moves quite like the River Niagara. If you dam it, it will break down the dam and inundate everything within its reach. The industrial problems of one hundred years from now will be just as real and difficult as they are to-day. It behooves the man charged with the responsibility for leadership in industry to concede that only as man-power is utilized along legitimate and just lines can any sort of temporary industrial stability be attained. That can be done by putting flood-gates in the great river of humanity and by installing great turbines that this tremendous power shall be used efficiently and productively with a fulsomeness of happiness in the doing. To help direct the river of humanity of which we are all a part is the great job of life to-day.

Before the surgeon commences to build up the patient to secure the proper functioning of his composite organization he operates to remove those causes that are detrimental to his purpose. There must be a great housecleaning to industry before distinct progress is possible.

(To be continued in January issue)

*Director Industrial Relations, National Association of Upholstered Furniture Manufacturers

THE BURCH LINE



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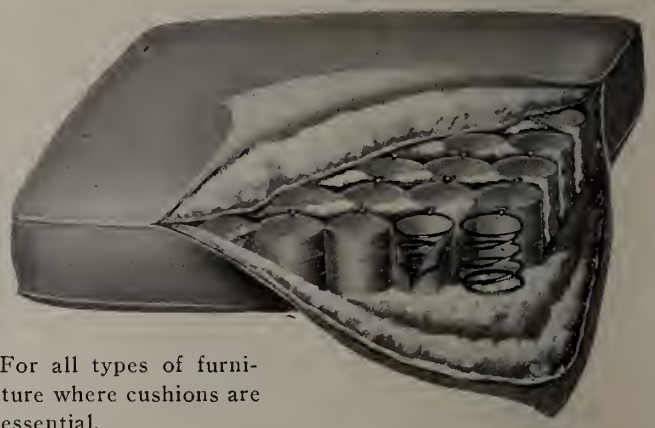

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BROWN CORPORATION

Mills at La Tuque, Quebec

56 St. Peter Street, Quebec, P. Q.

La Tuque WOOD Turpentine

Where Finishing Troubles Originate?

Faulty Work Means Fewer Sales—Finishers Not Always to Blame—Good Finish Will Not Supplement Poor Mechanical Work

By John N. Moore

While good light is necessary for the finishing room, strong light often exaggerates defects. It brings out defects in a piece of wood in the same manner that a strong light from an automobile lamp exaggerates every little depression on an asphalt pavement and makes the street look really dangerously rough. A strong light will exaggerate the surface of the wood so that sometimes a very bad impression of the workmanship is formed.

Recently, a prominent lawyer made up his mind to refurnish his office in mahogany, and went to an office furniture establishment to select and make purchases. This attorney was really much more interested in appearances than in cost, and with this idea in the back of his head, selected the most expensive suite on the floor, and ordered it sent over to the office at once.

Desk Top at Fault.

The lawyer being a good customer, the dealer, anxious to please him, had the pieces carried out on to the sidewalk preparatory to being loaded on the truck, and the purchaser very happy in the thought of the fine appearance his office would present when this new desk, chairs, table, etc., should be installed, lingered to take in the general effect. Now, this little affair happened on a very sunshiny day, and the buyer happened to take a position where the reflection was cast on the polished top of the big double desk. In that light the surface presented an appearance that was about as smooth as that of a pond, ruffled by a gentle breeze. The purchaser noticed this wavy appearance, went back into the store and registered a complaint that the desk top was not smooth, and there really was no arguing him out of it.

As a matter of fact, no defects were noticeable when the hand was passed over the top, but he could see them, dissatisfaction was created, and being unable to find another piece in the store that met his approval, he called the whole thing off and went down the street to rebuy at another store.

Result of Hasty Work.

Now, a close examination of the desk top showed that the cause of the whole trouble was, that common one of trying to rush the work through the factory. The desk was veneered and the core had been glued up and then sanded before the glue had ample time to thoroughly and perfectly dry. The core being made of pieces about four inches wide, as the glue joints dried, they pulled the cross banding and face veneer down with them just enough to show very plainly when a high finish was applied and the top displayed under lights of a certain character.

Of course, this particular dealer, after this unfortunate experience, went back at the manufacturer, who also lost a sale, but that wasn't the worst part of it, he lost the customer as well, because you know a dissatisfied customer doesn't keep his dislikes to himself, it is quite human to pass them around. The probabilities were the face veneer was too thin to stand sanding to a level, so the only way to repair the top would be to sand the surface smooth and apply new veneer, which, of course, is a rather expensive job.

Light and Ventilation Important.

Incidents similar to the above should serve as a warning to manufacturers of fine veneered goods. There is always something lost somewhere along the route to a sale by rushing goods through. It is an expensive proposition at best, for unless plenty of time is allowed for the cores to dry out before the veneer is applied, very troublesome effects are more than apt to result, and while we are speaking of light, a few words on proper air might not be amiss.

Ventilation of the finishing room is a very important feature, and generally speaking, there are very few rooms where finishing is done that are really properly ventilated, and yet ventilation should be one of the most important things about the department.

In consequence of poor facilities for ventilating, the necessity for a supply of fresh air and the elimination of gases which arise in the finishing room, the workmen adopt many devices with a view to accomplishing the desired result, but which are not always to the best interest of the work in process of finishing. For instance, workmen applying varnish surfaces or shellac will open a window and allow the air from the outside to come in direct contact with the material they are using regardless of consequences, which are sometimes almost disastrous.

Drafts as Cause of Trouble.

For the perfect hardening and drying of varnish it is essential to have good light and good ventilation, being careful always to avoid drafts. For instance, a workman is applying shellac dissolved in alcohol; nearby is an open window and the air coming through from the outside is moist, and comes in direct contact with the work in hand. In the case of the use of orange shellac it will at once take on a greenish cast, and if bleached shellac is being used, it will become opaque, entirely hiding the wood in places. This greenish cast apparently disappears as the shellac undergoes the drying process, and the bleached shellac will gradually lose its opaqueness.

Now, many a workman does not know the cause of that which is transpiring before him, and as mentioned, if the trouble disappears within a short period, he concludes that nothing serious has taken place, but orange shellac thus applied will never become quite as clear as it would have been had it been applied under proper conditions; nor the bleached shellac quite as transparent as would have been the case had it never become opaque.

You will also find that trouble with mahogany and walnut goods which show a gray cast after they are finished can frequently be traced to a source of too much air. After all the apparently inconsequential items of light and air play a big part in proper finishing.

Are Open Pore Finishes Gaining Favor?

Cheaper to Produce Than Filled Finish—Wood Lacquer Gives Good Results—Are Attractive and Durable—Should be Better Known

By Walter K. Schmidt

All open pore finishes—as understood by the trade—have been made on oak, of which fumed oak to-day is the best example. Although we admit this fact, we must not forget that old and new Cathedral are still being produced, especially in buildings where the interior trim and the seatings are thus finished.

With the present price of oak, there is a tendency to darker finishes, both in filled and open pore work. All finishers know that there is an advantage to open pore finishes—the main one being the expense of production. There seems to be a tendency to produce open pore finishes both on mahogany and walnut. The introduction is being made by higher grade factories, where the price of the goods produced will warrant care in selecting the best woods, which to a certain degree are a requisite to the better grade of furniture, and especially that finished with open pore. The idea seems to work in nicely with the present day tendencies to avoid piling on heavy coats of varnish. This fact is manifested in the finish. Instead of looking through a glassy coating, the present day finish is thinner and it appears more as a part of the wood. If the open pore style should take with the consuming public, a great saving would be possible from the fact that an open pore finish requires much less time, material and labor.

Filler is of quite modern introduction. Some of the most beautiful pieces made by the old masters have no filler whatever, and they are still improving with age. Their open pores do not detract from their beauty.

Water Stain Preferable.

In producing a finish of this kind, no matter what wood is employed, water stain is preferable. In many cases it can be used as a sponging coat, by making the stain a trifle lighter and obtaining the color by bountiful application. The grain is sufficiently raised, the pores opened, and at the same time the stain has penetrated enough so that the sanding will not cut through and it will permit of cleaning out the pores so that a beautiful smooth surface is presented. It is quite noticeable that more time and pains are taken in the sanding and smoothing of the wood before finishing materials are added, for it is quite evident that heretofore we depended upon the several coats of heavy varnish, which, when being smoothed would give us an absolutely level top so requisite to the final finish. If this level is produced before the finishing material is applied, the results are much better because of the fact, as mentioned above, that the finishing coats appear to be an actual part of the wood.

This class of finishes is produced in various ways. Two of them stand out noticeably because they are prepared smoothly in oil stains where asphaltum is the base of the color producing stain. These are known as old and new Cathedrals. There are some golden oak finishes with open pores, but very few. Asphaltum here is likewise the base. The final coats are usually obtained by giving the work one coat of shellac, and then waxing. In the cheaper grades of work, so called liquid wax is employed, which can be sprayed, brushed or wiped, and in many cases very little rubbing or polishing is done. While this gives a temporary finish, in a few years the wood has a dead appearance. It has a color, but it is not satisfactory as a finished piece should be. There is a certain disintegration—a mealy dead appearance of the finish, which the housewife cannot revive with the ordinary materials usually at hand. It can not be expected that this class of furniture can be rewaxed by their owners, which would really be the proper way of keeping it in condition. The truth of the matter is that the finishes are too short-lived.

Excellent Results With Lacquers.

In the present day method, especially on the better grades of furniture, where wood lacquers are employed, there can be no possibiilty of this trouble. After the wood is stained and properly prepared, a wash coat of genuine shellac with one or two coats of first quality wood lacquer, and then a spray coat of mat lacquer will give an open pore finish that is waterproof, the pores are protected, the finish is so thin that it is a part of the wood and it will endure for years.

These latter day wood lacquers must not be confounded with the metal lacquers that have often found their way into the woodworking industry, and often erroneously referred to as "Banana oil." They are rather a scientific compound combining the peculiar qualities of Pyroxylin with those specially treated gums, and when correctly made will not whiten in the pores. They will permit of being rubbed dull, but it has been found advantageous to use a last coat specially prepared so that without rubbing it will give the desired mat effect.

Water and Heatproof Finish

These finishes prepared with the use of lacquers will retain their brilliancy and are in no way offensive to the eye. In many ways one might say they give that soft effect produced by the old masters. Besides having waterproof qualities and heat proof qualities, they always remain fresh and lifelike. In the waxing proposition there was always the expense of rubbing. This is entirely done away with wood lacquer. Two days will suffice for a finished job after the staining coat has been applied. This factor alone should appeal to the furniture manufacturer. Especially is it adapted to close grained woods and small articles, such as lamps, candlesticks, small pieces of fancy furniture, brush handles, brush backs, tool handles, curtain poles, picture frames and a thousand and one other wood products where an absolutely durable and lasting finish is desired.

That the woodworking industries have not taken on this process in order to save time is due to a large degree to the misconception of the product. The old time finisher thinks of lacquer as the material that he borrowed from the brass workers. He is not aware of the immense strides that have been made in the rebuilding of this old-time product into what is now known as "wood lacquer." While there is yet a similarity of odor, it is not at all objectionable, and a thor-

ough acquaintance with the workings of this newer product will be a convincing argument in its favor.

Resist Hard Wear.

Fixture people have found to their great surprise and satisfaction that immense strides in time saving can be had by resorting to wood lacquers. One of the largest manufacturers of the country is using a spirit stain fiixing it with a spray coat of this wood lacquer, a coat of quick drying varnish, and topping it off with thin wax, which is rubbed out. By this method he accomplishes two or three operations in one, for in rubbing out the wax he sufficiently smoothes the last coat of finishing material to make a very good job. Note the elimination of numerous operations made possible by employing close grain wood. Of course it fits into his line of goods, but it gives a good idea of what can be accomplished where a maker has the nerve and personal initiative to transgress from the conventional methods of doing things.

To convince one's self of the durability, take an ordinary broom handle, a brush handle, or the edge of a show case and compare the wear they receive with that of an ordinary piece of furniture and note the extreme durability of one of these objects finished in the ordinary method. They would be worn through to the wood much sooner. That the open pore finish will again have its day is a foregone conclusion. It only needs the pioneer to learn that the newer way of producing these finishes is more durable than the old way was, and as that conviction gains a foothold, so will the finish again become popular. — "Furniture Manufacturer and Artisan."

Removing Moisture From Air For Sprayer

The most successful method yet devised for taking the moisture out of the air for the spray machine is to pass the air over and through a bed of calcium chloride. There are several ways in which this can be done, Here is the method which has proven highly satisfactory in one of the largest talking machine factories.

A metal cylinder—see illustration—about 6 inches in diameter and five feet long was constructed. Inside of this tank was placed a trough filled with calcium chloride, the full width and length of the tank, but only half the height. About every 12 inches for the full length of the tank are loovers, or flat discs, extending from the top of the tank to the trough. These loovers have a hole on half-inch by two inches on the centre line. The air hits these loovers and is deflected down through the calcium chloride which absorbs all the moisture in the air.

The calcium chloride ought to be changed about once a week. It is not necessary to place a new charge in the trough each week, as the old charge can be thoroughly dried and be used again the following week.

If the spray machines are close to the compressor, one of these tanks will take care of all the lines, but if they are quite a distance apart it is advisable to have a separate tank for each sprayer.—"Finishing Facts."

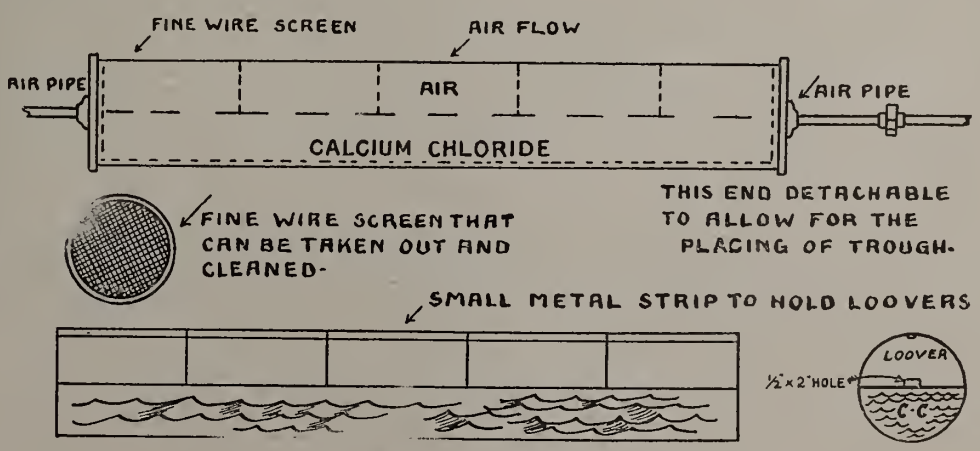
Veneer Manufacturers Meet in Chicago

The National Veneer and Panel Manufacturers' Association held their annual convention in Chicago, Ill., December 14-15. A very interesting program had been prepared including an opening address by President S. B. Anderson, of Anderson-Tully Co.,, Memphis, Tenn., and addresses by Wm. B. Baker, secretary of the newly former Association of Wood Using Industries, W. H. Anderson, of Arthur Anderson & Co., Chicago Ill.; N. R. Brooks, Guaranty Trust Co., New York, Armin Elmendorf, consulting engineer for the Haskilti Mfg. Co.; Fred. M. Knappen, Grand Rapids Veneer Works, and H. W. Marsh, Editor of "Veneers," Indianapolis, Ind. Reports were presented on general conditions in the veneer industry and covering questions of interest to the association and the industry as a whole.

Origin of Commercial Shellac

Shellac which is so extensively used as a finish for wood comes from India almost exclusively. Attempts to produce it elsewhere have been made, but have not met with success. It is a resin which is produced by a very small insect that feeds on the sap of a certain tree. The resin accumulates about the body of the insect and sometimes so completely buries it that the insect perishes beneath the accumulation of resin. The deposits are scraped from the surface of the tree in the form of a thin crust, and this becomes the shellac of commerce. Before being put to its final use it is refined and converted into liquid form.

The goods may speak for themselves, but they sometimes need a little prompting.



Tank for removing moisture from air line to spray machine.

Cutting Costs in Finishing Department

Value of Varnish Drying System Recognized—Increases Production and Reduces Expenses—Freedom From Dust Desirable Feature

By W. D. Philips

The rapid drying of varnish and other finishing material in special drying rooms or kilns is engaging the attention of manufacturers of furniture, phonographs, pianos and similar articles. Many of the more progressive have already installed some form of humidity controlled system, while others are considering some such installation and the results obtained have more than justified their expectations.

Just think of the advantages of being able to dry varnish in from eight to twelve hours. The output of the finishing department is increased. The period required for finishing is shortened by many days. Ideal drying conditions are possible—tending for perfect results. The elimination of dust from the drying surfaces. Space of finishing room may be reduced and many other desirable features will accrue. These all mean greater efficiency, decreased finishing costs and a better finished product.

What Constitutes Good Drying.

Before going into the matter of varnish drying systems, it might be best to first classify, in their order of relative importance, the subject as follows: (1) What is really meant by "drying?" (2) What are the atmospheric requirements for "drying?" (3) How best accomplished or obtained?

"Drying" is really an erroneous term, because the process of hardening a coating or varnish, constitutes a passing off of the volatile matter, and a resultant hardening of the oil as it saturates or absorbs oxygen. An abundance of pure air of moderate humidity content, would produce very good drying results, but these simple requirements are very difficult to obtain; in fact, are impossible to maintain during the entire working day, in the average finishing room. Cleanliness calls for closed windows, etc.; good drying howls for lots of fresh air.

Another drawback is the natural variations of temperature and humidity throughout the year, when the heat varies from below zero to 90 in the shade, and humidity varies from 2 grains moisture per cubic foot of air in the winter to about 11 grains in the summer. It is obvious, therefore, that as the average varnish is compounded under fixed and definite conditions of manufacture, that having various weather conditions to contend with in drying, the solution of the matter, during the four seasons of the year, would be to develop as nearly constant and unvarying conditions in the finishing department, as is possible.

Ideal Conditions Controlled.

It is also a fact that the various departments of manufacture are to-day more or less under mechanical control. Machines can be speeded up or retarded, labor increased or decreased, and general manufacturing conditions adjusted, but the average manufacturer has no control over the weather or his drying, so that it is imperative that these elements be under proper control if possible. The modern varnish drying apparatus is in reality, or should be, a complete automatically-controlled air conditioning equipment, which not only will produce and maintain ideal controllable drying conditions, but will thoroughly and efficiently ventilate the finishing room as well, eliminating the dust, fumes, etc., that are so detrimental to the workman's health. These conditions are beginning to receive attention from the government authorities.

Another feature in drying, is the fundamental law of chemistry, that, with but very few exceptions, all chemical actions are eccelerated by heat, but heat alone when applied to varnish, enamel, or other similar material, surface hardens such coating, and must, therefore, be applied with a definite humidity content, to act as a mechanical balance. When this is done, the coating is actually dried or hardened from the bottom or inside out, ensuring a perfectly dried surface and eliminating any tendency to shrink or crawl that might manifest itself under less ideal drying conditions. Surface-dried varnish is only partly oxidized and, therefore, is not thoroughly dry. What is more, when a coating is surfaced dried, it takes much longer to harden thoroughly because the surface is sealed and the oxygen of the air is prevented from reaching the body of the coat.

Desirable Features.

Finally, it is not only necessary to be able to obtain mechanically, perfect drying conditions, but these conditions must be constant, evenly balanced throughout the drying space, and continuously and constantly applied, as well.

Summing up the perfect conditions, we find, therefore, a demand for:—

1st. Absolute cleanliness.
2nd. Large constant volume of pure air.
3rd. Heat for chemical acceleration.
4th. Humidity for mechanical balance of heat.
5th. Automatic control of heat and humidity for constantly maintaining above conditions.
6th. Simplicity in construction of apparatus.
7th. Flexibility in equipment to meet varied physical conditions in factory.
8th. Ventilation of finishing room, preserving health of workmen.

With an installation embodying these points, finishing coats may be dried in a minimum of time, at a minimum cost and with maximum satisfaction.

Gasoline Fumes Highly Explosive

Using gasoline indoors is an extremely dangerous practice. While being handled the gasoline is evaporating and the fumes mixing with the air. Being nearly three times heavier than the air, they flow along the floor like a stream of water, lodging in the low places, perhaps fifty feet away from their source. The explosive force of this mixture is fourteen times greater than dynamite. The tiny drop of gasoline evaporated and exploded by an electric spark propels the heaviest truck. A spark from a horseshoe or an iron tool, a match, an open light, grate, stove or furnace, will explode this death-dealing mixture.

You cannot see this creeping foe on the floor, nor foresee the spark which may set it off to destroy life and property. Adequate floor ventilation will carry these dangerous fumes outside the building.

MACO

New Principle Non-Fading Stain

¶ Under ultra violet ray test it endured the equivalent of thirty days in bright sunshine without the slightest tendency to fade.

¶ It penetrates without raising the grain of the wood.

¶ It can be filled directly over like a spirit stain.

¶ Has the advantages of an oil, a spirit and a water stain with none of their disadvantages.

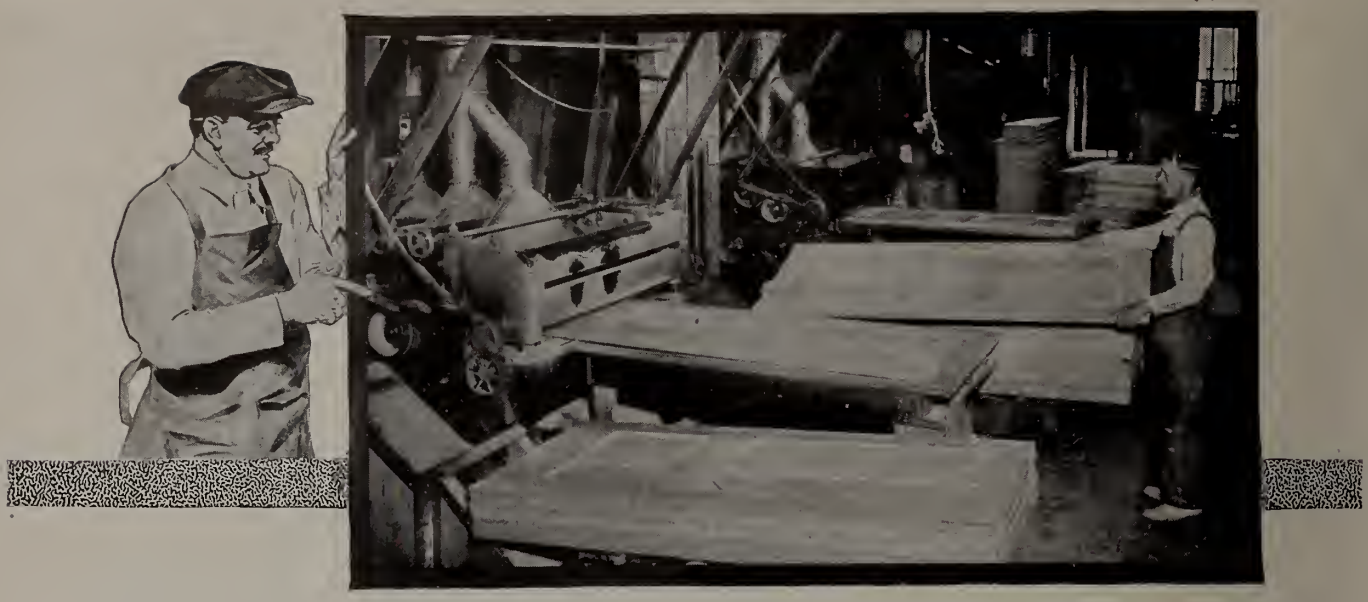
¶ Write for sample panel and full particulars.

The Marietta Paint & Color Co.

Marietta - - Ohio

Southern Branch: High Point, N.C.

MARIETTA WOOD FINISH SPECIALISTS



Meet John Erickson— (He's a Conservative)

John Erickson is a man you'd like to have working in your plant. John is Head Sander for the Weed Lumber Company of Weed, California. On Sundays you'll find him rolling along with his family in a spotlessly spic-and-span Ford, bound for the open country.

But from Monday to Saturday, year in and year out, you'll find him square on the job—keeping his four big Yates Sanders whirring smoothly at top speed.

I met John one day last April—asked him to give me his experiences with Speed-grits.

"Well," said John in a careful voice, "All I can tell you is that we use your 24" Speed-grits garnet combination on our Berlin Sanders. With it we sand an average of 1800 white pine doors a day on each machine. And we only have to change papers about once in three to four days. That's pretty good for certain."

Here John's conservative side came out.

"I see a lot of advertisements"—he went on, "advertisements in which folks claim that So-and-So's sandpaper is the best. I can't go so far as that about Speed-grits. But I will say this. I've tried pretty near all kinds of sandpaper and for speedy, smooth finishing and long endurance ***Speed-grits has sure got the others I've tried beaten a mile.***"

Manning Speed-grits

Look for this trade-mark on the back of every belt, sheet, or disc.

"Good Workmen Know the Difference."

Send for "The Difference Book"—Address

RITCHEY SUPPLY COMPANY

(CANADIAN DISTRIBUTORS)

154 Pearl Street Toronto, Canada

Or send to Manning Abrasive Co., Troy, N. Y., U. S A.

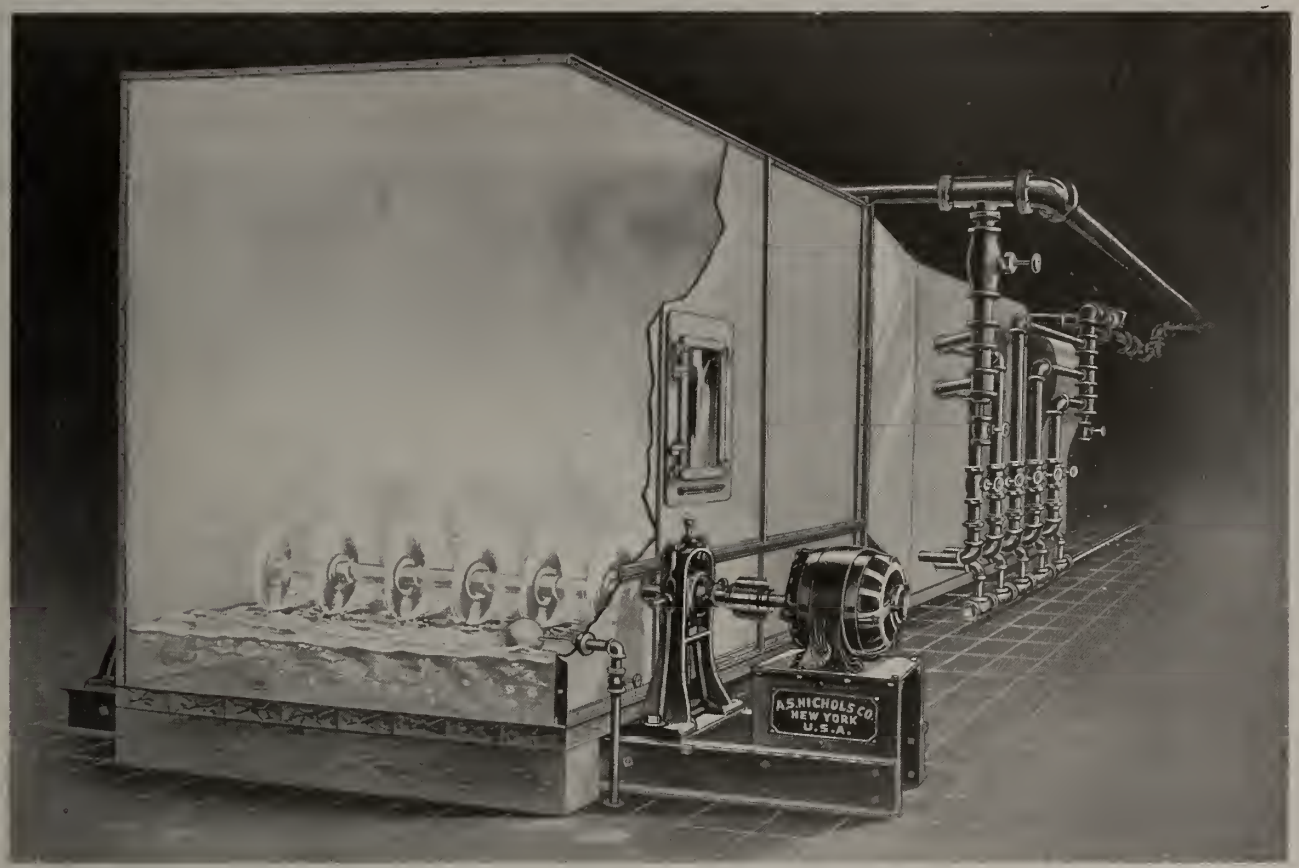
"We furnish 24" paper absolutely straight and with trimmed edges for Spiral Drum Sanders. This assures perfect fitting covers without rough edges."

Speed-grits
comes in the following varieties:
METALITE CLOTH
HANDY ROLLS
GRINDING DISCS
DURITE CLOTH
DURITE PAPER
DURITE COMBINATION
DURENDUM PAPER
DURUNDUM CLOTH
GARNET PAPER
GARNET CLOTH
GARNET COMBINATION
FLINT PAPER
EMERY CLOTH
EMERY PAPER

Manning Speed-grits

Reg.U.S.Pat.Off.

Don't say sandpaper—say Speed-grits



The above photograph shows our complete Varnish Drying Equipment showing air washer and humidifier in operation. These dryers may be used to turn out automobile bodies, furniture, pianos, talking machines, etc., in as many days as it formerly took weeks, and the finish is better, for it is dried scientifically, from the inside out.

If not already Nichols equipped, you owe it to yourself at least to investigate, because:—

1—It will easily triple the output of your finishing rooms.

2—It will decrease congestion in your factory.

3—It will decrease the investment in goods necessarily in process.

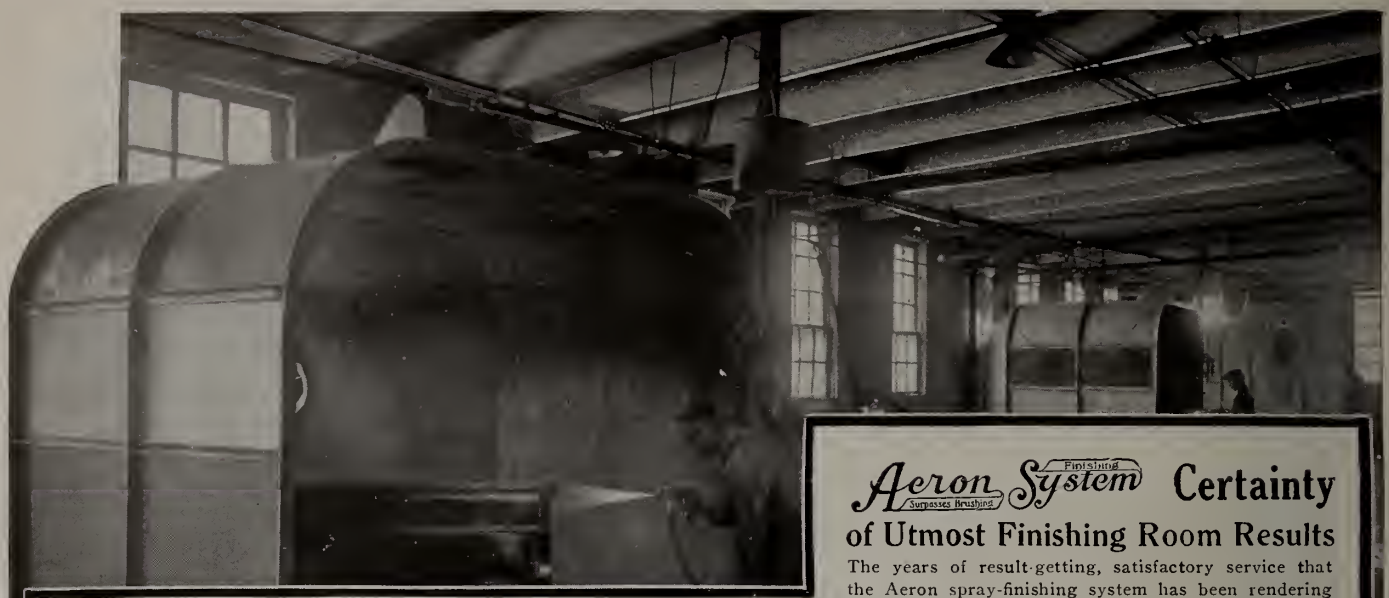
4—It will enable you to make more prompt deliveries.

We will analyze your particular conditions and then make you a proposition on an equipment that we know, from our extended experience, will save you time and money, as well as improve your product.

We guarantee fully the efficiency of the equipment as well as its mechanical construction. Every installation has been successful. There are hundreds of concerns to whom we can refer you.

A. S. NICHOLS COMPANY, 33 W. 42nd St. NEW YORK CITY

Manufacturers of Dryers for Lumber, Veneers, Glued Stock, Varnish, Paint and Enamels, for both high and low temperature work. Also sole agents for "Zenitherm" insulating material for the making of rooms for both high and low temperature drying.



Aeron Finishing System Surpasses Brushing

Certainty of Utmost Finishing Room Results

The years of result-getting, satisfactory service that the Aeron spray-finishing system has been rendering the wood- and metal-working industries, gives to each new installation of this equipment an assurance of the utmost in quality, speed and economy.

No matter what type, size or grade of product you manufacture, nor with what kind of finishing material you coat it—the Aeron System undoubtedly is now being used on work of the same or a similar character, and will be most certain to make it possible for you to do the highest grade of work at a big reduction in costs.

Operation Facts One Aeron operator easily does the work of 2 to 5 or more hand brushers--this is governed by nature of work.

A cleaner and more uniform coating of every material is applied—there are no brush marks, thin spots or fatty edges.

Work is made absolutely healthful and safe—all fumes are completely removed.

Equipment is kept in the best working condition at practically no cost.

The Aeron System is sold on a strictly guaranteed basis, and every installation followed up by a competent service organization.

Write and let us send on more definite particulars.

The DeVilbiss Mfg. Co. 3718 Detroit Ave. ***Toledo, Ohio, U. S. A.***

Painting your buildings with Aeron System **PORTABLE PAINTING EQUIPMENT** means a big saving in time, labor and confusion.

High Grade Stains and Fillers

In our Stains you will find the highest possible color values—they are positive—they are permanent. Manufactured in quantities from the best quality raw materials.

Wood Fillers also that have been tested under the most difficult of varying circumstances and found satisfactory.

Eliminate trouble in your finishing department by using these tested materials.

WRITE FOR PRICES

The Edward J. Shannon Company

CINCINNATI, OHIO

Veneers and Panels

Why We Should Have Confidence

Time of Preparation for Good Business to Come—Entering on Saner Period—Much to Inspire Confidence

By S. B. Anderson*

Since we met last, six months ago, a change has come over the spirit of our dreams. Then we were all at the height of prosperity. More orders booked than we could fill; customers begging for goods, which we could not supply even at the peak prices then prevailing. We do not know exactly what has happened to us. We know our shops are idle, or practically so. No one wants our goods even at the very conservative prices that we might be tempted to quote if the opportunity was offered us. It is a difficult matter to adjust ourselves to present conditions. In the classic inquiry of a generation ago, we are all asking "Who Struck Billy Patterson?" The search for the cause of our present situation can only be valuable as it may help us to solve the very serious problems now facing us.

Are present conditions indicative of what we may expect regularly in the future, or are they simply a letting up to catch breath? Undoubtedly the American public was for a year or two buying mad. Will they rest awhile and take hold again in a reasonable, moderate way, or have they quit? It strikes me that this is the whole question:—Has the American public—the every-day American citizen—quit buying for his wants permanently; quit with a good bit of money lying around loose, or is he just resting up? I think we all know him well enough to be able to answer this question, and I think the answer will be unanimous. If my diagnosis of the case is correct, what are we up against? We are up against a spell of waiting, more or less drawn out, but I hope not an exceedingly long spell. We were flying pretty high and in the course of events we could not expect to always continue on the wing. I think, though, the shots that brought us down were fired a little early. The propaganda of the Treasury Department at Washington, and of the Reserve Banks, while probably well intended, was efficient, but I think premature, and probably more efficient than intended. An immense debt had been created during the war, while prices were high and business rushing. The only time that a big debt can be paid is when prices are high and business good. It is a poor time to attempt to pay when prices of commodities are low, business poor and profits small. I think, in the desire to lower the high cost of living, this fact was overlooked, and the "goose that was laying the golden eggs" into the U. S. Treasury was killed, or, at least, temporary put out of business.

I think now is the time to get ready for good business in the near future—not such a business as we had last year, but a good, healthy business. We all must sharpen our pencils as prices will be close. We must cut out extravagance and useless waste, and introduce economy in the conduct of our business. We will probably all have something of a strain in adjusting ourselves to conditions coming, but I believe any well-equipped, well-organized and well-managed plant will soon again be doing a reasonably profitable business. I fully realize that the buying capacity of our people will be somewhat contracted. The shrinkage in value of farm products during the past few weeks, estimated in some quarters at around seven billion dollars, will reduce the buying ability of our farmers very materially. The inevitable reduction in wages will reduce, more or less, the buying capacity of the workmen, and these are the two classes of buyers that make business good or bad. I have before stated that I thought the interest of the business man ran along with good prices for farm products and good wages to our workmen. I think everything that can be done to restore farm products to a good paying basis should be done, not only in the interests of the farmers, but in our own interest; in the interest of the business man in general. I think it stands the employer of labor in hand to watch himself very closely to see that he does not, in his effort to reduce cost of production, use the pruning knife too freely, and so, while possibly doing an injustice to his employees, injure himself by crippling the buying power of a very large proportion of the American public, a portion that always spends freely if it has anything to spend. The menace facing business is cheap farm products and low wages. Eighty cent wheat and $1.25 wages buy little furniture.

While it is not to our interest to force wages too low, we should not allow the opportunity to pass without bringing about great improvement in labor efficiency. Labor should understand fully that a good day's work must be returned for a good day's wages. If this is not understood and heeded the workman is simply inviting disaster. We should weed out the inefficient workmen and encourage the efficient workmen by paying good, liberal wages—in fact, all the business will stand. We will, by this course, reduce labor cost of our products, and at the same time keep the buying ability of the workingman at a high point.

The natural growth of population of the country has been increasing during the past few years with the usual rapidity, but house building has very largely stopped. It has failed to keep pace with the growth of population so that it is in all cities difficult to find quarters in which to live. Families are doubled up—young couples are living with the old folks instead of starting a new home for themselves. Money has been scarce with which to build. Building material has been too costly to encourage investment in new residences. With the lowering of cost of building material, and labor, money will again be obtainable for building, and this industry will revive. It appears to me that on this one point hangs very largely the future of the furniture trade, and we all recognize the dependence of our line of trade on the prosperity of the furniture business. With the revival of house building will come an enlarged call for furniture. It is estimated that a million new residences are needed now. Think

*Anderson-Tully Co., Memphis, Tenn. Address before National Veneer & Panel Manufacturers' Association.

for a moment what the building of a million houses in the next few years would mean to the furniture trade, and, incidenally, what it will mean to us. And the building is coming—it cannot be put off much longer. I believe there is every reason to feel encouraged. We will be compelled for a while to go slow, but the good time is coming. In the meantime get ready. I believe that we must depend on a good output at close figures for our profit and not a large profit on a small output—and this is better in the long run. Low prices encourage buying and puts goods within the reach of a large buying public. I believe the ideal conditions will be when cost can be made so low that good goods can be placed within the reach of the larger portion of the community. This does not mean that goods will be made without a fair profit, but it means good management, good machinery and good work.

Withall we have reasons for a hopeful outlook. There is much to inspire confidence. The accumulations of the last few years are still in existence. The crops, in spite of low prices, will bring a very large sum of money. The world needs our surplus, and I believe will make some arrangements by which it can make payment. Our transportation system is greatly improved so we will be able to get our goods to market. The majority of our workingmen are still receiving good wages. Credits are slowly easing up. With all this, why should we be pessimistic? Let's cheer up. This of itself will help. Feel optimistic and talk optimism. This will help sales. No one will buy if you bring gloom with you, but if you are optimistic your optimism will spread and sooner or later your customers will feel its effect. There is no reason or excuse for pessimism.

Efficient Installation in Modern Veneer Plant

Automatic Thermostatic Control of Steaming Tanks—Individual Motor Drive on All Equipment—Every Effort Made For High Production and Low Manufacturing Costs

A million dollars in a veneer and lumber plant is an investment that makes one pause and consider, even in these days of big business when the words million and billion seem to be on everybody's tongue. The firm, who recently completed a modern plant at an outlay of one million dollars—The Wood-Mosaic Co., Inc., Louisville, Ky.—should not need any introduction to Canadian wood users, as they have been serving the requirements of the industry in Canada for many years.

The veneer end of this progressive industry is divided into several units so that the most suitable manufacturing facilities may be provided for each type of log. Thus the veneer plant at Huntington, W. Va.,

Concrete vats and huge log handling crane at Wood-Mosaic plant.

operates on yellow poplar crossbanding, the New Albany, Ind., plant is devoted to the manufacture of quartered white oak veneers, while the large new plant at Louisville cuts walnut in plain and fancy figure.

The yellow poplar plant at Huntington, was purchased from the Central Veneer Co., Huntington, W. Va., in 1917. This operation has since been incorporated as the Wood-Mosaic Poplar Veneer Co., and is operated as a subsidiary of the parent organization. The plant is thoroughly modern in every respect and consists of two Coe rotary lathes, a Philadelphia Textile veneer drier, together with the necessary trimmers, clippers, saws, etc. About 40,000,000 feet of 1/24 inch poplar crossbanding makes up the annual production from this unit. The location is a fortunate one with regard to the supply of raw material, as it is surrounded by a fine stand of yellow poplar.

Producing Sawn Oak Veneer.

At New Albany, Ind., production is centred on sawn veneers in high-grade quartered white oak. The raw material for this line is carefully selected and graded before being shipped to the New Albany plant. The equipment here consists of six modern veneer saws, together with the necessary complementary installation.

The pride of them all, and what is claimed to be the most complete and the most modern veneer plant of its kind, is the newly-completed veneer plant at Louisville, Ky. As shown in the accompanying illustration, the factory building is the last word in modern industrial design. It is of the one-storey, monitor type. The walls of the building are nearly all glass, affording unusual light and ventilation. The same progressive spirit was displayed in equipping the plant. The machinery is all new and is driven by individual electric motors with the latest silent chain drive instead of the usual belts and countershafts.

The cutting equipment consists of a 16 ft. Capital slicer, a 10 and a 7 ft. Capital lathe and a 65 inch Coe lathe. The slicer and the Capital lathe are used exclusively for the production of sliced, rotary and half round, plain and figured walnut veneers, including butts and burls. The smaller lathes operate on the same class of poplar crossbanding as the Huntington plant, specializing in thin stock for the cabinet trade.

Mechanical Driers Employed.

The drying of the veneers is a very important operation. This is done with the aid of two new Philadelphia Textile driers. These machines are one 13½ ft. and one 9 ft. wide and 80 feet long. The stock emerges from these mechanical driers dry and flat. The latter is an important consideration. The drying condition in these machines can be so controlled that the veneers may be brought down to any percentage of moisture content desired. Thorough drying at the manufactur-

Two views in Wood-Mosaic veneer plant: One showing veneer driers, the other veener slicer and veneer lathe

ing end eliminates to a certain extent the necessity of redrying the stock before laying, depending largely on the manner in which the veneers were handled in transit and stored upon arrival at destination. The veneer user must not overlook the fact that dry lumber or veneer will absorb moisture if stored in a damp place or exposed to moisture, thus even though the stock was perfectly dry when shipped, if not handled and stored properly, trouble may be experienced unless resort is made to redrying. The Louisville plant has a capacity of 100,000 feet of walnut veneer and 125,000 feet of poplar veneer per day.

The logs are efficiently and economically handled in the yard. The large steel derrick shown in the accompanying illustration is of 10-ton capacity and has an operating radius of 75 feet. The logs and flitches are boiled and treated in four large concrete vats, shown in the same photo. These vats are equipped with automatic thermostatic controlling instruments, thus ensuring uniform treatment of the raw material. Absolute control of the temperature in the vats is also assured.

W. A. MacLean, the president, has been in a large measure responsible for the development and expansion of this progressive firm, which was established in 1883, just 37 years ago. The Louisville operations are under the capable supervision of J. J. Egan and H. C. Hobbs.

Untold Possibilities in Modern Glues

Adapted to Wide Variety of Uses—Require Special Handling for Best Results—Suggestion for Making Curved Panels —Many Other Applications

By M. C. H.

Considering the adaption and capabilities of modern glues in doing veneer work, and comparing them with those of olden days, when hide and bone glues were practically the only adhesive employed in the veneering trade, one is impressed with the great strides made in the turning out of better built-up products and the great future possibilities for veneered work.

In the use of animal glues the process of veneering, at best, has always been a gamble to a certain extent, despite all the rules, regulations and devices developed to obviate this risk. No two batches of animal glue received would ever be exactly the same, and add to this the possibilities of having glue spoiled through overheating, or both glue and veneers spoiled through blistering from having a cold draft enter the glue room, one often wonders that modern glues haven't made their debut years ago.

In the use of modern glues the heating of the glue or the veneering room beyond natural heating requirement is eliminated; the tedious process of mixing glue twenty-four hours in advance of actual requirement is also obviated. Modern glues can be mixed in fifteen minutes, in which a sufficient requirement for the entire day's operation can be prepared.

Lower Veneering Costs.

As it was with the hide and bone glues, both having certain advantages in the turning out of certain products, so with the vegetable glues and the casein or waterproofing glues, each having certain merits which make the application of either, in turning out a certain product, the most economical one to use.

Reduction of veneering costs is only one of the advantages attending the use of either one of these modern glues. And another good point in their favor (and quite contrary to the use of hide glue, in which the glue joint often weakened with age), with these new glues a joint once made improves with age, and heat, as well as ordinary moisture, apparently has no effect on them. These glues, as a rule, are uniform; each shipment must come up to the specific standard of its manufacturer before it is allowed to leave the plant.

There are many plants that have changed from animal to vegetable or waterproof glues and are using their old veneering equipment in identically the same manner as before. In fact, these glues will often work more beautifully with the machine spreader (especially if rolls are of the corrugated type) than was possible with animal glues, making a glue joint or bond as strong as the woods.

No Change in Methods.

One thing to guard against, however, in changing to a waterproof glue, is not to relax in the care taken to have absolutely dry veneers for glueing. In some quarters the impression seems to have spread that with the use of waterproof glues, veneers for glueing need not be dried as carefully as when hide glues are used. This, however, is a serious error, considering that it takes but very little water content in any glue to swell thin face veneers, and very little time after the water is applied. Therefore, the application of any kind of glue, animal, vegetable or waterproof, that is mixed with water will swell the face veneers in a very short time; consequently, if a piece of face veneer is used which is wet, and the water content of the glue, which is also absorbed by the veneers, it will load the veneers with such a moisture content that they become swelled. It is only natural that when the moisture dries out and shrinkage takes place, the veneers will shrink, and, not being able to give at the edges as drying takes place, will show up fine checks all over the face.

Many products which to-day are never thought of in connection with built-up stock, are feasible, and will, in a year or two from now, be looked upon as thoroughbred built-up products. A few of these may be casually mentioned here, such as refrigerators in which panels are made with paterproof glue, built-up furniture that can be shipped to the ends of the earth and withstand any climatic condition, table tops that can be soaked in hot water and from which the veneer will not peel, pianos, doors and interior trim which, when once veneered, will stay veneered despite moisture, exposure or accidental flooded conditions. With the ever-increasing shortage of all kinds of wood, glued-up articles will become an absolute necessity.

Overcoming Certain Difficulties.

It has been remarked that, due to the cold state and moisture content of vegetable and waterproof glues, considerable trouble has been experienced in holding very thin face veneers flat, such as crotch mahogany and walnut, after the glue has been applied. To overcome this objection some of the plants making a specialty of these woods have overcome the handicap by spreading glue, not directly on the veneer, but on both sides of tissue paper, the paper then being placed between the sheets to be glued.

In the use of waterproof or vegetable glues the process of drying out of glued-up panels is identically the same as in the use of animal glues, glued-up panels being piled between sticks and placed in the dry room with a temperature of from 110 to 120 degrees, with a humidity of about 50. A mild circulation should at all times be maintained in the dry room. If proper equipment is not at hand, one or two small electric fans, such as are used in offices in the summer, will give very satisfactory results, as a daily operation cost of from 10 to 24c.

Bending Curved Panels.

With the use of waterproof glues, curved panels need not be glued up to the desired shape at time of veneering. They can be glued up flat and can then be molded to any desired shape by soaking or steaming, bending to desired form, and retaining in that shape until dry. In cases where a stair riser with half or quarter-circle is desired, a very practical method being used is to place the waterproof veneered panels between wet blankets for ten or twelve hours, when they will be in a thoroughly pliable condition to be bent in any desired form.

As predicted over a year ago, the automobile with a body made of plywood with waterproof glue, has arrived. An automobile concern has recently started operations in Buffalo, N.Y., using and featuring the plywood-panel body. Due to the lighter weight of a built-up body, and several other features, the claim is made that a five-passenger car of 121-in. wheel base is produced, weighing less than 1,500 lbs., and giving a mileage of from thirty to forty miles per gallon of gas, and about 15,000 miles per set of tires.

The manufacturer of this car has the following to say: "The new principle in automobile construction of building the body without a steel frame, eliminating much of the weight of the car, is accomplished by the use of plywood, the strongest and lightest structural material known. Plywood is from 300 to 400 per cent. stronger than steel and lighter in weight than ordinary wood; as in airplane construction, where the factor of safety is so important, under circumstances of great stress, sudden shock and intense vibration, it has stood up beyond the greatest expectations."

Evidently the use of built-up panels in automobile construction has an assured future before it, and the demand of the public at its very inception augurs well for the wider use of plywood in automobile construction.—Veneers, Indianapolis.

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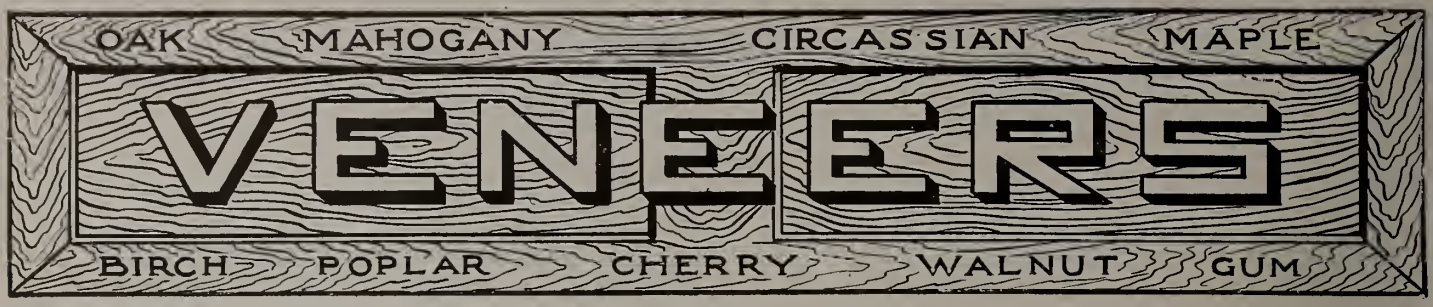

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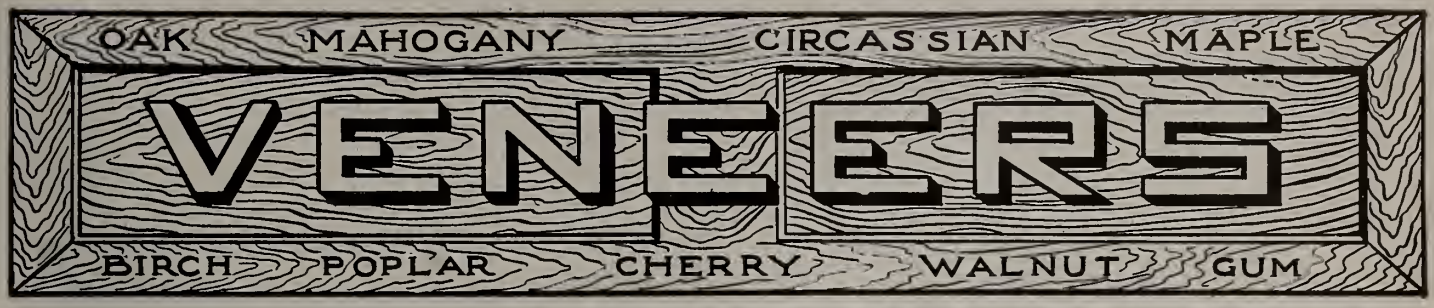

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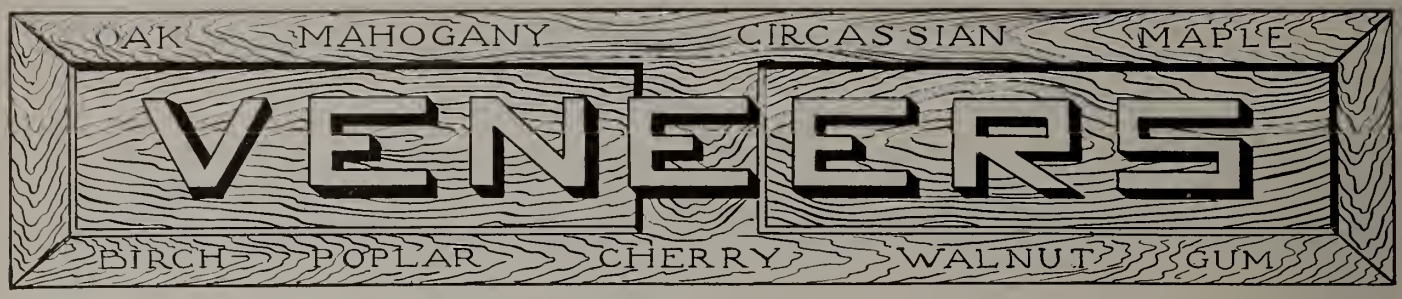

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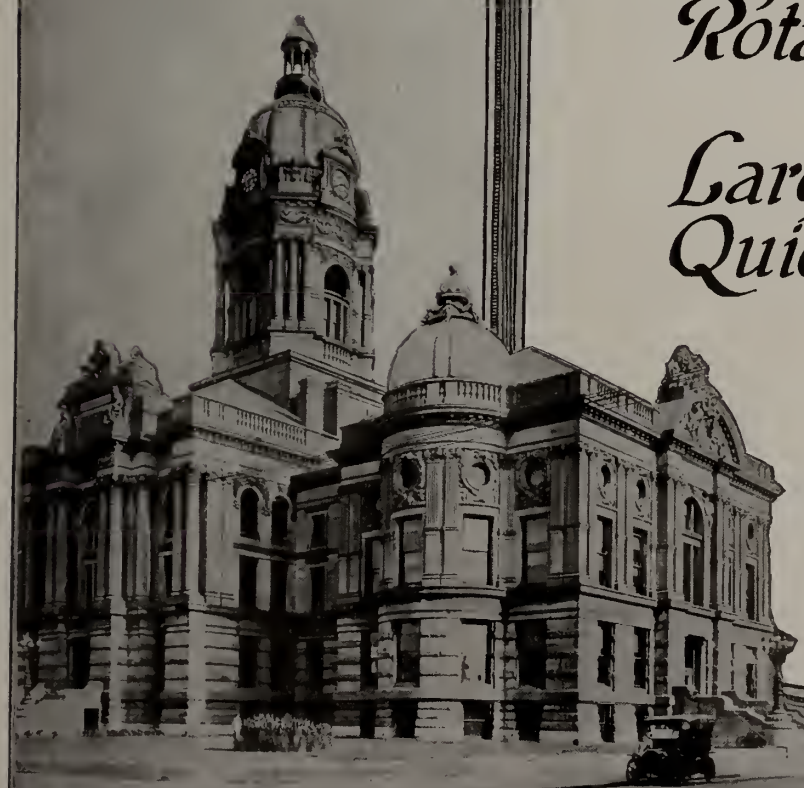

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Do You Know What Constitutes Good Core?

Much Fine Work Marred by Poor Cores—Five Essential Factors to Consider—How Certain Common Faults May be Overcome—Equalization of Moisture Content Big Feature

By S. H. Johnstone

The question of properly constructed cores seems to be ever with us. One would think, that, with all that has been written about good core construction, the equalization of moisture content and the necessity for even surfacing, the manufacturer of a veneered product would give a little more attention to this phase of the work in an effort to turn out a first-class product Yet one does not have to look far to find that this is not so.

While walking through the furniture department of the Robert Simpson store, Toronto, parallel depressions on the top of a mahogany dresser, drew the attention of the writer. Upon examination, this piece, which could not by any means be classed as a cheap article, was found to bear the name of a well-known Ontario furniture manufacturer. Now this manufacturer is producing a fine line of furniture and would not, knowingly, allow a piece of his to go on the market in that shape. It is more than possible that the depression noticed was not visable when the dresser left his plant. Be that as it may, they certainly were conspicuous as the piece stood on Simpson's floor.

Core is Determining Factor

It would appear as if in this particular instance that the full significance of a perfect core—the absolute necessity for a dry, well-constructed core—has not been fully realized. There are five outstanding factors in the building of a core, all of which must be observed. They are, sound stock, dryness, equalization of moisture content, smoothness and even thickness. It might be advisable to discuss each point briefly.

It goes without saying that any kind of rough, shaky, knotty stock should not be worked up into cores. The core may not be visible after the veneers are applied, and the pieces included in the finished article, but the veneers and crossbanding in present-day use are none too heavy and such defects as knots and cracks are bound to show through, marring the beauty of what otherwise might have been a perfect surface. The question as to how one can successfully veneer over knots, is often asked. The best way is to use cores that do not contain knots. The best core is that constructed from clear wood of an even texture. then the whole core body is affected, in the same degree, by the moisture of the glue and changes in atmospheric conditions. This is an argument against building-up a core from different woods, that is embodying beech, basswood, spruce and gum, or other woods, in the same core. Each wood will act differently when exposed to moisture and it is possible that one piece may shrink or swell more than the rest, causing a depression or slight elevation to appear on the veneered surface.

Moisture Content and Equalization.

Very little requires to be said about dryness. The average wood user knows that the stock he employs must be dry, otherwise he will be confronted with warping, twisting, checking, shrinking and similar troubles. For the core, it is not sufficient that the average moisture content of a lot of lumber is 5 per cent. Each piece entering into a corebody should be equally dry. A damp piece among a number of dry pieces will shrink as it dries, causing a depression. This is one reason why cores should be sanded or dressed shortly before the veneer is laid.

Equalization is the term used to express the fact that the moisture in a piece of wood or core is equally distributed, or in other words, each part of each piece is equally dry. When stock for a core is glued up, the wood adjoining the joint picks up moisture from the glue and swells. This, after the glue is applied, there is a ridge along each joint. It may not be very high but it is there just the same. As the excess moisture taken from the glue is dried out and equalized, this ridge shrinks back until when the moisture content at the joint is the same as the rest of the piece, the joint is perfectly level again. Suppose the core had been sanded or planed, and the veneer laid, while the wood on either side of the joint was swollen, what would happen? Dressing off the slight ridge would not stop the wood from shrinking. With the veneer on top, the moisture would equalize more slowly, with the result that the piece might be sanded, filled, varnished and rubbed before the shrinkage was completed. In that case surface veneer would be drawn down along each joint and slight depressions, over the joints, would be visible on the finished surface. That is what happened in the case mentioned. The work was hurried through and the excess moisture at the joints was not eliminated until after the article was finished. The remedy is simple. Allow the cores to stand a few days on sticks before they are surfaced. The same applies to a crossbanded core. Give the core all the time possible before surfacing. That is why it is best to surface just before laying the veneers.

Machine Operations Important.

Some manufacturers lay their veneers and crossbanding on the cores as they come from the planer. If this machine is in perfect condition and doing faultless work, this may be permissable, but at best it is a practice that is open to doubt and criticism. Because the veneers and crossbanding used are thin, all planer marks and rough spots, where the wood was worked against the grain, will show through the face veneer. This is often noticed on veneered stock. It does not cost much to run a lot of cores through a drum sander, and it would certainly add to the appearance of the finished product. On a crossbanded core the sanding could be done just before laying the face veneer.

Any inequalities in the thickness of a number of cores can cause a lot of trouble. If the planer knives are not straight or are not set parallel to the bed, the slight variation which results, when multiplied by the number of pieces in a press load, say 15, means that very little pressure is being applied on the thin spots. This often accounts for loose veneers and blisters. A final sanding, if the sander is doing perfect work, will remedy this trouble.

There is sufficient material for a whole article in each of the points touched on. That being the case, it was possible to only briefly touch on the main features. However, if this article causes the reader to pause and consider, it will have accomplished something.

There's Many a Slip—!

What does it avail a man that he builds well if he fails to paint his dwelling?

It is easy for even the novice to build a good sawmill (if he has the money) but after the mill starts to saw lumber **knowledge** that comes only through long experience and study counts most.

Our manufacturing plants (four sawmills—three veneer plants) are not only as perfect as money plus experience can make them but—each plant is designed to cut only certain stock.

Trained supervision follows the product from the woods (where twenty men are needed to pick the quality of timber we want) to the shipping platform. Deviation from consistent merit is impossible.

Try Wood-Mosaic standard of white oak, walnut, ash, poplar and other hardwood lumber—sawed quartered white oak veneers, sliced and rotary cut walnut veneers and rotary cut yellow poplar cross banding.

Experienced Care in Handling is the Basis of Our Recognized Quality

WOOD-MOSAIC COMPANY

LOUISVILLE, KENTUCKY

Why Veneering Troubles Still Persist

In Spite of Improved Methods and More Accurate Knowledge, Veneering is Vexatious Operation—A Few Suggestions

By Dick New

It seems only logical to assume that, as much progress has been made in the art of veneering during the last few years, many of the veneering problems, which troubled the old-time glue man, have been overcome. We point with pride to the advance made in the design and manufacturing of veneering equipment, the new and improved glues in every-day use. We have a greater knowledge of the action of moisture in veneers and in core bodies and seemingly have the manufacture of glued-up material down to a fine science. But the question is,—Has this increased knowledge brought us any nearer to the point where veneer troubles have been overcome? The answer seems to be in the negative, for with all our modern equipment and with all the knowledge gained during the last few years, we still struggle on with the same old problems, but, perhaps, in a different way.

Whereas in the old days it was a question of working in the dark in trying to find the cause for warped and checked panels and other similar defects, to-day we know what causes these troubles and to a large extent how they may be prevented, but owing to the fact that the modern manufacturer aims at high production, he seems willing to take a chance on things turning out right rather than following, strictly, the rules laid down by modern veneering practices.

Not Content to Do Things Well.

The same applies to the man in the shop. The operator in charge of drying the veneer, will hurry things along by allowing a little less time for the veneer and core stock to dry. If this is the attitude of the average manufacturer and mechanic in his employ, is it any wonder that the old troubles are ever with us. Thus it may be said that the veneering troubles encountered to-day are not due so much to ignorance as to what constitutes good veneering, practices as to the gambling instinct of every human being, of just taking one more chance, and then trusting to good luck that the results will be satisfactory.

This is the practice of the man laying up the veneers, who says a minute or two longer to put it under pressure won't make any difference, or of the operator of the hydraulic press, who takes the attitude that too much pressure is better than not enough, and gives it the limit. In the buying department the buyer may know that a certain batch of glue or veneer offered him at a cut price may not come up to the exact requirements of his product, yet he sees an opportunity of saving a few cents or dollars on the first cost and decides to take a chance, then, perhaps, wonders why certain troubles are encountered or why the quality of the finished product is not up to the standard.

Modern Methods Responsible.

However, apart from the human factor, modern methods and modern equipment have developed troubles of their own. Thus the use of the newer casein waterproof glues has led some veneer men to think that the drying of the veneer and core is not so essential as when animal glue was employed. True, on certain grades of work, fair results have been obtained by glueing up material with a fairly high percentage of moisture content, but this applies only to a very limited class of work. For a high-class product and in all face work, it is just as necessary to have the stock absolutely dry when using casein glues as it was with animal glue.

Another new development in the adhesive field is sillicate of soda. This is being used to a large extent in the making of plywood for box shooks and other similar short-lived veneered products. While in its present state of development it is not suitable for the better grade of built-up work, it is possible that the time is not far distant when some of the present-day objections to its use have been overcome and this material will take its place among the other adhesives used in the veneering business.

Cause of Hair-line Checks.

It is not so long ago when the appearance of hair-lined checks in face veneers was ascribed to moisture in the veneer or moisture absorbed from the glue. Recently, however, the conclusion has been reached that only about 25 per cent. of the trouble from the hair-lined checks is traceable to moisture, and the other 75 per cent. results from the application of too much pressure. Heavy pressure, that is, beyond the requirements of the work in hand, tends to force the thin face veneers into the cross-banding, thus crushing and rupturing the fibres in the face stock. The veneer at this time is full of glue moisture and these little breaks and checks are not noticeable and often do not show up until after the application of the stains or varnishes. An article in the October issue of the "Canadian Woodworker" outlined the method of calculating the pressure per square inch, and also gave a table, showing the gauge readings for various-sized panels to give a square inch pressure of 100 lbs. Very little information is available as to the best pressures to use, but the general consensus of opinion seems to be that a pressure of from 100 to 150 lbs. per square inch is satisfactory. Those in charge of the veneering department could profitably do a little experimenting in an endeavor to determine the best pressure for the work they put through.

One often hears the merits of metal and composition caul boards discussed. In the writer's opinion the very best caul for all purposes is a plywood caul made of some absorbent wood such as basswood. A caul of this kind will take care of slight variations in the thickness of the veneers and will also absorb a certain amount of the moisture taken from the glue. If properly handled and carefully treated, the life of a wooden caul is long enough to make it a paying proposition.

Specializing in Chair-making Equipment

The patents and rights to manufacture the chair-making machinery, as formerly made by the Jenkins Machine Co., Sheboygan, Wis., has been secured for the Jenkins Co., by the L. G. McKnight & Son, Co., of Gardner, Mass. As the McKnight Co. have been engaged in producing equipment for making chairs and for cutting and working them, the aquisition of the the patents and right to the Jenkins line of chair-making equipment will tend to round out their line, making it a specialized line of chair-making equipment.

Finest Quality Veneers

We carry in stock, for immediate shipment, 3 and 5 ply Panels in Birch, Oak, and Mahogany — sizes 24" and 30" wide, 48", 60" and 72" long.

Ordering your Veneer requirements from us takes the gamble out of buying—because our stocks are so carefully chosen and so complete that we are always able to give you exactly what you want.

Why not let us send you full particulars.

We have on hand at all times a complete range of American Walnut, Mahogany, Quartered Oak (in all thicknesses) Figured Gum Veneers, and Rotary Cut Veneers in all the popular woods.

TORONTO VENEER CO. LIMITED

1100-1107 Queen St. West TORONTO, ONT.

Walnut, Quartered White Oak and Mahogany Veneers and Lumber

Prompt Delivery

LONG-KNIGHT LUMBER COMPANY

INDIANAPOLIS, IND.

How to Distinguish Birch, Beech and Maple

Birch, beech, and maple are very similar in appearance, and have approximately the same weight. Hence it is comparatively easy to mistake one of them for the other. A method which anyone can use to distinguish them is suggested by the U. S. Forest Products Laboratory. The method makes use of the relative width of the pores and medullary rays in the three woods.

If the end grain of birch, beech, or maple is cut smooth with a sharp knife and examined with a hand lens, the pores will be seen as tiny holes distributed fairly evenly over the surface, and the medullary rays will appear as narrow lines of a different shade running at right angles to the growth rings.

In beech some of the rays are very distinct even without a lens. The large rays are fully twice as wide as the largest pores.

In maple the rays are less distinct, and the largest are about the same width as the largest pores.

In birch the rays are very fine, invisible without a lens. The pores are several times larger than the rays, usually being visible to the unaided eye as minute holes on the end grain and as fine grooves on dressed faces of the board. The pores in birch are considerably larger than the pores in beech or maple.

The appearance of the medullary rays on a "quartered" surface is also distinctive. Here they appear in beech as distinct "flakes," the largest being between 1/16 and 1/8 inch in height when measured along the grain of the wood. In maple they are considerably smaller, rarely attaining a height of 1/16 inch. In birch they are comparatively inconspicuous.

Indicating Correct Knife Bevels

Knife bevels for different woods under different conditions are shown on the accompanying sketch. This was taken from a knife chart issued, recently, by the Simonds Canadian Saw Co., Montreal, P.Q. These bevels, which are varied to suit woods of different densities and of varying degrees of dryness, were decided on only after many tests had been made under actual working conditions.

The feed to be carried on ony planer or sticker should be governed largely by the number of knives and the rate at which the head is revolving. The average feed rate runs from 20 to 30 feet a minute for each knife cutting, when the head is revolving at the average rate of 3,000 r.p.m. Thus a head carrying four knives running at 3,000 r.p.m. would stand a feed up to 120 feet per minute. If six knives were attached a feed as high as 180 feet a minute could be carried.

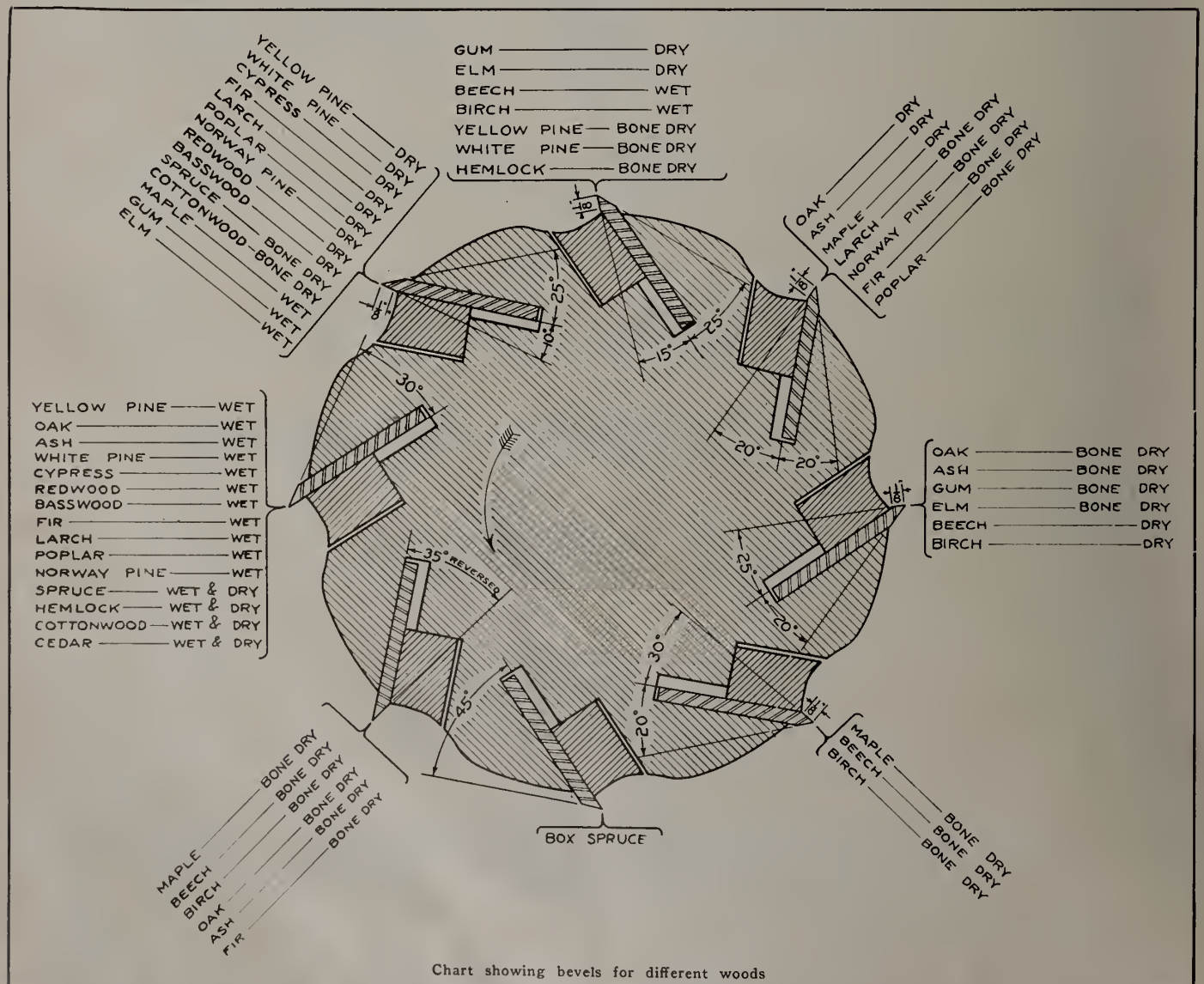


Chart showing bevels for different woods

Leland G. Banning
CINCINNATI, OHIO

Send Us Your Orders

For

Soft Texture

Mountain Poplar

and

Northern Oak

1 to 4″ thick, any grade. Can ship immediately.

3 PLY **VENEERED PANELS** 5 PLY

In

Maple, Elm,
Birch,
Walnut, Mahogany,
Plain Oak,
Quartered Oak,
etc., etc.

For

Drawer Fronts,
Drawer Bottoms,
Desk Tops, Table Tops,
Door Panels,
Interior Woodwork,
Sewing Machine
Woodwork, etc., etc.

HAY & CO., Ltd., Woodstock, Ont.

Have Lumber Prices Reached Rock Bottom?

Indications Point to an Awakening Demand — Production Curtailed with Stock Below Normal—Stabilization Would Benefit Producer and Consumer

By L. R. Wright

In the November issue of the "Canadian Woodworker," I made the suggestion that the present is an opportune time to sort-up and fill-out depleted lumber stocks. I want to reiterate and emphasize that suggestion. Indications point to the fact that lumber prices have reached their lowest levels and that the next movement will be upward. That being the case, the wise wood-user will estimate his requirements and enter the market before prices stiffen and increase.

One of the main reasons for stating that lumber prices have reached their lowest ebb, is that signs are not lacking, pointing to an awakening demand. At the first positive signs of a change in the lumber situation, values are bound to stiffen, with an upward tendency. Such signs are not very pronounced but are discernible to those in close touch with the lumber industry. They consist of an increasing number of inquiries for quotations, some by wire, which would not be the case if the request were not prompted by need for such stock, an increasing number of orders for mixed cars, showing that stocks are being checked over and shortages replaced, and, lastly, the placing of a few export orders together with an increased interest on the part of overseas buyers.

Another factor is that many items are selling at and even below the cost of production. The result is curtailed production and cessation of logging and manufacturing operation. This phase is emphasized in the following communication from a gentleman who is in close touch with the conditions in the Southern producing centres: "The writer has just returned from a three weeks' trip among the mills of Arkansas, Louisiana, and Mississippi, and is fairly well acquainted with the production centres, such as Memphis, Tenn., Helena, Ark., Little Rock, Ark., Alexandria, La., and New Orleans, La., and other of the larger shipping points, and feels safe to say that at least 75 per cent. of the mills producing southwestern hardwoods are now closed down, and that another 10 per cent. will be closed shortly.

"Speaking generally, the logging outfits have been taken out of the woods, and the cutting of trees has been discontinued for the winter. Inasmuch as the rainy season will prohibit the resumption of logging until late spring or early summer, it is comparatively easy to figure to a certainty that there will be far from normal supplies in the hands of the producers before August or September, 1921.

"It is the general consensus of opinion among those who have made it a business to find out, that there is, unsold, in the hands of the producers, not over 60 per cent. of the normal stocks of oak, gum, and other southwestern hardwoods. There is no question but that all of the mills would have continued producing, could they have done so without loss of money.

"The stocks now being carried have cost the producer to manufacture, approximately fifty to seventy dollars per M, log run, for oak; and forty to sixty dollars per M for gum—the actual cost dependent, of course, largely upon the quality of the log. The prices obtained from the consumer to-day will average f.o.b. mill, from forty to fifty dollars on oak, and from thirty to thirty-five dollars on gum. These figures give the reason for discontinuance of manufacturing.

"The mill men are very optimistic as to the outlook for the future, and are quite resigned to present conditions, and are prepared to sit and wait until the buyer shows himself above the surface. After studying the habits of the lumber trade for 25 years, I feel safe in the prediction that history will repeat itself, and that when the lumber consumer does come into the market, he will come "en masse," which will, in the nature of things, have a very marked effect upon values.

"If it were possible to convince the consumer of lumber of the truthfulness of the present situation, as stated above, they would recognize the exceptional opportunities now offered, to buy at prices which are below the cost of production, and much less than they will be able to buy after the first of the year. Should a fair percentage of them come into the market now, rather than have them all wait until January, February or March, it would certainly have a very strong tendency to keep the market from skyrocketing."

The same remarks hold true with regard to northern and Canadian hardwoods. Stocks in the hands of wholesalers and lumber manufacturers are low—the estimate is 60 per cent. of normal. This applies more particularly to the higher grades. In addition, this year's cut is not expected to exceed 50 per cent. of that normally brought out. The conclusion is obvious. When buying is resumed, whether in the immediate future or next spring, there is not likely to be enough lumber to go around, with the result that the buyers will be scrambling for stocks and prices will soar.

Such a condition is not healthy and is not desirable either from the standpoint of the lumber manufacturer or of the wood-user. A repetition of the spring market of 1919 can only be prevented by lumber buyers breaking the existing "non-buying" strike and placing orders to cover immediate requirements.

It would not be correct to state that the market has turned and prices are advancing, but the low point in lumber values has been reached and that the next trend will be upward. The manufacturer who enters the market to-day, will not only help to stabilize conditions, to the benefit of his own industry, but will be able to secure his requirements at a figure that will be under the prices prevailing a few months from now.

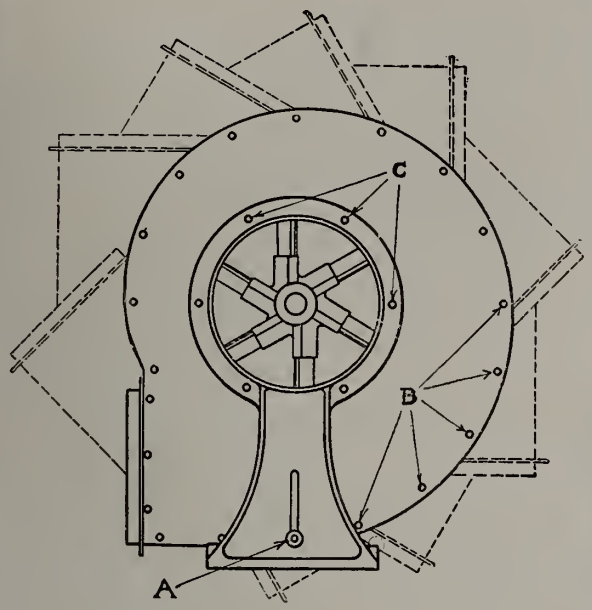
A Real Wooden Wedding

Norfolk, Va., Nov. 11.—When Miss Ada Oakes, daughter of Mr. and Mrs. J. C. Oakes, of Washington, N.C., became the bride of Walter Pine of Salisbury, N.C., recently, the pair had a "wooden wedding." For instance:

The Groom—Walter Pine.
The Bride—Miss Ada Oakes.
The Best Man—Rober L. Birch.
The Bridesmaid—Anna Lee Laurel.
The Preacher—The Rev. Oscar Wood.

The couple went to Hickory, N.C., to spend a week with the bridegroom's aunt, Mrs. E. W. Shingle.

Reversible Housing



One of the features of the Canadian Planing Mill Exhauster is the reversible housing. It is easily adjustable to either hand and to any discharge.

By this arrangement one fan may be used to meet all requirements, thus eliminating crossed belts and sharp angles.

Let our engineering department help you plan your refuse exhauster system.

Write for catalogue 400-13.

Canadian Blower & Forge Co.
KITCHENER, ONT.

Let's Forget Business

Meantime, and Catch

The Christmas Spirit.

With Good Will to All,

We Wish You and Yours

In Large Measure

The Joys of Christmas.

Canadian General Lumber Company, Limited
712 Bank of Hamilton Bldg.
TORONTO
MONTREAL OFFICE: 203 McGill Bldg.

Selling
Graves, Bigwood & Co.'s
Lumber, Lath and Box Shooks

Information and Inquiries

You are cordially invited to make use of this department

Enamel Baking Ovens

Lawrenceville, P.Q., Nov. 27, 1920.

Editor, "Canadian Woodworker":—

Can you tell me where I can secure information on baking ovens, suitable for baking enamel on small wooden articles? Thanking you in anticipation, I am,

Sincerely yours,
L. H. Millette.

The following firms manufacture industrial ovens suitable for baking enamels on wood: Bellevue Industrial Furnace Co., Detroit, Mich.; American Enamel Co., Providence, R.I., and the Paul Maehler Co., Chicago, Ill. The Consumers Gas Co., Toronto, through their engineering department, are prepared to design and manufacture gas oven of any capacity and to suit any particular requirement.

Graining Machine Wanted

Chatham, Ont., Nov. 27, 1920.

Editor, "Canadian Woodworker":—

I wish to secure a machine for graining. The machine I want is for imitating quartered oak and is used largely for such articles as cheap furniture, incubators, screen doors, etc. Kindly tell me who manufactures such equipment.

Yours truly,
Arthur Dunn.

The Hugh Silver & Son, Prescott, Ont., and the Grand Rapids Panel Co., Grand Rapids, Mich., are manufacturers of graining equipment, rolls, etc.

Clamp Fasteners Wanted

Alliston, Ont., Oct. 27, 1920

Editor "Canadian Woodworker"

Will you kindly inform us where we can purchase clamp fasteners or steel splines, such as are used by the manufacturers of phonographs in assembling the tops.

Yours truly,
J. E. Burnett

The clamp fasteners you require are manufactured by Wm. Siegler & Son, 115 S. Clinton St., Chicago. The Empire Tool Works, Toronto, have made a few of these clamps. Would suggest that you get in touch with them. Mr. McIntyre is the manager.

Wonderlac Shellac Substitute

Chatham, Ont., Nov. 2, 1920

Editor "Canadian Woodworker"

Would like to get in touch with the manufacturing of a shellac substitute called "Wonderlac" and not knowing their name, have referred to you in the hope that you would be able to assist us. Any information you may give will be appreciated.

Yours truly,
S. Hadley Lumber Co.

The shellac substitute to which you refer, namely, "Wonderlac," is manufactured by the Flint Color & Varnish Works of Canada, Limited, Montreal, P. Q.

K. D. Furniture Wanted

A firm in Johannesburg, S.A., who are importers of furniture, are desirous of securing price lists, catalogues, etc., from Canadian furniture manufacturers who are prepared to handle this business and make regular shipments. Desks are important items. When writing for the name of this firm kindly refer to enquiry 2377.

To Clean Hardwood Mouldings

Victoria, B.C., Nov. 2, 1920.

Editor, "Canadian Woodworker":—

Will you endeavor, through your magazine, to find out whether any of your readers can inform me how to clean hardwood mouldings that have been exposed to the weather and become stained. Is there any particular cleanser or wash that would remove this discoloration easily and efficiently? Thanking you in anticipation, we are,

Yours truly,
Knappen Bros.

If any of our readers can supply this information and will co-operate by writing the editor, their kindness will be appreciated.

Butter Boxes Wanted

A Liverpool concern are in the market for 250,000 to 300,000 butter boxes for Irish trade. Delivery February to September. Name on request. Inquiry No. 2234.

Suggestions for Lacing Belts

Much better results would be secured from belts if more attention were paid to lacing. No matter what form of lacing is employed, the laced joint is the weakest place in the belt and is the point where trouble usually begins. The following suggestions may be found helpful in securing greater satisfaction and service from belts:

Cut the ends of the belt square. Do not depend upon your eye or use an ordinary ruler. If the end is cut slantwise, the pull will come on one side.

Make the holes as small as practicable. Use an awl rather than a punch, whenever possible.

Leave a sufficient margin at the edge of the belt without holes so as not to impair its strength. In belts 2 in. to 6 in. wide the holes should be at least ½ in. from the edge, ⅝ in. for belts 6 in. to 12 in. wide, and ¾ in. for belts 12 in. to 18 in. wide.

Make two rows of holes in parallel lines straight across the width of the belt, and stagger them so that the strain comes upon different portions of the belt.

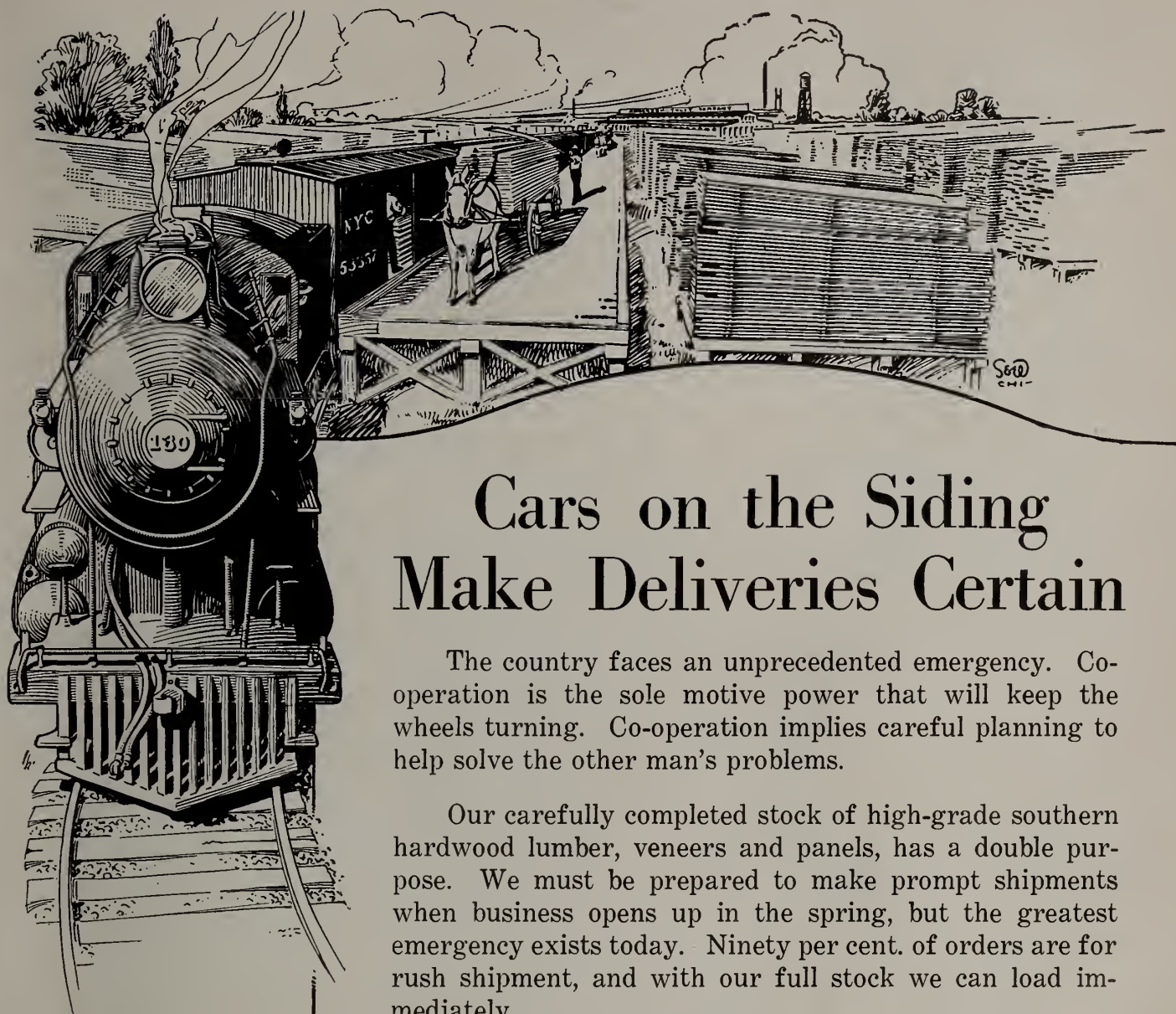
Be sure that the holes in the two ends to be joined match, otherwise there will be a "jog" in the belt, and this may result in tearing the belt lengthwise.

Use flexible lacing, being careful to have it proportionate to the size of the belt. A heavy lacing is likely to cause trouble.

In lacing the belt, make the pulley side as smooth as possible. Rough places and ends should be turned away from the pulley.

In using metal fasteners on rubber belts, select those which place the strain on the lengthwise strands. The crosswise strands are not so strong as those which run lengthwise.

One man tried to repair a planing machine without stopping it. He was caught in the gears. In order to save a minute, he lost his hand.



Cars on the Siding Make Deliveries Certain

The country faces an unprecedented emergency. Co-operation is the sole motive power that will keep the wheels turning. Co-operation implies careful planning to help solve the other man's problems.

Our carefully completed stock of high-grade southern hardwood lumber, veneers and panels, has a double purpose. We must be prepared to make prompt shipments when business opens up in the spring, but the greatest emergency exists today. Ninety per cent. of orders are for rush shipment, and with our full stock we can load immediately.

The location of our mills is insurance of plentiful cars. Cars on the siding and a full stock behind them make immediate delivery certain. Try us.

ANDERSON-TULLY CO.

MEMPHIS, TENNESSEE

OUR FOUR MILLS PRODUCE 200,000 FEET DAILY

ATCo MEMPHIS SOUTHERN HARDWOOD LUMBER & VENEERS

News of the Trade

The Capital Broom Co., Regina, Sask., are disposing of their plant.

C. Gamelin, Montreal, P.Q., was recently registered as an upholsterer.

The sawmill of P. N. Mathieu, St. Gregoire, Que., was recently destroyed by fire.

The Dominion Furniture Co., Limited, Edmonton, Alta., were recently incorporated.

J. S. Parent & Co., Montreal, P.Q., were recently registered as manufacturers of mops.

West & Little, East Angus, P.Q., sash and door manufacturers, recently dissolved partnership.

The furniture factory operated by Mrs. M. Foster, Ottawa, Ont., was recently destroyed by fire.

Green Bros., Toronto, Ont., manufacturers of interior woodwork, are disposing of their business.

The Fairy Toy Co. has leased the Academy Building, corner of Bond and Dundas Sts., Toronto.

The Canadian Builders' Manufacturers' Woodworker Co., Winnipeg, Man., were recently registered as a partnership.

The plant of the Sterling Woodworking & Construction Co., Limited, Lambert, P.Q., was recently destroyed bp fire.

The sash and blind factory of C. F. Moore, Limited, St. Lambert, P.Q., was completely destroyed by fire. The loss is $15,000.

The rights for Great Britain of the Lloyd loom for manufacturing wicker furniture, has been secured by Messrs. Lusty & Sons of London, England.

The Toronto carpenters at a mass meeting held in the Labor Temple recently, decided to stand by their wage demand for $1.10 an hour for the coming season.

The Doering Trunk Company, Waterloo, Ont., have been authorized by supplementary letters patent to increase their capital from $40,000 to the sum of $250,000.

The plant of the Duhamel Rattan Furniture Co., Reg'd., St. Hyacinthe, P.Q., are being disposed of by tender. Vincent Lamarre, Montreal, is the authorized trustee.

The Port Arthur Shipbuilding Co., Port Arthur, Ont., recently launched the "Canadian Harvester," a steamer which was built for the Canadian merchant marine.

Messrs. Maguire, Patterson and Palmer (Canada), Limited, who are erecting a $5,000,000 match factory at Pembroke, Ont., were recently registered in Montreal.

Robert Bury & Company (Canada), Limited, Toronto, were recently authorized by supplementary letters patent to increase their capital from $40,000 to the sum of $100,000.

The Halifax Shipyards, Halifax, N.S., recently launched the 5400-ton trader, known as the "Canadian Mariner." This vessel is to be delivered to the Canadian Merchant Marine.

The plant of the Denby Motor Truck Co., Chatham, Ont., has been acquired by J. T. Wood & Son, of Brussels, Ont. This plant will be converted into a knitting factory.

Work is proceeding nicely on the factory being erected by the Progress Spring Bed Co., Limited, Montreal, P.Q. When completed, this new addition will have cost about $10,000.

The Mill Cut Homes & Lumber Co., Limited, Vancouver, B.C., has recently been organized with a capital of $50,000 to manufacture and deal in knock-down or ready-cut houses.

The Hintonburg Planing Mill on Armstrong St., Ottawa, was recently destroyed bp fire. The loss is $2,000. The owner of the mill, Mr. Foster, is considering the advisability of rebuilding.

Beatty Bros., Fergus, Ont., are having plans prepared for a $200,000 addition to their London factory. It is anticipated work will be undertaken on this new extension in the early spring.

I. Johnson & Son, Limited, Toronto, Ont., were recently incorporated as general woodworkers. Capital $60,000. L. Macaulay and H. J. McLaughlin, solicitors, both of Toronto, Ont., are two of the incorporators.

The plant of the Conklin Planing Mill Co., Kingsville, Ont., has been totally destroyed by fire. The loss is estimated at $25,000. The owners plan on rebuilding and will be in the market for the necessary equipment.

There is a possibility that the well-known shipbuilding firm of Wm. Beardmore & Co., of Glasgow, Scotland, will establish a branch in Canada, probably in Montreal. If conditions warrant, the company may build a large plant.

A small blaze occurred in the factory of the Kindel Bed Co., Limited, Stratford, Ont. The damage done was very slight. The blaze originated in the baking oven in which the enamel on the davenport frames, springs, etc., is baked.

The Diamond Brush Co., Limited, Toronto, Ont., were recently granted incorporation by federal charter to manufacture all kinds of brushes. Capital $500,000. Two of the incorporators are M. J. Sage and G. E. Gynn, both of Toronto.

The Wood Hydraulic Hoist & Body Co., of Detroit, Mich., recently opened a Canadian factory at Windsor, Ont. The hoist is used in connection with the dumping of motor trucks, or with unloading devices which are now on the market.

Gelinas, Limited, Three Rivers, P.Q., have been incorporated to manufacture and deal in furniture, toys, boxes and other wood products. Capital $49,000. Two of the incorporated are H. G. Lajoie and A. Lebelle, both of Montreal, P.Q.

All-steel office furniture seems to be growing in popularity in Great Britain. Many new factories have been equipped recently to manufacture office furniture and equipment in steel, and over $200,000 has been expended in equipping these plants.

The Thompson Company, Limited, Sherbrooke, P.Q., have been incorporated to manufacture and deal in spools, bobbins, spindles and wood products. Capital $100,000. C. G. Thompson and J. A. Cook, both of Sherbrook, are two of the incorporators.

The International Button Co., Smith's Falls, Ont., which recently purchased the "Steel" planing mill, has completed the installation of their new equipment and is now taking on operators as fast as they can be trained to handle the different machines.

Goo & Patrick, Limited, Toronto, Ont., have been granted a charter to manufacture and deal in automobiles, motor trucks, carriages and wooden vehicles. Capital $50,000. W. W. Perry and Chas. H. Croft, both of Toronto, are two of the incorporators.

The T. Eaton Co., Limited, of Toronto, have presented the Royal Ontario Museum with a number of pieces of genuine period furniture. Included in the lot is a complete furnished room dating 1740 and other examples of 17th and 18th century furnitury.

The Wallace Shipyards, Limited, North Vancouver, B.C., have about completed their new three-storey carpenter shop. This new addition was found necessary when the company accepted a contract from the C.P.R. for the construction of a passenger vessel.

The Decalcomania Co. of Canada, Limited, Toronto, Ont., manufacturers of transfers, etc., are erecting a two-storey factory 63 x 148 feet. The building will be of mill and brick construction, and when completed will cost in the neighborhood of $60,000.

Modern Implements, Limited, Walkerville, Ont., have incorporated to manufacture and deal in trucks, aeroplanes, farm implements and wood products. Capital $100,000. Two of the incorporators are H. E. Blood and C. D. Donaven, both of Walkerville, Ont.

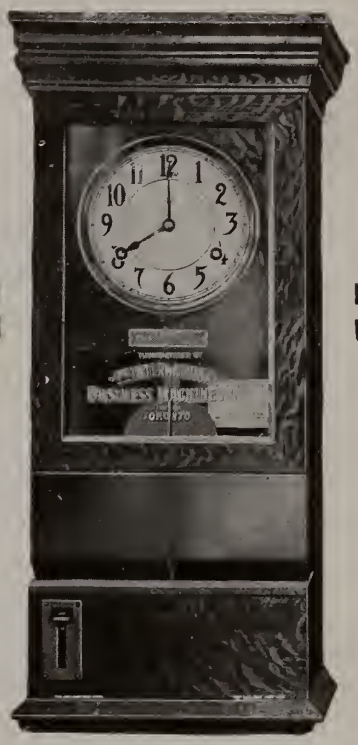
Stevenson Bros., Limited, Toronto, Ont., were recently granted a federal charter to manufacture and deal in furniture, roofing and all kinds of woodenware. Capital $50,000. J. F. Stevenson and G. C. Stevenson, both of Toronto, are two of the incorporators.

A boiler in a new cooperage factory at Fort Coulonge, Que., belonging to the Sutherland-Innes Co., Limited, of Chatham, Ont., recently exploded, killing one of the employees and injuring a number of others. The reasons for the accident are not known.

Warren & Son, Woodstock, Ont., are working on a large organ for the Pantages Theatre in Toronto. This is the largest theatre organ in Canada but a larger one is contemplated for the theatre being erected in Montreal by the Famous Players' Corporation.

After being closed down for a few weeks, the plant of the North American Bent Chair Co., Limited, Owen Sound,

First Assistant to the Superintendent



INTERNATIONAL JOB TIME RECORDERS

George Martin, superintendent of the Blank Furniture Manufacturing Co., was talking to one of the International salesmen.

"I'll tell you," said George, "that International Job Time Recorder is one thing I couldn't and wouldn't do without—I call it my **first assistant.**"

"Just take a look around this workroom," said George, with a wave of his hand, "Every man at his bench or machine, and they smile while they work, too. You see the men all know they are timed on every job and **they seem to take a keen delight in trying to cut down on the time necessary for each operation.** And it doesn't affect the quality of their work either, because we have a standard that must be maintained and the men realize it."

"And say," and here George began to get enthusiastic, " the very day the boss put that job time recorder in here I discovered that I had a bunch of 'chair warmers' on my hands. Did I fire them? No, you bet I didn't; some of them are the best workmen I have—all they needed to prove it to themselves and me was that time meter. You've just got to admit that something happened to our production, too! Why some men in this department turn out as much work in a day now as they used to in two."

"Is the boss satisfied?" exclaimed George; "Why say, if he couldn't get another one to take its place money couldn't buy it. He'll tell you so too, and just as soon as our new addition is ready you'll get an order for more."

Does your superintendent need a **first assistant?** Why not ask him?

We would like to show you how many other superintendents are getting greater production from their departments by using International Job Time Recorders. It won't cost you anything to investigate, but it most likely will if you don't.

International Business Machines Company, Limited

Frank E. Mutton, Vice-President and Gen. Manager.

Head Office and Factory: Campbell and Royce Aves., TORONTO, ONT.

Halifax, N. S., 44 Granville St.
St. John, N. B., 18 Germain St.
Quebec, Que., 506 Merger Bldg.
Montreal, Que., 1 & 3 Notre Dame St. W.
Ottawa, Ont., 190 Queen St.
Toronto, Ont., 409½ Yonge St.
Hamilton, Ont., 225 King St. E
London, Ont., 489 Richmond St.
Walkerville, Ont., 44 Lincoln Rd.
Winnipeg, Man., 227 McDermott Ave.
Saskatoon, Sask., 254 3rd Ave. S.
Edmonton, Alta, 10118 102nd Ave.
Calgary, Alta, 127-6th Ave.
Vancouver, B. C., 110 Water St.

Also manufacturers of Dayton Scales and Hollerith Electric Tabulators

Ont., has been reopened with practically a full complement of men. Sufficient business is in sight to keep this plant running for an indefinite period.

The plant of the Frontenac Molding & Flash Co., Limited, Kingston, Ont., was recently damaged by fire. The loss is estimated at $3,000. Had it not been for the sprinkler system installed, there is a strong possibility that the whole plant would have been destroyed.

The Gilsy Musical Corporation, Limited, Toronto, Ont., were recently incorporated to manufacture and deal in phonographs and other musical instruments. Capital $40,000. J. R. Roaf and J. Creighton, solicitors, both of Toronto, Ont., are two of the incorporators.

The Tudhope-Anderson Co., Orillia, Ont., manufacturers of carriages and agricultural implements, are extending their business. They recently completed arrangements with Messrs. Bournival & Co., of Montreal, to handle their complete line for the province of Quebec.

The Manufacturers' Lumber Co., Stratford, Ont., have purchased the cooperage plant in Stratford, formerly operated by Merritt & Co., of Chatham, Ont. Hardwood lumber, together with hoops and staves, will comprise the output. About twenty men will be employed.

The Office Equipment Company of Canada, Limited, Montreal, P.Q., have been incorporated to manufacture and deal in office equipment, furniture and other office fixtures. Capital $100,000. Two of the incorporators are W. A. Hayman and P. N. Jacobson, both of Montreal.

The paint and varnish manufacturers of Canada donated $1,600 to the Muskoka Free Hospital through their organization, the Canadian Paint, Oil & Varnish Association. This was collected at a recent meeting of the association and is to be used in rebuilding the above institution.

J. G. Stephenson, who operates a small clothespin factory at Orillia, Ont., was instantly killed, recently, in his plant. Something went wrong with the electric motor and when Mr. Stephenson attempted to pull the switch, his hand came in contact with both live wires with fatal results.

The box factory and planing mill of the Canada Box & Lumber Co., Limoilou, P.Q., was entirely destroyed by a disastrous fire. In addition to the plant, a considerable quantity of lumber went up in flames. The loss is in the neighborhood of $70,000 and is partly covered by insurance.

Maisonneuve Box & Lumber, Limited, Montreal, P.Q., have been incorporated to acquire the business and interests of La Fabrique de Bois Laval, Limitee, and to manufacture all kinds of wooden boxes. Capital $49,500. E. Abel and J. T. Legault, both of Montreal, are two of the incorporators.

Business may be quiet, but that does not seem to have prevented the Goderich Mercantile Co., Goderich, Ont., from closing a rush order with a Toronto firm for over $30,000 worth of furniture. As delivery is to be made by January 15th, it will be necessary to operate the factory both day and night.

J. M. Hughes, Kingston, Ont., has purchased the business known as the Kingston Casualties Reed & Rattan Co., and will carry on the manufacture of reed and rattan articles. This company was started with a view to enabling disabled soldiers to learn an occupation at which they could earn a good wage.

The Canadian Bonom Reversible Steam Turbine Co., Limited, Quebec, P.Q., have been incorporated, under federal charter, to manufacture and deal in automobiles, aeroplanes and wooden vehicles. Capital $100,000. A. Bonom and C. E. Taschereau, both of the city of Quebec, are two of the incorporators.

The Bruce Wood Workers, Limited, Chesley, Ont., who recently took over the plant of the Canada Beds, Limited, are turning out a line of extension table slides, table pins and similar items for the manufacture of extension tables; also a line of wooden parts for automobile running boards, toe boards and seat lids.

It is understood that arrangements have been completed for the reopening of the Dominion Shipbuilding Yards, Toronto. It is not known whether this yard will take on any new work when the two ships on the way are completed. In any event suffcient work is available to keep the plant in operation throughout the winter.

In presenting information before the Tariff Commission, a representative of the paint and varnish industry stated that in 1910 there were only twenty-six firms manufacturing finishing material in Canada, while at the present time forty-five are engaged in this business and their total annual output is valued at over $25,000,000.

A. B. Beverley, recently purchased the premises at 485 King St. W., Toronto, where he operates the National Cabinet Co., producing five hundred phonograph cabinets a month. He intends making substantial additions to his factory. Several new machines will be installed and production increased to a thousand cabinets a month.

Piano Cases and Phonographs, Limited, Brantford, Ont., who are at present operating under federal charter, have been granted incorporation under provincial charter providing the company does not use in Ontario a larger amount of capital than $70,000. The company has appointed W. T. Henderson, of Brantford, to act as their attorney.

A company known as the Acetate Products, Limited, is being formed to operate a chemical plant at Port Mann, B.C., to manufacture chemicals, such as wood alcohol, acetated lime and charcoal from alder wood. This wood will be distilled in large retorts. Acetone is used largely in the manufacture of cordite, while the charcoal will be disposed of to powder manufacturing companies.

According to a decision recently handed down by Judge Denton, several Toronto firms succeeded in obtaining a reduction of business tax assessments. Judge Denton ruled that such firms as Heintzman & Co., Gourlay, Winter & Leeming, Nordheimer & Co., and Frank Stanley, who both manufacture and retail pianos and other musical instruments, be classed as retailers and assessed on a 25 per cent. basis.

The Dominion Rattan Co., Limited, Montreal, P.Q., have been incorporated with a capital of $20,0000 to manufacture and deal in reed and rattan furniture and to take over the business known as the Canadian Reed & Rattan Mfg. Co. The plant of the latter company was damaged by fire a short while ago, but the damage has been repaired and production resumed. R. Larocque is the manager of the new company.

The Grimsby Steel Furniture Co., Grimsby, Ont., are bringing out a new phonograph. For some time past this firm has been making cabinets for the Columbia Gramophone Co. of Toronto, but have decided to branch out and market a line of their own. The new Grimsby phonograph contains a few changes in design and mechanism which it is claimed tend for a better machine both in appearance and tonal qualities.

The spacious building on King St., Toronto, formerly occupied by the Murray-Kay Company, has been secured by a number of Toronto men for the holding of a furniture exhibition early in the new year. This exhibition will be held at the same time as the proposed Stratford and Kitchener shows. In all probability most of the Toronto manufacturers will display their lines. About forty manufacturers will show their lines.

A lot is published about the Germans and Austrians flooding the British market with pianos. One phase of this situation which is worth emphasizing, is the fact that apparently these pianos are not being bought by the British public. Some of the importers of foreign pianos are afraid to even advertise them but are attempting to dispose of them personally at a price below that being asked for the cheapest grade of British make.

The new Canadian plant of the Fulton Motors, Limited, of Farmingdale, Long Island, is to be located at Welland, Ont. An announcement to this effect was recently made by George Day, Industrial Commissioner for Welland. The site secured consists of 4½ acres, including some buildings, but extensions and additions will be necessary. New machinery is being shipped to this plant. A line of trucks from ¾ to 5 h.p. will comprise the Fulton line.

The Emerson Phonograph Co., Inc., of New York, who operate five factories in the United States, have disposed of the Canadian rights to the Emerson-Canadian Co., Limited, a new corporation which is being organized in Brockville, Ont., to manufacture of Emerson records and, ultimately, phonographs. The capital of the new company is $500,000. J. R. A. Lang, Hon. George T. Graham and W. B. Reynolds, all of Brockville, are among the provisional directors

The Listowel ratepapers recently carried the by-law approving a loan of $25,000 to a local corporation recently organized to manufacture automobile wheels and other similar articles. The type of wheel to be made is entirely new and the company has been strongly financed with a view to promoting a large export trade with Great Britain as well as

One reason why our Gum is Straight and Flat

The Ultimate Cost

The cost of lumber in the finished product, furniture, trim, auto bodies, music cabinets or whatever it may be, is what the manufacturer is interested in. Ultimate cost; that's the true yard stick of value.

That's what we're striving for; **to give our patrons the lowest ultimate cost.**

That's why we steam (Kraetzer-Cure) our Gum as it comes from the saw, thus preventing stain, eliminating warp, producing lumber that is **straight, bright** and **flat.**

That's why we use nine stickers in piling our lumber instead of the customary four, five and six; use only carefully selected stickers of unifrom size and have these placed directly over each other in perfect alignment.

That's why in many other details we spend just a little extra money, putting value into our product, which is returned with big dividends to the man who uses it.

We're proud of our lumber; that's why we put our brand on every board. Every car we ship must go into our customer's work exactly according to his calculations. It must produce less waste; be a little better than he expected; **we are satisfied with nothing less.**

Make a thorough comparison with the ordinary kind—**and be convinced.**

Our protection THE KRAETZER-CURED LUMBER CO. *Your guarantee*

The Kraetzer-Cured Lumber Co.

GENERAL OFFICE: GREENWOOD, MISS.

Band Mills: Greenwood, Miss., Moorhead, Miss.

Why our Gum does not stain

Our Quartered and Plain Red and White Oak, Ash, Hickory, Red Gum and Tupelo is as fine as the highest quality of virgin timbers and thorough knowledge of production can produce. THERE IS NONE BETTER.

cultivating the Canadian market. A building has been secured with trackage on both C. P. R. and G. T. R., and the installation of machinery will be undertaken immediately.

R. W. Milligan, of Orillia, Ont., is negotiating with the city council for the lease of a site on which to erect a hoop mill. If successful in securing a suitable location, Mr. Milligan intends to spend $4,000 on the erection of a plant, and will give employment to 10 or 12 men. While the Industrial Committee of Orillia favored granting Mr. Milligan's request, it was found upon investigation that part of the site desired was under lease to another concern. The matter is being held in abeyance and an exort made to come to some satisfactory arrangement.

The Clarkson Fruit Growers' Association have given a contract to the Oakville Wirebound Box & Basket Co. for their requirements for the 1921 fruit season. This order calls for approximatelp 3,000,000 quart boxes, 200,000 baskets and 45,000 crates. The prices are around 20 per cent higher than those which prevailed last season. In all likelihood the Association would have had to pay more for these containers were it not for the fact that certain British Columbia basket manufacturers were in the field with lower quotations. The B. C. Product, however, differed from the requirements of the local trade.

H. A. Grimsdick of the Bell Piano & Organ Co., Guelph, Ont., in giving evidence before the Tariff Commission, presented the following facts pertaining to the piano and organ industry: In Canada there are 32 factories devoted to the manufacture of these lines, together with 15 plants producing accessories for the piano manufacturing trade. Employment is given to 4,000 men and the annual pay rolls total over $5,000,000. The total investment is in the neighborhood of $15,000,000. In addition, in the retail field there are 402 dealers, employing some 10,500 people and representing an investment of $46,000,000, with an annual turn-over of $50,000,000.

PERSONAL

Mr. MacDonald of the B. C. Manufacturing Co., New Westminster, B. C., was in Toronto recently, calling upon the trade.

Walter C. Laidlaw, of the R. Laidlaw Lumber Co., Toronto, lumberman and general woodworkers, was recently re-appointed president of the Central Neighborhood House at the Ninth Annual Meeting of this institution. The aim of this organization is to show new citizens the best meaning of Canadian nationality and to help them preserve the best in the heritage which they bring with them from their own counties.

H. F. Holton, of Toronto, who is a member of the inspection staff of the National Hardwood Lumber Dealers' Association, has returned from an enjoyable hunting trip near Restoule.

Clayton R. Burt has been appointed general manager of the Willys-Overland, Limited, Toronto, succeeding T. A. Russell. Mr. Burt has had considerable experience in the motor car business, having been assistant manager of the Russell Motor Car Co., Limited, Toronto, for four years and general manager of the Russell Motor Car Co., Buffalo, N. Y., for the past three years. He will assume his new duties immediately.

OBITUARY

T. W. Bennett recently passed away in Toronto. Mr. Bennett was a well-known Newfoundland shipbuilder, having been engaged in the shipbuilding industry in St. John, Newfoundland, for the better part of sixty years.

Herman Heintzman, vice-president of Heintzman & Co. Limited, Toronto, manufacturers of pianos, died recently at his home in that city. Mr. Heintzman was in his sixty-eighth year. He was one of the main figures in the development of the above-mentioned firm.

J. R. Fluker recently passed away in Pembroke, Ont. Mr. Fluker was a well-known commercial man and at different times had represented such firms as the Shurly-Dietrich Co., Limited, of Galt, Ont.; Thomas Pink Co., Pembroke, Ont., and Wood, Vallance & Co., of Hamilton.

James Sparling, who was a prominent resident of Meaford for 54 years, where he operated a planing mill and retail lumber yard, as well as carried on a building and contracting business, died very suddenly at his place of business recently. He was a leading Mason and a life-long member of the Conservative party. Mr. Sparling took a great interest in the work of the Ontario Retail Lumber Dealers' Association and was one of those in attendance at the last annual gathering in Hamilton.

Making Use of Trade Papers

Practically every modern factory or establishment of any kind receive a number of magazines and trade papers dealing with the type of material or equipment it manufactures, general machinery, management, and other topics that are of interest to office and shop employees of that particular industry.

In many cases these papers are received in the office, read by one or two people, and then passed on to the file room, where they are held for some time and then either thrown away or perhaps bound.

One manager felt that these periodicals could be made to do some extra work by making arrangements to pass the trade papers, after they had served their purpose in the office, out to the shop, where they would be distributed to the foreman or any other of the employees who had interest and initiative enough to read them either during the noon hour or at home.

In order to make the periodicals available a rack was built outside of the shop office, where all the papers were placed as received from the office. A sign was placed about the rack stating that the men were free to help themselves to the magazines the request also being made that any papers taken home be returned promptly so that they could be put in circulation. A number of the men took advantage of the opportunity to take the magazines home to read, while many others came to the magazine rack at the beginning of the noon hour and took advantage of the idle hour to look over the literature in which they were interested and from which they could derive benefit, thus utilizing what was previously wasted time.

While the magazines are usually a week or two old before they reach the shops, in the case of the average trade or technical paper the time element is not so important as in current news magazines, and hence the papers serve a useful purpose.

Such a scheme of placing at the disposal of the shop force literature in which they are directly interested, while probably not now, deserves favorable attention from the standpoint of improving both the education and the general spirit of the employees.—"Factory."

Hand-Painted Furniture

One of the big furniture companies that has recently located in the Long Island City section is now making an effort to engage the services of high-class artists to decorate furniture. In sending out the announcement that it is ready to give employment to artists, the firm says that an entirely new line of goods is about to be placed on the market. The decorations are to be similar to those which were used on furniture nearly a century ago and which were used most effectively by foreign makers.

The Annual meeting of the American Walnut Manufacturers' Association will be held at the offices of the association, 616 South Michigan Boulevard, Chicago, Illinois, on Thursday, January 20, 1921.

LUMBER OF QUALITY

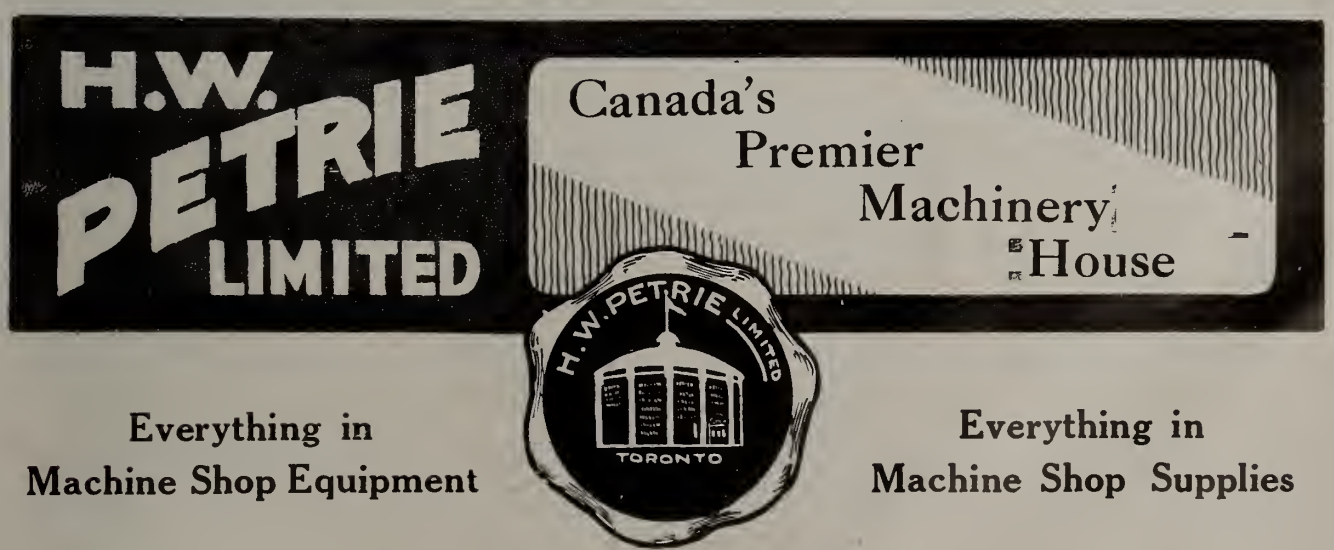
Rightly Graded - Promptly Shipped - Attractively Priced

4/4 to 16/4	White & Black Ash
" " 12/4	Basswood
" " 16/4	Birch
" " 16/4	Beech
" " 12/4	Hard Maple
" " 12/4	Soft Maple
" " 16/4	Oak
4/4	Butternut

The above stock is in pile in our transit yard, Toronto, and is bone dry and well manufactured and can be shipped immediately.

C. G. Anderson Lumber Co., Limited

705 Excelsior Life Building Toronto



Everything in Machine Shop Equipment

Everything in Machine Shop Supplies

In Our Stock of Woodworking Machinery We Have:

dowel machines	moulders	saw arbors	planers & matchers
dovetailers	mortisers	saw tables	drag & scroll saws
band saws	planers	scrapers	band saw filing clamp
band re-saws	shapers	tenoners	horiz. & post borers
band saw roller	swing saws	trimmers	timber sizer

Let us Quote on Your Requirements

H. W. PETRIE, LIMITED, 131-147 Front Street West Toronto

Office Manager

Large American lumber dealer opening Canadian office is desirous of getting in touch with prospective experienced lumberman as office manager and to assist in sales. Small investment preferred but not essential. Box 105, Canadian Woodworker, Toronto. 12

Superintendent Wanted

Factory superintendent wanted, must be capable of taking entire charge of all departments in factory manufacturing wooden toys. References necessary. State salary and experience. Hitch Bros. Co. of Canada Limited St. Thomas, Ont. 12

Do You Require Capable Superintendent?

Open for engagement Jan. 1st. Experienced in furniture and phonograph work. Capable, energetic and aggressive. Apply Box 104, Canadian Woodworker, Toronto, Ont. 12

Selected Trimmer Ends

8 to 10 cars White Pine Selected Trimmer Ends for sale. For prices and particulars apply JOHN B. SMITH & SONS, Toronto, Ont. 12-1

Machinery For Sale

MALCOLM & HILL,

Limited

KITCHENER, ONT.

Large gauge lathe, 8'.
Large gauge lathe, 6'.
Rip saw table, Goldie-McCulloch.
Tumbler, Stickley 2.
Glue joint spreader.
Embossing machine.
Glue spreader, No. 11 (for hide glue) power feed.
Single section press.
Fox dado machine, 62".
Shell box borer.
Spindle carver.
Double disc sander, No. 9.
No. 12 Dovetailer spindle.
Old rubbing machines, Maddox short bell.
Post upright boring machine.
Double spindle horizontal mortiser, J. C. & Co.
Roping machine, No. 10 Valley City Special Twist.
Small double miter saw for chair seat rails.
Screw driving machines, No. 4 Reynolds, No. 2 Mag.
Edge sander.
Double spindle shaper, H. C.
Wooden saw table with boring attachment.
1 Double spindle chuck.
1 Steaming bending tank, 8 x 48.
1 Bending machine (chair back bender).
1 Double drum sander, 2-24"x24" drums, (M.G. Gowley) with 42" disc on 1 end.
1 Double spindle sander, oscillating feed, 5/8 & 1 1/8 spindles, H.C.
1 Multiple drum sander, 6-12-18 & 24 diameters, 12" face, M.G.G.
1 Combination belt & spindle sander, M.G.G.
1 Maddox double miter saw.

FOR SALE

No. 43 Berlin Triple Drum Sander (roll feed), 42 inch, with countershaft. Practically new. For further particulars, price, etc., write The Pacific Box Co., Limited, Vancouver, B. C. 12

Planing Mill For Sale

Planing mill, sash & door factory and contracting business, Pembroke, Ont. Building ,etc., $15,000; equipment, $19,500; stock, $11,000. Established 48 years. Money maker. Immediate sale owing to owner's death. J. P. Lawrason, 25 Toronto St., Toronto.

Maple and Birch Squares for Turning

Handle & Dowel Stock, etc.

Furniture Dimension stock cut to order.

M. E. DAVIS,
11-2 Arundel, Que.

I Offer the following

Used Machines

For Immediate Shipment

Subject to prior sale

Sticker, Hermance Machine Co. 10" 4 Side.
Moulder, Hall & Brown 12" 4 Side.
Moulder, Greenlee Bros. 6" 4 Side.
Moulder, American 10" 4 Side.
Moulder, S. A. Woods 9" 4 Side.
Sandpapering Machine, Berlin 48" 3 Drum.
Sandpapering Machine, Berlin 36" 3 Drum.
Sander, endless bed 42", H. B. Smith.
Belt Sander, Curtiss No. 20.
Sandpapering Machine, Moore Machine Co. Double Belt
Belt Sander, Wysong & Miles.
Belt Sander Shimmel Simplex.
Scraper, Baxter D. Whitney 42".
Rubbing Machine, Moore Machine Co. Standard.
Matcher, American No. 229 Fast Feed Hardwood Flooring.
Matcher, American No, 22, 24" 4 Side.
Rip Saw, Greenlee Bros. Power Feed.
Band Resaw, Mershon, 44".
Band Resaw, Connell and Dengler, 60".
Band Rip Saw, American No. 1 Power Feed.
Jointer, Falls Machine Co. Undercut 24" Power Feed.
Buzz Planer 24" Buss Machine Works.
Buzz Planer, 12" Frank Machine Co.
Lathe, Back Knife Clement 36".
Lathe, No. 10 Ober Turning.
Planer, Buss Machine Works 30" Cabinet.
Planer, Whitney, 24" by 6" single.
Dowel Rod Machine, E. B. Hayes
Dowel Gluer and Driver, E. B. Hayes.
Door Clamp, E. B. Hayes Standard Power.
Shaper and Dove Tailing Machine, Combination Single Spindle.
Carving Machines, Moore 4 Spindle.
Lock Corner Machine, Morgan Machine Company.
Drills, Tool Room Buffalo Forge Co.

C. J. ANDERSEN,
15 W. Swan St., Buffalo, N. Y.

BARGAINS *In* Used Wood Working Machines

Planers & Matchers.

Yates No. 87 Hardwood Matcher.
Woods 15 x 6" Planer and Matcher.
Woods 24 x 6" Planer and Matcher.

Double Surfacers.

MacGregor 26 x 8" Double Surfacer.
Yates 30 x 6" Double Surfacer.
Whitney 26 x 8" Double Surfacer.
Berlin 30 x 6" Double Surfacer.
Crescent 18" Surface Planer.

Moulders.

C.M.C. 12" Moulder.
American 4" Sticker.
MacGregor 4 side 10" Moulder
C.M.C. 6" Sash Moulder

Circular & Band Saws.

Yates No. 341 Band Resaw
Fay & Egan Band Rip Saw
Ballantyne Self Feed Rip Saw
Beach Box Makers Cut-off Saw
C.M.C. Power Feed Rip Saw
Wood Table Rip Saw
30" Bracket Band Saw

Miscellaneous.

C.M.C. 12" Buzz Planer
McGregor Tenoner
C.M.C. Post Borer
C.M.C. Arm Sander
C.M.C. Sash Clamp
Cowan Wood Turning Lathe
C.M.C. Double Spindle Shaper
Fay & Egan Dovetailer
Rogers Saw Sharpener (new)
Adde Meter 100M capacity
C.M.C. Glue Jointer
MacGregor Mortiser

M. E. Casey Co., Ltd.

263 St. James St., Room 801
MONTREAL

FOR SALE

One Berlin No. 87-7 x 4 Hardwood Flooring Machine complete.
One Fay-Egan Band Rip Saw.

Apply P. B. Yates Machine Co., Limited, Hamilton, Ont. 12

For Sale

Excelsior Machine and Press. Can be seen running. Good reasons.

REID BROS.,
8-12 Bothwell, Ont.

Used Machinery

For Immediate Disposal

1 No. 46, Berlin planer & matcher.
1 Cowan 42" band resaw.
1 Exhauster, Sirocco, 80".
1 Exhauster, Sheldon, 40" double.

All in good running order and cheap. Subject to prior sale.

THE INTERNATIONAL AGENCY,
416 St. Nicholas Bldg., Montreal

FOR SALE

Berlin Triple Drum Sander, 48".
Fay & Egan Drum Sander, 48".
Berlin Triple Drum Sander, 43".
McDonough 54" Band Resaw, Vertical
Diamond Horizontal Band Resaw.
American Timber Sizer.
70" Sheldon Fan.
400 H. P. Cross Compound Corliss.

Write Box 82, Canadian Woodworker, Toronto. t.f.

Turpentine from B.C. Fir

After a trial of a year the Douglas fir turpentine industry is now said to have demonstrated itself as a successful undertaking, capable of expanding to enormous dimensions. This work was first taken up in a somewhat doubtful manner, many of the backers of the scheme being afraid they were venturing into something that would prove to be "another wild cat." But the developments have proven the sound commercial basis of the arguments of the apostle of the venture. The business is established and is growing.

There are vast forests of Douglas fir on the coast, and they provide an inexhaustible source for raw material. The trees are tapped as is a maple tree, and the sap is received in a metal receptacle and shipped to Vancouver, where it is refined into turpentine and rosin. The sap runs in the trees for seven months of the year, and tapping does not injure the timber. In fact, it is said it helps by making a finer grain. Another thing which the turpentine extraction has done is to create a use for trees that hitherto were not considered as marketable. When experiments first were undertaken, the men tapped the finest, biggest, straightest trees they could find. The results were not very promising, as the sap flow was light. As time passed, it was learned that much more sap would come from a fairly poor tree than from a perfect one. Further development along this line showed that the trees on rocky, poor land gave more sap than trees on rich soil. So now practically all the operations under way are being carried out on the areas where soil is poor.

The company that is now operating has adopted a plan of employing farmers and settlers to get the sap. The company provides receptacles and tools, and guarantees to take the sap at a certain minimum figure per gallon at tidewater. It sends launches up the coast at certain intervals to collect, pay the settlers, and carry the product to Vancouver for refining. This company now has 50,000 acres under lease.

Restoring Paintbrushes

Don't throw away the stiff, hard paint brushes, that so often accumulate, and don't buy new ones; but particularly don't buy expensive paint remover to make them usable again.

Put an inch of ordinary vinegar in a granite dish. With the brushes in this, set the pan on the stove and let it boil. As the paint softens and comes off, try working the brushes to help the process. When the vinegar has lost its strength, replace with fresh as often as necessary till the brushes are clean.

A word of caution is necessary at this point: Do not let the vinegar come too high on the brush, where the bristles are held in place. Cement-set or glue-set brushes are liable to soften and let the bristles fall if the boiling vinegar works into the glue or cement. A little care readily overcomes the danger of this.

Fifteen cents' worth of vinegar and an hour's time will make soft, pliable and as good as new, a dozen brushes that have been dried in paint a dozen years.

Reese Sheriff Lumber Co.

WILLIAMSPORT, PENNSYLVANIA

Manufacturers of

Northern and Southern Hardwoods White Pine, Spruce and Hemlock

With special attention to **Oak, Chestnut, Poplar, Cherry, Walnut, Gum and Basswood.**

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REASONABLE PRICES – that you can afford to pay.
EFFICIENT SERVICE — that you have a right to expect
FAIR TREATMENT — that you can depend on getting

We would appreciate an opportunity of furnishing a portion of your lumber requirements.

Cut Miles without Grinding

A Characteristic Experience

Richmond, Indiana.

G. M. Diehl Machine Works,
Wabash, Ind.

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You may possibly be interested in an experience which we had recently in our factory with your Diehl Heads and Cutters.

Our Sticker man recently made a run of 10,000 stiles, each piece being 73 inches long, of hardwood, in which we cut a groove ¼ inch wide by 9/16 inch deep, and we made the entire run without taking the Heads or Bits off the machine and without re-sharpening, which makes a total run of a little more than 11½ miles. The Bits would, no doubt, have run quite an additional number of feet before it would have been absolutely necessary to sharpen them. We consider this a very good performance, especially in view of the fact that these stiles were all run from the rough wood and the Heads being used on a four-sided Sticker

Very truly yours,

RICHMOND FURNITURE MFG. CO.,
Per O. H. BRUBAKER, Manager.

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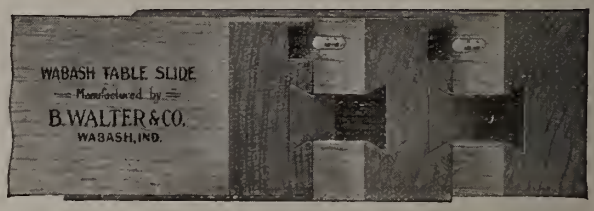
On the Banks of the Wabash

THE SLIDE IS THE HEART OF YOUR EXTENSION TABLE



If the Slide Does Not Work Properly Your Whole Table is Condemned

Wabash Slides insure **Satisfied Customers**

SLIDE MAKING is a SPECIALTY BUSINESS

We can Furnish Better Slides for Less Cost

Eliminate Slide Troubles by using WABASH SLIDES

MADE BY

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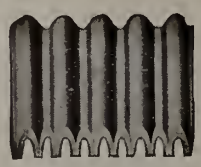
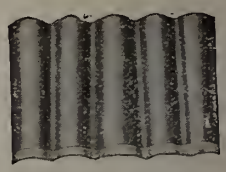
Cary's SUPERIOR QUALITY Corrugated Fasteners



SAW EDGE



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According to final decision, after long litigation, we have been granted the SOLE RIGHT to manufacture a Saw Tooth Corrugated Fastener with a continuous cutting edge. Our fastener is beveled evenly on both sides, which enables fasteners to be driven in straight, and much easier than any other fastener made. Our Corrugated Fastener is made in various widths and corrugations, also in coils wound right and left. Try our products and you will use no other.

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PLANER KNIVES
and CUTTERS
OF ALL DESCRIPTIONS

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Measure the Output

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Put this little worker on your moulders, matchers, stickers, flooring machines, self-feed rip saws, it will tell you, exactly, any time, just how much lumber has gone through.
It's a real lumber meter, sturdily built to withstand the hardest usage.

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Cast Brass Leg Sockets

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No.	Opening at Top inches	Height inches
A808	1	1
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C808	1½	1¼
D808	1¾	1½
E808	2	2
F808	2¼	2¼

Style 814

No.	Opening at Top inches	Height inches
A814	1	⅞
B814	1¼	1
C814	1½	1⅛
D814	1¾	1⅜
E814	2	1½
F814	2⅜	2⅛

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Also in wrought brass, either straight or tapered
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Same time; change your paper in 5 minutes.
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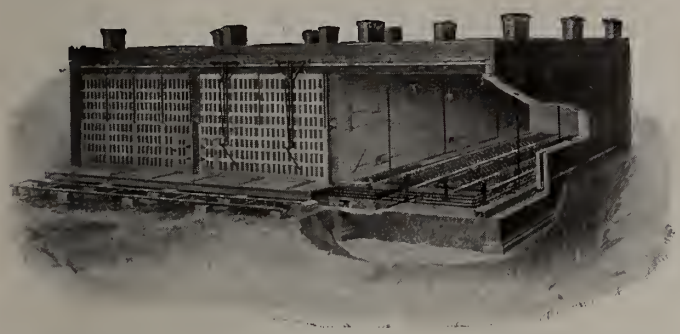
For All of Us Living in America



this holiday season there are scores of reasons for wishing each other a

Merry Xmas.

and there are reasons more vital even, than the fact that this has been a splendid year. To our many appreciated friends we send our greetings with the hope that the future also will be as satisfactory.

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Successors to

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Because they do not break and put you to the trouble of doing over again the work caused by the broken clamp. They do not break because of the superior materials and finer workmanship which compose them—they last longer, yet cost no more than the ordinary kind. All sizes. Prompt shipment.

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The Wheel and Hole Cutting Machine has four automatic movements, all of which work in perfect unison, performing their functions in clock-like regularity.

The Hand-Hole Machine will cut hand holes in crate and box ends. It is worked by a carriage and levers, and will cut any size or length hole with either round or bevel edge in any kind of wood.

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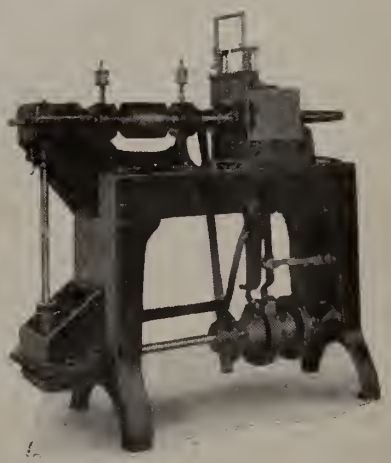

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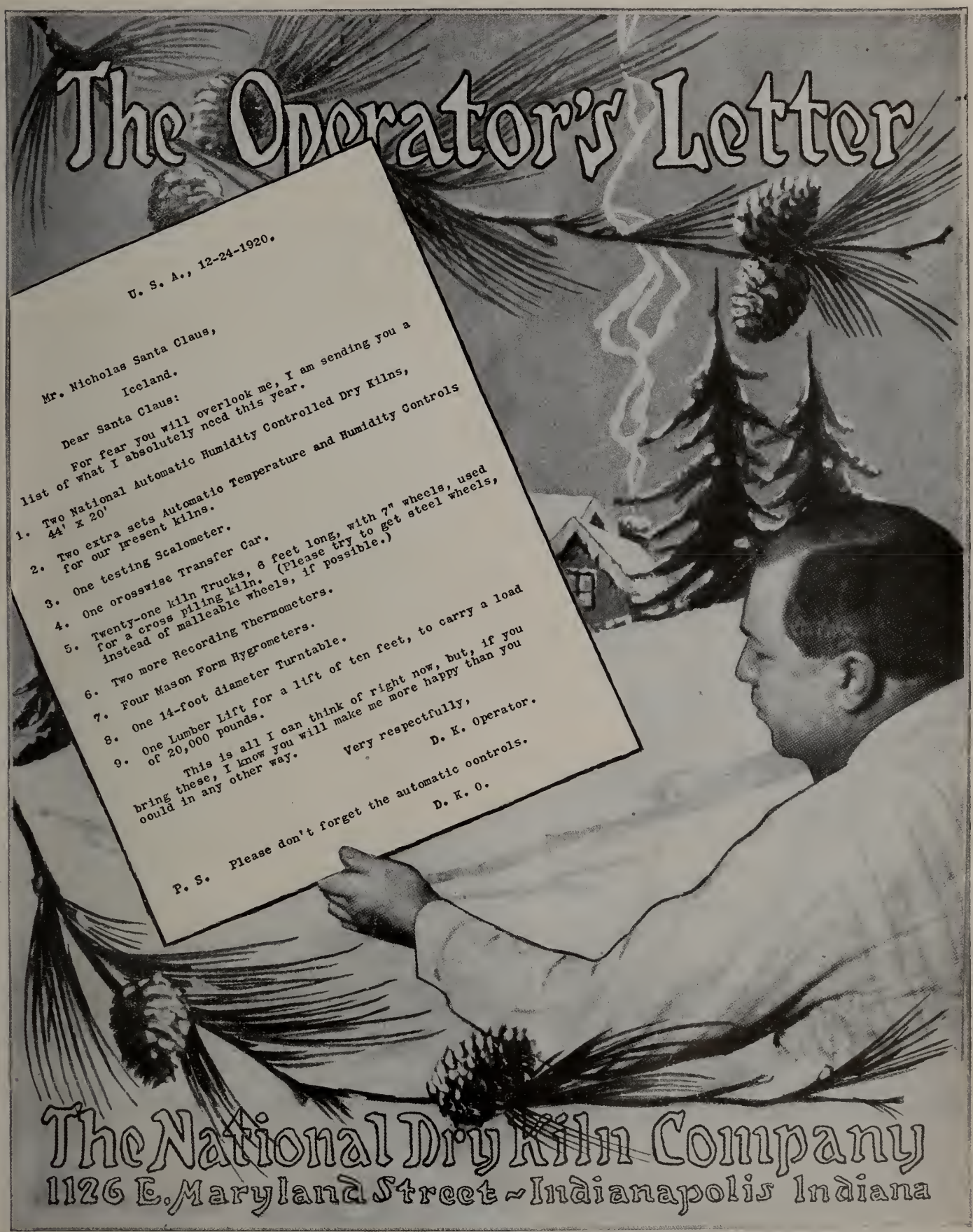
The Operator's Letter
U. S. A., 12-24-1920.
Mr. Nicholas Santa Claus,
Iceland.
Dear Santa Claus:
For fear you will overlook me, I am sending you a list of what I absolutely need this year.
1. Two National Automatic Humidity Controlled Dry Kilns, 44' x 20'
2. Two extra sets Automatic Temperature and Humidity Controls for our present kilns.
3. One testing Scalometer.
4. One crosswise Transfer Car.
5. Twenty-one kiln Trucks, 6 feet long, with 7" wheels, used for a cross piling kiln. (Please try to get steel wheels, instead of malleable wheels, if possible.)
6. Two more Recording Thermometers.
7. Four Mason Form Hygrometers.
8. One 14-foot diameter Turntable.
9. One Lumber Lift for a lift of ten feet, to carry a load of 20,000 pounds.
This is all I can think of right now, but, if you bring these, I know you will make me more happy than you could in any other way.
Very respectfully,
D. K. Operator.
P. S. Please don't forget the automatic controls.
D. K. O.
The National Dry Kiln Company
1126 E. Maryland Street ~ Indianapolis Indiana

NATIONAL DRY KILNS

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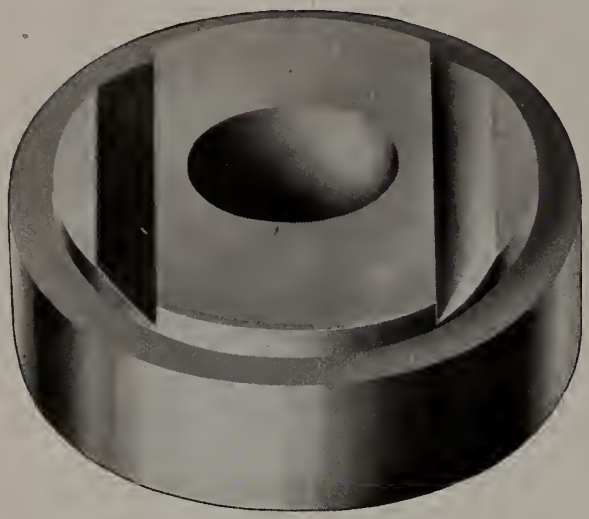
THE SHAPER MAN'S DREAM

THE KNOUREK PATENT

Ball Bearing Shaper Guide Collars

A Decided Improvement Over the Revolving Solid Collars Now in Use



Patent applied for

Ball-bearing Shaper Guide Collars are made with grooves as shown, for flat knives, and without grooves for solid steel cutters.

ORDER A SET ON 30 DAYS FREE TRIAL

The friction set up by stock or patterns bearing against solid revolving collars is entirely eliminated when ball-bearing shaper collars are used. Every shaperman knows the effect of this friction on stock being run, and so will appreciate the real value of these new shaper collars.

In the operation of the ball-bearing collar, the outer shell is free from the slotted collar proper and ceases to revolve with the spindles when pattern or stock comes in contact with it. It does not stop entirely but simply rolls along with the feed of the work. In this way there is no friction whatever between the collar and the work, therefore the edge surface can neither be burned nor worn down.

To save your patterns, stop spoilage of stock and in an easy manner, enable your operator to do more work, you should try out these new ball-bearing shaper collars —note the results by actual operation in your own plant.

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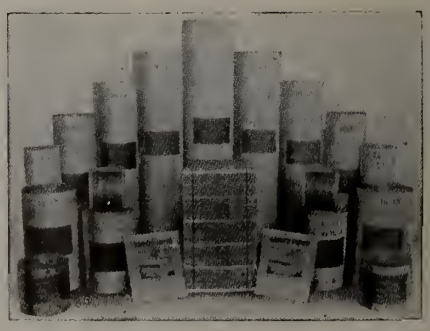
TO Our Customers and Friends:

As the year draws to a close, permit me to offer the Season's cheer and good will, and our best wishes and greetings for our pleasant business relations during the past year.

We desire to thank you for the business you have sent us, and express the hope that our business relations may continue in the coming year.

Here's hoping for a Prosperous New Year and wishing you the Compliments of the Season.

Christmas 1920



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GRAINING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

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Moulder, Goldie-McCullough—8"—4 sided	300.00
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Sander—American, 3 drum, 37"	750.00
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Casein Glue Mfg. Co., Chicago, Ill.
Perkins Glue Company, South Bend, Ind.
Sampson & White, London, England.
Waterville Veneer & Panel Co., Waterville, Que.

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Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane, & Company, Kitchener.

GLUE HEATERS
Cincinnati Glue Heater Co., Cincinnati, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
International Electric Co., Indianapolis, Ind.
Jackson, Cochrane, & Company, Kitchener.
Pringle, R. E. T., Toronto, Ont.

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Canada Machinery Corporation, Galt, Ont.
Casey Co., M. E., Montreal, Que.
Garlock-Walker Machinery Co., Toronto, Ont
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GLUE SPREADERS
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane. & Company, Kitchener.

GLUE ROOM EQUIPMENT
Perrin & Company, W. R., Toronto. Ont.

GRINDERS (Cutter)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

GRINDERS (Knife)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane, & Company, Kitchener, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N.Y.

GROOVING HEADS
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Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.

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Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
Anderson-Tully Co., Memphis, Tenn.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Brown & Co., George C., Memphis, Tenn.
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Churchill-Milton Lumber Co., Louisville, Ky.
Cornelius Lumber Co., St. Louis, Mo.
Darnell-Love Lumber Co., Leland, Miss.
Gum Lumber Association, Memphis, Tenn.
Hyde Lumber Company, South Bend, Ind.
Merceau-Hawkins Tie Co., Huntington, W.Va.
Paepcke-Leicht Lumber Co., Chicago, Ill.
Sondheimer Co., E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Thomas & Proetz Lumber Co., St. Louis, Mo.

HAND SCREWS
Fay & Egan Co., J. A., Cincinnati, Ohio.

HANDLE & SPOKE MACHINERY
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.

HARDWARE
Garden City Plating & Mfg. Co., Chicago.
Laidlaw Bale-Tie Co., Hamilton, Ont.

HARDWOOD DIMENSION STOCKS
Brown Bros. & Co., New York.

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Aberdeen Lumber Co., Pittsburgh, Pa.
Alexander Bros., Belzoni, Miss.
American Column & Lumber Co., Columbus, Ohio.
American Hardwood Lumber Co., St. Louis, Mo.
American Oak Mfrs.' Assn., Memphis, Tenn.
American Walnut Association, Washington, D.C.
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Anderson-Tully Co., Memphis, Tenn.
Arrow Lumber Co., Parkersburg, W. Virginia
Astoria Mahogany Co., New York, N.Y.
Atlantic Lumber Company, Toronto, Ont.
Bacon Lumber Co., Cleveland, Ohio.
Banning, Leland G., Cincinnati, Ohio.
Barr- Holaday Lumber Co., Greenfield, Ohio.
Barlett Lumber Co., W. C., Charleston, Va.
Bedna Young Lumber Co., Jackson, Tenn.
Biglow-Cooper Co., Bay City, Mich.
Bonner & Sons. J. H., Memphis, Tenn.
Brown Bros. Co., New York.
Brown & Company, Geo. C.
Brown & Hackney, Inc., Memphis, Tenn.
Bruce Co., E. L., Little Rock, Ark.
Burns & Knapp Lbr. Co., Conneautville, Ohio.
Bury & Company, Robert, Toronto. Ont.
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Conkling Lumber Co., Frank A., Memphis, Tenn.
Cornelius Lumber Co., St. Louis, Mo.
Canadian General Lumber Co., Toronto, Ont.
Clark & Sons, Edward, Toronto.
Dacus-Richards Hardwood Co., Memphis, Tenn.
Darling Lumber Co., J. W., Cincinnati, Ohio
Darnell-Love Lumber Co., Leland, Miss.
DeHewit Lumber Co., Huntington, Va.
Des Moines Sawmill Co., Des Moines, Iowa.
Dooley Lumber Co., F. T., Memphis, Tenn.
Evansville Band Mill Co., Evansville, Ind.
Gayoso Lumber Co., Memphis, Tenn.
Gill Lumber Co., Chas., Wausau, Wis.
Hall Lumber Co., Thos., Charleston, W.Va.
Hart & McDonagh, Toronto. Ont.
Heeney, Percy E., Kitchener, Ont.
Hunt, Wellington & Smith, Nashville, Tenn.
Hyde Lumber Co., South Bend, Ind.
Johnson Bros., Memphis, Tenn.
Kersley, Geo., Montreal, Que.
Korn-Conkling Co., Cincinnati, Ohio.
Kosse, Shoe & Schleyer Co., Cincinnati, O.
Kraetzer-Cured Lumber Co., Greenwood, Miss.
Lawrence & Co., P. J., St. Louis, Mo.
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Merceau-Hawkins Tie Co., Huntington, W.Va.
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Pedwell Hardwood Lumher Co., Toronto, Ont.
Perkins Bros., Kelso, Ark.
Peytona Lumber Co., Huntington, W. Va.
Pickrel Walnut Co., St. Louis. Mo.
Powe Lumber Co., Thos. E., St. Louis, Mo
Ritter Lumber Co., W. M., Columbus, Ohio
Rush Lumber Co., Memphis, Tenn.
Sondheimer Co., E., Memphis, Tenn.
Spencer, C. A., Montreal, Que.
Spotswood & Son, E. R., Lexington, Ky.
Stark & Co., Jas. E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Sterrett, Will S., Cincinnati
Stimson Hardwood Co., J. V., Memphis, Tenn.
Tallahatchie Lumber Co., Memphis, Tenn.
Thompson, Katz Lumber Co., Memphis, Tenn.
Thompson & Co., Philadelphia, Pa.
Tustin Hardwood Lumber Co., Memphis, Tenn.
Upham & Walsh, Chicago, Ill.
Utley-Holloway Co., Chicago, Ill.
Warren-Ross Lumber Co., Jamestown, N.Y.
Wheeler-Timlin Lumber Co., Wausau, Wis.
Whiting Co., Wm. S., Johnson City, Tenn.
Woodruff Powell Lumber Co., South Bend, Ind.
Wayne Lumber Co., New York
Wood Mosaic Co., Louisville, Ky.
Yellow Poplar Lumber Co., Coal Grove, Ohio.

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Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohic
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Onio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochane & Company. Kitchener. Ont.
Mattison Machine Works, Rockford, Ill.
Petrie. H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Smith, C. W., Grand Rapids, Mich.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

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Fibro Mfg. Company, Beverly, N. J.

LUMBER MEASURER
Durant Mfg. Co. Milwaukee, Wis.

MACHINE KNIVES
Canada Machinery Corporation, Galt, Ont.
Casey Co., M. E., Montreal, Que.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

MIRRORS
Hart Mirror Plate Co., Grand Rapids, Mich.

MITRE SAWS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

MOTOR TRUCK EXTENSIONS
Swedish Crucible Steel Co., Windsor, Ont.

MOULDINGS
Waddell Mfg. Co., Grand Rapids, Mich.

MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

NAILS
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NAILING MACHINES
Morgan Machine Co., Rochester, N.Y.

OIL
Zero Oil Co., Parkersburg, Pa.

OIL STONE GRINDERS
Mummert-Dixon Co., Hanover, Pa.

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Gorham Bros., Mount Pleasant, Mich.
Hay & Co., Woodstock, Ont.
Holden Company, Henry S., Chicago, Ill.
Roberts, Geo. G., Chicago, Ill.
Waetjin & Co., L., Milwaukee, Wis.

PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago. Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
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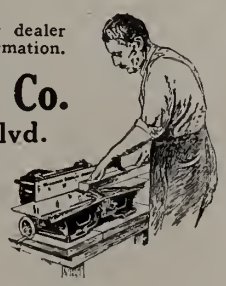

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Canada Machinery Corporation, Galt, Ont.
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Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY
Canada Machinery Corporation. Galt, Ont.
Casey Co., M. E., Montreal, Que.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PORTABLE DRILLS
Wisconsin Electric Co., Wisconsin, U.S.A.

PRESSES (Veneer)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

REED
Overseas Reed and Cane Co., Ionia, Mich.

RESAWS
Canada Machinery Corporation, Galt, Ont.
Casey Co., M. E., Montreal, Que.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A. Cincinnati, Ohio.

RIP SAWING MACHINES
Canada Machinery Corporation. Galt, Ont.
Casey Co., M. E., Montreal, Que.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company. Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Waddell Mfg. Co., Grand Rapids, Mich.

RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.

SAFETY DEVICES
Cowan & Company, Galt, Ont.

SANDERS
Canada Machinery Corporation. Galt, Ont.
Casey Co., M. E., Montreal, Que.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company. Kitchener, Ont.
Loeffler Machine Co., Wm. Sheboygan, Wis.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAND PAPER
Manning Abrasive Company

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Casey Co., M. E., Montreal, Que.
Cowan & Company, Galt, Ont.
Elliot Machinery Co., Belleville, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R,, Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS
Atkins & Co., E. C., Indianapolis, Ind.
Disston & Sons, Henry, Toronto, Ont.
Elliot Machinery Co., Belleville, Ont.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Silver Mfg. Company, Salem, Ohio.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.

SAW BENCH
Wallace & Co., J. D., Chicago, Ill.

SAW SWAGES
Cowan & Company, Galt, Ont.
Crowel, D. J., Buffalo, N. Y.
Disston & Sons, Henry, Toronto, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES
Canada Machinery Corporation, Galt, Ont. ..
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Company, Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont. ..
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY
Reynolds Machine Co., Massillon Ohio.

SCROLL SAWS
Canada Machinery Corporation, Galt, Ont. ..
Casey Co., M. E., Montreal, Que.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Disston & Sons, Henry, Toronto, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane, & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamiltonfi Ont.

SECOND-HAND MACHINERY
Casey, M. E., Montreal, Que.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Osborne Sexton Machinery Co., Columbus, O.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS
Canada Machinery Corporation, Galt, Ont.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAPER COLLARS
Woodworkers Tool Works Chicago, Ill.

SHAVING COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.

STAINS
Ault & Wiborg, Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ohio.
Shannon Co., Ed. J., Cincinnati, Ohio.
Williams Bros. & Co., Hounslow, Eng.

SINGLE SPINDLE BOXING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE
Whitney & Son, Baxter D., Winchendon, Mass

STEEL DOOR MATS
Cary Mfg. Company, Brooklyn, N.Y.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Casey Co., M. E., Montreal, Que.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company. Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Canada Machinery Corporation. Galt. Ont.
Casey Co., M. E., Montreal, Que.
Colladay Machine Works, Indianapolis, Ind.
Cowan & Company. Galt, Ont.
Eaglesfield, R. D., Indianapolis, Ind.
Fay & Egan Co., J. A.. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohoa.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES
Jefferson Woodworking Co., Louisville, Ky.
Walter & Company, B., Wabash, Ind.

TEMPERATURE REGULATORS
Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Compan, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS
International Business Machines Co., Toronto, Ont.

TOPS
Gorham Bros., Mount Pleasant, Mich.

TRIMMERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Preston Woodworking Machinery Company, Pretson, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

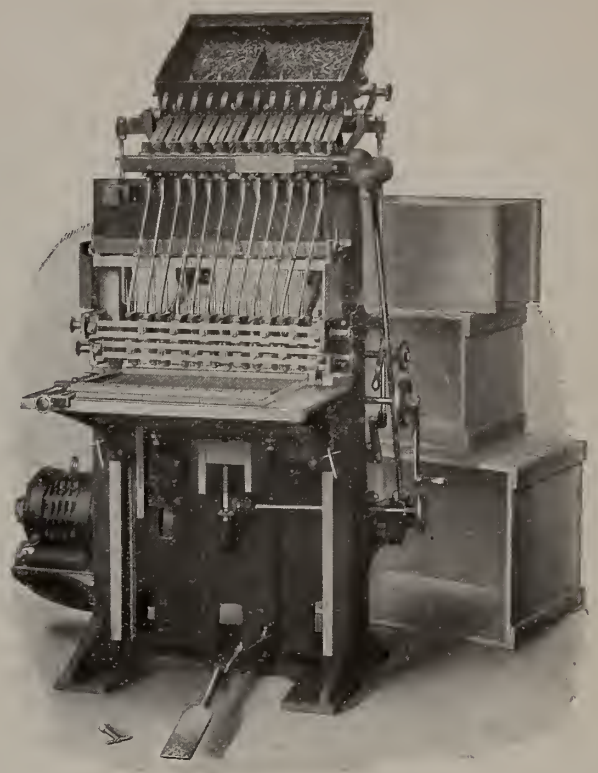
TRUCKS
Cowan Truck Company, Toronto, Ont.
National Dry Kiln Co., Indianapolis, Ind.

TURNED WOOD GOODS
Algoma Wood Products Co., Algoma, Wis.

TWINES & WEBBING
Doon Twines, Ltd., Kitchener, Ont.

How do YOU Drive Nails?

The Morgan Automatic Nailing Machine will prove a good investment for any woodworking plant. It drives nails anywhere and in any kind of wood, accurately, effectively and faster than it is possible to do it by hand. It makes money for Box Factories, Canning Factories, Cabinet Factories, Furniture Factories, etc.



Morgan Machine Co.

DEPT. A ROCHESTER, N.Y.

Write for our Descriptive Literature

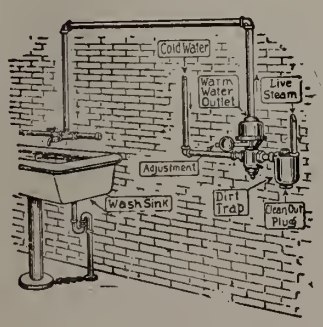
Cleanliness Promotes Health

Remove the danger of scalding or shock from too hot or too cold water—see if your men don't use the showers and wash sinks more.

Greater cleanliness means better health — and the better a man's health the better his work.

The Powers Steam and Water Mixer mixes live steam and cold water, and saves double piping and double valves. Set it to deliver water of the desired temperature, and one faucet in each basin will do all the work.

Positive in action—never fails. Absolutely safe against scalding.



Ask for Bulletin 137

The

Canadian Powers Regulator Co.

Limited

Specialists in Automatic Heat Control

82 Chestnut Street - - Toronto, Ont.

"Canadian Woodworker" Buyers' Directory—Continued

UPHOLSTERY FABRICS
Burch Co., A. F., Grand Rapids, Mich.

UPHOLSTERY SUPPLIES
Burch Co., A. F., Grand Rapids, Mich.

VARNISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto, Ont.
Flint Varnish & Color Co., Montreal, Que.
Penfound Varnish Co., Toronto, Ont.

VARNISH DRYERS
Nicholls Co.. A. S., New York, N.Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS
Astoria Mahogany Co., New York, N.Y.
Batesville Lumber & Veneer Co., Lawrenceburg, Ind.
Birds Eye Veneer Co., Escanaba, Mich.
Bury & Compny, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christmann Veneer & Lumber Co., St. Louis, Mo.
Curtis Co., C. E., Chicago
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Evansville Veneer Co., Evansville, Ind.
Freiberg Lumber Co., Cincinnati, Ohio
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Holden, Henry S., Chicago, Ill.
Geo. Kersley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Litton Veneer Co., Rockford, Ill.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Mowhawk Veneer Co., Warren, Pa.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Veneer Co., New Albany, Ind.
Roberts, Geo. G., Chicago, Ill.
Southern Veneer Mfg. Co., Louisville, Ky.
Stimson Veneer & Lumber Co., Memphis, Tenn.
Sturm Co., Adolph, Chicago, Ill.
Talge Mahogany Co., Indianapolis, Ind.
Thompson & Co., Lewis, Philadelphia, Pa.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Underwood Veneer Co., Wausau, Wis.
Veneer Manufacturers Co., Chicago, Ill.
Waetjen & Co., George L., Milwaukee, Wis.
Warren Rose Lumber Co., Jamestown, N. Y.
Williamson Son Veneer Co., William, Chicago, Ill.
Wood Mosaic Co., Louisville, Ky.

VENEER TAPE
Canadian Nashua Paper Co., Peterboro, Ont.
Gummed Products Co., Troy, Ohio.
Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.

VENEER JOINTERS
Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY
Garlock-Walker Machinery Co., Toronto. Ont.

VENEER PRESSES (Hand and Power)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont
Perrin & Company, Wm. R., Toronto, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Johnson Co., O. E., Chicago, Ill.

WALNUT LUMBER
American Walnut Mfrs. Assn., Chicago.
Des Moines Saw Mill Co., Des Moines, Iowa.
Pickrel Walnut Company, St. Louis.
Purcell Walnut Lumber Co., Frank, Kansas City.

WIRE
Laidlaw Bale-Tie Co., Hamilton, Ont.
Pakanship Company, Brooklyn, N.Y.

WIRE BOX STRAPPING
Cary Mfg. Company, Brooklyn, N.Y.

WOOD FINISHES
Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Penfound Varnish Co., Toronto, Ont.

WOODWORKING MACHINERY
General Machinery Co.. Toronto, Ont.
Hollis Wood Trimmer Co., Birmingham, Eng.

WOOD STAINS
Williams Brothers & Co

WOOD TURPENTINE
Brown Corporation, Quebec, Que.

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WOOD LATHES
Colladay Machine Works, Indianapolis, Ind.

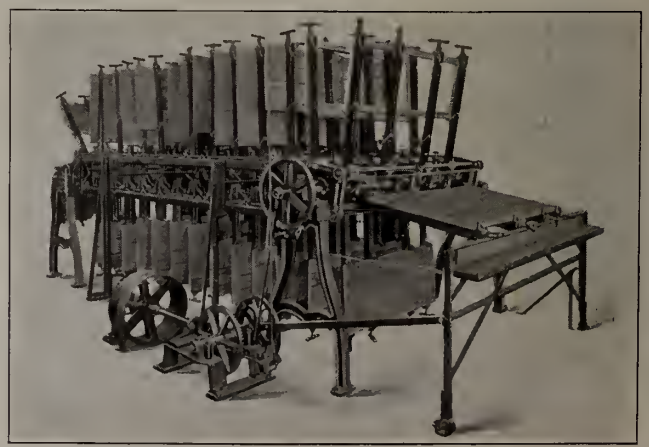
WOODWORKING SPECIALTIES
Brantford Pattern Works, Brantford, Ont.

The Billstrom Glue Clamp Carrier

The Modern Method of Edge Gluing
A Time Saver — A Money Saver

You have only to know about the Billstrom—to know the labor, time and money saving it effects—to know that it will put your edge gluing on a modern, efficient basis—before adopting the system in your plant.

It will do these things for you because it is doing them for others. All we ask is an opportunity of proving it to you. Why not drop us a card?



N. J. BILLSTROM
2002 NINTH ST. ROCKFORD, ILL.

44 Yates No. 275
36 and 66-in. Automatic
Knife Grinders,
Brand New, at
One-half Price

Machines arranged for Motor Application as per cut, or regular belt drive, if wanted.

We have in Cincinnati, available at once, three Whitney 30-in. single surfacers and two Whitney 30-in. double surfacers, all with sectional rolls; three double arbor revolving saw tables; three single arbor tilting table saw benches; F.&E. single-end tenoner with roller table, and a few other choice machines. All are in exceptionally fine condition—are doing precision work at the present time.

7 New Hermance Molders, 8, 10 and 12-in., Stationary and slip-on heads.
8 New Andrew Multiple Vertical Borers, 20, 30, 42 and 60-in., any number of heads.

Band saws, 32, 36 and 38-in.
Borer, Andrew, 10-ft., 13-spindle, power table.
Borers, Andrew mult. vert., 20, 42 and 60-in., new.
Door clamp, Fay-Egan, heavy.
Door clamp, Jenkins-Hayes power-feed.
Edgers, two, three and four saws.
Glue cookers and retainers.
Jointers, 8, 12, 16, 20, 24 and 30-in.
Lathes, speed, eight, mounted on iron bed.
Lathes, turning automatic, Mattison No. 8
Yates No. 72, practically new.
Matcher, American Northwest, 24x8-in., 3 sides.
Matcher, 24x6-in., 3 and 4 sides.
Molders, 4-side, 9, 10 and 12-in. American.
Molder, Fay & Egan, 12-in. outside, heavy.
Mortiser, chain saw, New Britain No. 7, new.
Mortisers, F. & E. vertical, hollow-chisel; also plunger type; Greenlee vertical, double hollow-chisel.
Nailers, two, Hayes, 8-track, 8d, closed back.
Nailing machines, 2 closed back,4-track, 4d, 15-in. spread, Hayes' make.
Pony planers, 16, 20 and 24-in.
Rip saws, self-feed, Hoosier, F. & E. Greenlee.
Rip saw, gang, Luther, for box work.
Router for stair stringers.
Sand belt, closet seat and similar work.
Sander, H. B. Smith, spindle and disc, practically new.
Sanders, 30- 42 and 54-in. Columbia; 30, 42 and 48-in. Invincible; 30 and 36-in. F. & E. double.
Saw, 8-ft. double cut-off, roller table.
Saws, combination and variety, single and double arbor, also tilting arbor, stationary and tilting table, 24 and 30-in. circular resaw.
Saw, circular re-slab, 40-in. blade, power feed rolls.
Shapers, Fay single-spindle reversible, also Shimer single with overhead routing attachment.
Shaper, Whitney No. 7 and 8 double-spindle, practically new.
Surfacer, 30-in. double, cabinet, B. & M., practically new.
Surfacer, Whitney 30-in. double, sectional roll and sectional chipbreaker; American No. 4½, 36-in. sectional and solid; Fay & Egan No. 140, 27 and 30-in. double divided rolls; also 18, 20, 24 and 30-in. single cylinder panel planers.
Tenoners, Fay & Egan double-end, also single-end.
Window frame machine for production work, new.
Window frame machines, Smith & Phillips combination.
Wood-worker, universal, Fay & Egan and Bentel & Margedant. One lot of glue room machinery.

We have just received two carloads of Band Saws and Jointers—all new—which are ready for immediate delivery.
Band Saws, 20, 26, 32, 36 and 38-in. Jointers, 8, 12, 16 and 24-in.

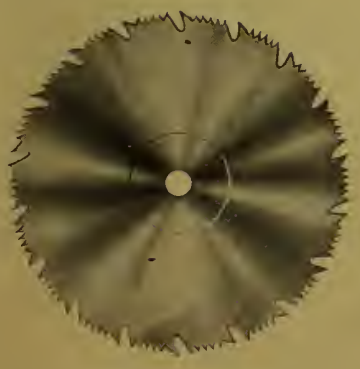
The Osborne & Sexton Machinery Co.
Re-manufacturers **COLUMBUS OHIO**

ATKINS
STERLING QUALITY
SAWS and KNIVES

mean continuous, efficient work and 100 per cent. production.

The extraordinary demand for more buildings and homes means that the Lumber output must increase.

Atkins Sterling Quality Saws and Knives will assist you in making the year 1920 the biggest and best in the history of your business.



Write to-day for our Knife Booklet "C W" and Pattern Template Paper.

E. C. ATKINS & CO.
Makers of Sterling Saws

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

Rub Your Varnish Electrically

with a

MATTISON ELECTRIC Rubbing Machine

—operates direct from a lamp socket

By doing the work of two hand rubbers, the Mattison Electric cuts wages 50%, thus paying for itself many times over every year. It is a power unit complete in itself, consumes very little current, and requires no special hose or piping.

Any flat varnished surface, larger than the machine itself can be rubbed to better advantage with this portable electric rubber than by any other method.

The machine is very easy to handle, and relieves the operator of all the hard labor of hand rubbing. His attention is concentrated on his work; and with the machine he produces a finish much more uniform than is possible by hand.

Ask for bulletin "165" and get detailed information

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